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Discovery of the second specimen of the African amphisbaenian *Monopeltis kabindae* Witte & Laurent, 1942

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Abstract.—The genus *Monopeltis* (Reptilia, Amphisbaenia) is widespread in sub-Saharan Africa, occurring in several areas, from South Africa to Cameroon. *Monopeltis kabindae* Witte & Laurent, 1942 was until now only known from its type specimen, which was collected in 1930 in southern Democratic Republic of the Congo. Here, the discovery of a second specimen collected in Manovo, Central African Republic (1 630 km north of the type locality) is reported. The specimen is described and its characters compared with those of the holotype. Despite the great distance between the site where this specimen was collected and the type locality, the specimen described here shows only small differences in external morphology when compared to the type. Considering also that there is no other specimen of *M. kabindae* in zoological collections and that the data available are not sufficient to support a complete analysis, the specimen is referred to as *Monopeltis kabindae*, thus considerably enlarging the range of that species.

Key words.—Amphisbaenia, distribution, Amphisbaenidae, Central African Republic, Squamata

The representatives of the genus *Monopeltis* Smith, 1848 (Amphisbaenia, Amphisbaenidae) are widespread in sub-Saharan Africa, occurring in South Africa, Botswana, Namibia and Zimbabwe, up to Mozambique, Angola, Zambia and Malawi, as well as in the Democratic Republic of the Congo, Congo, Gabon, Equatorial Guinea and Cameroon (Gans & Latifi 1971; Gans & Lehman 1973; Broadley *et al.* 1976; Broadley 1998; Chirio & LeBreton 2007; Pauwels *et al.* 2010). This genus was reviewed by Loveridge (1941), FitzSimons (1943), Gans and Lehman (1973), Broadley *et al.* (1976) and Broadley (1997).

Monopeltis kabindae Witte & Laurent, 1942 is until now only known from its holotype by monotypy, which was collected in 1930 at Kabinda, in Kasai-Oriental Province, Democratic Republic of the Congo (formerly Belgian Congo). This species was described by Witte and Laurent (1942), who suggested that it could be related to the “*capensis-welwitschii* group”. Nevertheless, these authors noted that the only specimen available showed distinct characters, such as four supralabials instead of three, and a lower number of segments in a body annulus. Broadley *et al.* (1976) also noted that morphometric and meristic characters of the holotype suggest its affinity with *Monopeltis capensis* Smith, 1848, but they pointed out that the distance of more than 1 000 km between the type locality of *M. kabindae* and the range of

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M. capensis – considering that there are adequate samples in that region – would make it unlikely that *M. kabindae* could be a northern isolate of *M. capensis*. These authors also observed that the holotype of *M. kabindae* is clearly distinct from all other *Monopeltis* collected in adjacent areas with regard to several characters, emphasising that although the specimen is a juvenile, it shows a single azygous head shield. Juveniles of other *Monopeltis* species, such as *M. capensis* and *M. guentheri*, show two unfused azygous plates, which become fused in adults (Gans & Latifi 1971; Broadley *et al.* 1976). Considering these characters, the authors decided to confirm *M. kabindae* as a valid species.

This study reports the discovery of a second specimen of *Monopeltis kabindae*, which was collected in Manovo, Central African Republic (CAR) (1 630 km north of the type locality) on 3 May 1995. The specimen was included in a lot with 37 other amphisbaenids collected in CAR and identified as *Cynisca leucura* Duméril & Bibron, 1839, and was wrongly classified as the same species. These specimens were listed in a study on the biogeography of reptiles of the Central African Republic (Chirio & Ineich 2006) and are now deposited in the collection of the Muséum National d'Histoire Naturelle (MNHN, Paris). That study reported the presence of only one species of Amphisbaenia (*C. leucura*) in the CAR. Thus, the present article reports a second species in this country.

The works of Loveridge (1941), Gans and Lehman (1973), Broadley *et al.* (1976) and Broadley (1997) were used to identify this specimen, which is described here based on the general method established by Gans and Alexander (1962). Photographs of the pectoral region, tail, midbody, and dorsal, lateral and ventral views of the head of the holotype presented in the work of Broadley *et al.* (1976) were used for comparison with the CAR specimen, as well as photographs of the holotype provided by the Royal Museum for Central Africa (RMCA), where it is deposited. It is interesting to note that the species name written on the original identification label is '*Monopeltis cabindae*', although in the description paper the authors named the species '*Monopeltis kabindae*'. Therefore, the latter is the valid name.

The new specimen is an immature male, as observed during dissection and examination of its gonads, and measures 136 mm in snout-vent length (SVL), 7.48 mm in caudal length and 5 mm in body diameter. Like the holotype of *M. kabindae* (Broadley *et al.* 1976), this new specimen shows a single azygous head shield with no evidence of dividing lines, although it is smaller than the holotype (136 mm SVL versus 188 mm for the holotype).

The dorsal part of the head (Fig. 1A) also has two elongated oculars that border the azygous shield between the supralabials and the median pair of parietals. There are no preoculars. The rostral shield is T-shaped and separates the nasals from contact with the lip and with each other. There are four supralabials increasing in size from the snout to labial commissure, with the fourth being approximately two times larger than the third one. In addition to this set, there is a fifth supralabial, which is smaller than the fourth supralabial, partially borders the end of the lip and partially extends beyond it. The presence of five supralabials represents a difference between this specimen and the holotype, which has four supralabials, with the fourth one extending beyond the labial commissure (Witte & Laurent 1942; Broadley *et al.* 1976). From the position, size and shape of the extra scale, when compared to the supralabials of the type, it is possible that it resulted from the division of the second supralabial. There are four parietals, the median ones marginating the posterior part

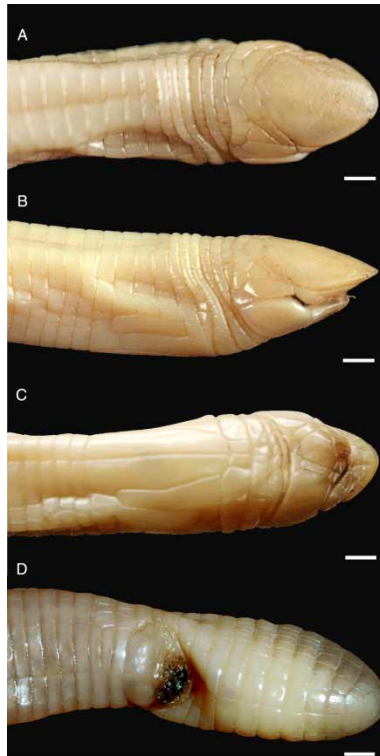


Figure 1. Dorsal (A), lateral (B) and ventral (C) views of the head and pectoral region, and ventral view of the tail and precloacal shield (D) of *Monopeltis kabindae* from Manovo, Central African Republic (MNHN 1997.3536). Scale bars: 1 mm.

of the azygous shield and touching the posterior edge of the oculars, and the lateral ones touching the fourth supralabial.

At the lower jaw (Fig. 1C), the rectangular mental shield is followed by three pairs of infralabials, with the third one representing the largest shields in the ventral part of the head. Posterior to the mental shield, there is a heart-shaped post-mental shield. The first row of post-genials is composed of two elongated scales that do not touch each other, but border the sides of the post-mental, separating it from the contact with the third and the second infralabials. Posterior to this group of plates, there is the second post-genial row with seven scales, with the two lateral ones being very small. With the exception of the extra pair of supralabials, the head scalation of the new specimen is almost identical to that of the holotype of *M. kabindae* (Fig. 2).

The new specimen has 223 body annuli, counted from the first annulus after the third infralabial up to the last annulus before the precloacal shield. There are also five partial dorsal annuli that extend ventrally beyond the lateral sulci and two supernumerary dorsal half annuli, which occur between the 50th and 100th body annuli. There are three lateral and nine caudal annuli. Neither autotomy site nor precloacal pores were observed. There are 18–19 dorsal and 13–14 ventral segments per midbody annulus. The median dorsal segments are 2.5 to 3 times as long as wide, and the median ventral segments are 2.5 times as wide as long. The lateral sulci are

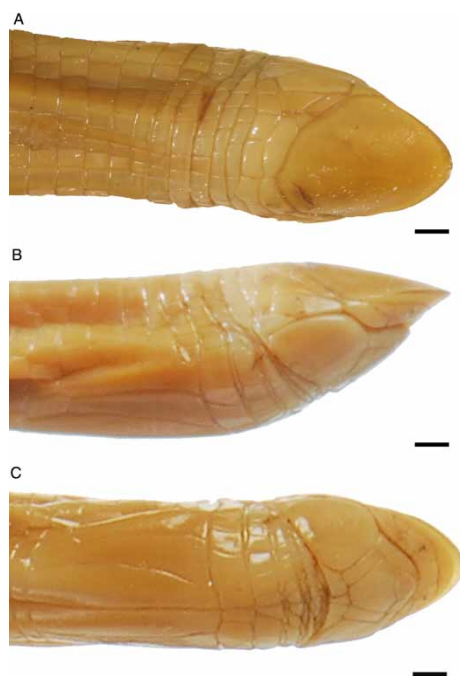


Figure 2. Dorsal (A), lateral (B) and ventral (C) views of the head and pectoral region of the holotype of *Monopeltis kabinda* (RMCA 6773, Royal Museum for Central Africa, Tervuren). Scale bars: 1 mm.

visible from the 63th ventral annulus up to the lateral annuli. There is no dorsal sulcus.

The pectoral region is formed by three pairs of elongated parallel shields, of which the median pair is the longest. Those shields extend from the 5th to the 10th body annulus, thus involving six annuli. The precloacal shield has two central large shields, bordered laterally by two shorter scales at the right side and one at the left side (Fig. 1D).

There is light pigmentation on the dorsal part of the posterior third of the body. The tail is more darkly pigmented, particularly at the last two annuli and the tip, where the greyish pigmentation extends also to the ventral surface (Fig. 1D). According to Witte and Laurent (1942), Witte (1954) and Broadley *et al.* (1976), the holotype of *M. kabinda* does not have any pigmentation. In effect, the tail of the type does not show the greyish pigmentation, but only a dark yellow at its tip. However, the pigmentation of the type could have been lost, since it was captured in 1930, 12 years before it was described (Witte & Laurent 1942).

Therefore, the greyish pigmentation in the tail of the CAR specimen and the occurrence of a fifth supralabial are the main differences between this new specimen and the holotype of *M. kabinda*. Nevertheless, these differences may not be sufficient to describe a new species or subspecies, especially considering the lack of other comparative specimens of *M. kabinda* in zoological collections, making it impossible to analyse the occurrence and importance of geographical variations. Thus, this specimen is referred to as *Monopeltis kabinda*. However, considering the huge distance between the two locality records (1 630 km), the possibility of the

existence of a cryptic species should be considered and analysed properly with more data in the future.

This new specimen of *M. kabindae* from Manovo is the northernmost record for the species and for the genus, and the first record of this genus in the Central African Republic. The geographically nearest species of *Monopeltis* are *Monopeltis galeata* Hallowell, 1852, occurring in Gabon (Gans & Lehman 1973; Branch *et al.* 2003; Gans 2005), *Monopeltis guentheri* Boulenger, 1885, in the west of the Democratic Republic of the Congo (Gans & Latifi 1971; Gans 2005), *Monopeltis schoutedeni* Witte, 1933, in the west of the Democratic Republic of the Congo, Congo and Gabon (Gans & Lehman 1973; Gans 2005; Pauwels *et al.* 2010) and *Monopeltis jugularis* Peters, 1880, in Cameroon, Gabon and Equatorial Guinea (Tornier 1902; Gans & Lehman 1973; Gans 2005; Chirio & LeBreton 2007) (Fig. 3). However, *M. kabindae* differs from each of these species in characters such as number of body and caudal annuli, segments in a midbody annulus, pattern of pectoral shields, absence of autotomy site and presence of a single azygous head shield in the juvenile (Table 1).

The lack of records of *M. kabindae* in the huge area between the two locality records known until now could be due to the lack of adequate samples of the

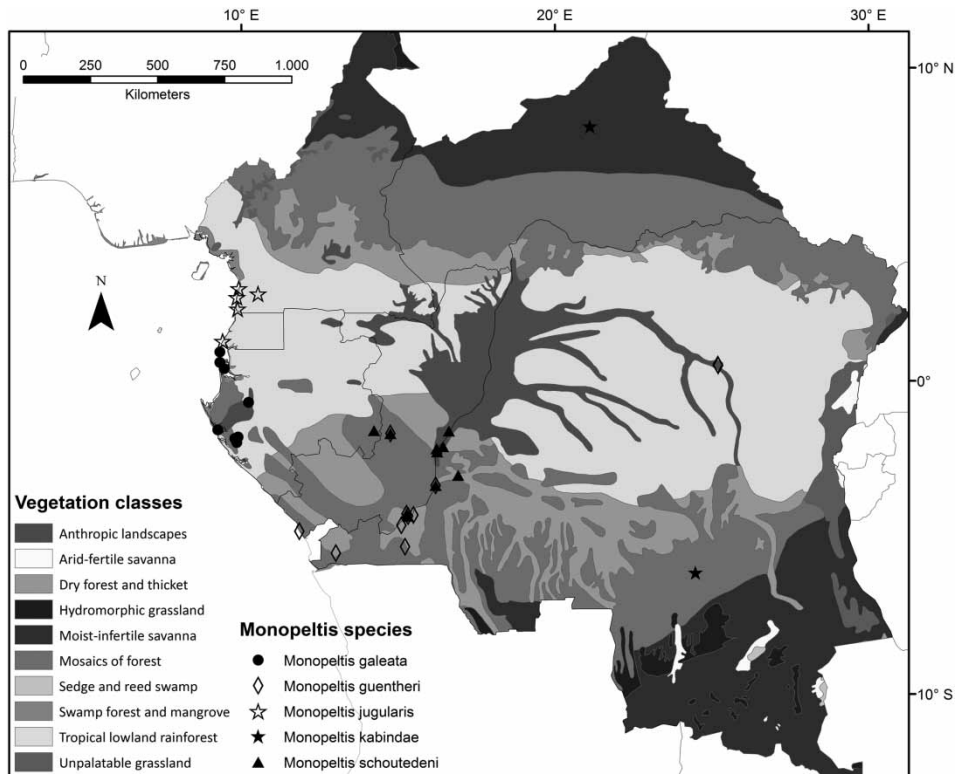


Figure 3. Map of central West Africa, showing the two locality records registered for *Monopeltis kabindae* and the distribution records for *M. galeata*, *M. guentheri*, *M. jugularis* and *M. schoutedeni*, based on literature data (Gans & Latifi 1971; Gans & Lehman 1973; Branch *et al.* 2003; Chirio & LeBreton 2007; Pauwels *et al.* 2010). The spatial distribution of vegetation classes in Africa (White 1983) is also shown.

Table 1. Summary of the main characters used to identify *Monopeltis kabinda*, *M. galeata*, *M. guentheri*, *M. jugularis* and *M. schoutedeni*.

	Body annuli	Caudal annuli	Segments in a midbody annulus		Pectoral shield pattern	Autotomy site (caudal annulus)	Dorsal head shield pattern	Source
			Dorsal	Ventral				
<i>M. kabinda</i> (new specimen)	223	9	18-19	13-14	elongate parallel	absent	2 fused azygous plates	this paper
<i>M. kabinda</i> (holotype)	223	9	18-20	13-14	elongate parallel	absent	2 fused azygous plates	3
<i>M. galeata</i>	219-233	15-20	9-13	7-10	elongate parallel	4 - 6	2 unfused azygous plates	2, 4, 6
<i>M. guentheri</i>	241-262	22-26	14-24	12-18	elongate parallel	5 - 8	2 fused azygous plates	1, 2
<i>M. jugularis</i>	200-211	7-10	14-22	14-18	short, non-parallel	absent	2 unfused azygous plates	2, 6
<i>M. schoutedeni</i>	273-289	25-29	16-23	14-17	elongate parallel	6 - 8	2 fused azygous plates	2, 5

Sources are as follows: 1, Gans & Latifi (1971); 2, Gans & Lehman (1973); 3, Broadley *et al.* (1976); 4, Branch *et al.* (2003); 5, Pauwels *et al.* (2010); 6, Chirio & LeBreton (2007).

fossorial fauna in this area, as well as to the difficulty in collecting these animals. Chirio and Ineich (2006) commented on the scarcity of synthetic studies on the herpetofauna in central Africa, particularly studies and surveys including lizards. After six years of intensive collecting effort, these authors sampled 4 873 reptile specimens, which included only 38 amphisbaenians, most of them identified as *Cynisca leucura*, and one of them now identified as *Monopeltis kabindae*. Thus, despite this important collection, obtained in 78 localities all over the country (with the exception of the easternmost region), no other *M. kabindae* was recorded in the CAR. Here, it is important to note that all specimens must have been captured on the surface, since they were collected by hand, with glue traps or lead pellet shot, which makes it more difficult to sample fossorial species. The lower number of *M. kabindae* captured by the authors could suggest that this species lives deeper in the soil. In fact, Gans (1968) noted that the amphisbaenian species that have “highly specialized” head morphology – such as the “shovel-headed” genus *Monopeltis* – are often found deeper in the soil than the more “generalized” species (i.e. with rounded snout) like *Cynisca* sp. He also commented on the greater difficulty of finding “shovel-” and “keel-headed” species, even in areas where the specimens occur in high numbers.

The lack of data on distribution and population information for amphisbaenian species was also evidenced in a recent work on the conservation status of the world’s reptiles (Böhm *et al.* 2013). The authors estimated the conservation status for a representative sample of 1 500 reptile species, and noticed that data deficiency is higher for fossorial or semi-fossorial reptiles such as Amphisbaenia. They also emphasised the data gaps in tropical regions such as Central Africa.

Thus, the present article adds information on a poorly known group, but also reaffirms the need for further research and surveys focusing on the fossorial fauna in Central Africa.

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