

## New Species of *Leptosiaphos* (Scincidae) from Adamaoua Massif, Central-Northern Province, Cameroon

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**ABSTRACT.**—A small skink of the genus *Leptosiaphos* from the Adamaoua Massif in Central-Northern Province of Cameroon is described. The new species is most similar to the East African *Leptosiaphos kilimensis* from which it differs in coloration and in having 22 scales around midbody.

The genus *Panaspis* Cope, 1869, sensu lato has been thoroughly studied morphologically, especially in west Africa (Fuhn, 1969, 1970, 1972; Perret, 1973, 1975, 1982). Four subgenera have been described within *Panaspis* (*Afroablepharus* Greer, 1974; *Lacertaspis* Perret, 1975; *Leptosiaphos* Schmidt, 1943; *Panaspis* Cope, 1869). Several of these subgenera have also been elevated to full genera (Broadley, 1989), but this arrangement has not been followed by all subsequent authors (e.g., Böhme, 1975; Böhme and Schmitz, 1996; LeBreton, 1999). Because the last complete revision of the subgenera within *Panaspis* sensu lato (Broadley, 1989) regarded *Leptosiaphos* as a full genus, we herein follow this classification scheme.

Perret (1973) made a comprehensive revision of *Panaspis* sensu lato known to occur in Cameroon. He recognized 12 forms as full species, which he divided tentatively into three groups according to their general morphology: sepsinoid, with an elongated body, short and robust limbs, not overlapping when adpressed to body, a muscular tail enlarged at its base (*amieti*, *fuhi*, *gemmiventris*, *lepesmei*, *pauliani*, *vigintiserierum*); lacertiform, with slender body, very long limbs, fingers and toes with an increased number of subdigital lamellae, limbs which overlap when adpressed to body, a long and thin tail, more than twice the snout–vent length (SVL), not enlarged at its base (*reichenowi*, *rohdei*); and mabuiform, with an increased number of scales around midbody and supranasals present or absent (*africana*, *breviceps*, *kitsoni*, *nimbaensis* [*sic*]). He later (Perret, 1975) referred these groups to three subgenera, respectively *Leptosiaphos* Schmidt, 1943, *Lacertaspis* subg. nov. and *Panaspis* Cope,

1869. Our examination of both type specimens of *lepesmei* (*Lygosoma* [*Lioplepisma*] *lepesmei* Angel, 1940; holotype MNHN 1939.83, paratype MNHN 1939.84; Cameroon, Mt Bambouto, 2200–2300 m) clearly shows that their habitus is lacertiform and not sepsinoid and that the species should be assigned to the genus *Lacertaspis*. The sepsinoid *Panaspis ianthinoxantha* Böhme, 1975, and the lacertiform *Panaspis* (*Lacertaspis*) *chriswildi* Böhme and Schmitz, 1996 have been described from Cameroon since Perret's (1973) revision.

Perret (1975) placed Cameroon species with a sepsinoid morphology in the subgenus *Leptosiaphos*. About 10 additional species of *Leptosiaphos* occur in central, eastern, and southern Africa (Laurent, 1982; Spawls and Rotich, 1997; Spawls et al., 2002). LeBreton (1999) compiled a checklist of the herpetofauna of Cameroon and listed 15 species of the genus *Panaspis* in Cameroon, including *L. aloysiisabaudiae* (Peracca, 1907), *L. duruarum* (Monard, 1949; not listed by Perret, 1973), and the two above-mentioned new species described from Cameroon since the revision of Perret (1973).

*Leptosiaphos aloysiisabaudiae* (a member of the Kivu-Ruwenzori group of *Leptosiaphos*; also known from southern Sudan [Broadley, 1989]) has been previously recorded from eastern Nigeria (Dunger, 1973: as "*Leptosiaphos kilimensis*") and from Cameroon (Böhme and Schneider, 1987). This species is unique among all west African species of *Panaspis* sensu lato in having a reduced number of only four fingers but five toes.

Broadley (1989) regarded these "E. African" species in Cameroon as relict populations. Several recent studies show a similar pattern. *Trachylepis mekuanus* (Chirio and Ineich, 2000), from Mount Mekua in Cameroon is considered closely related to the widespread east African

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montane species, *Trachylepis megalurus* (Peters, 1878). Additionally, based on molecular data, Mausfeld et al. (2004) found a close relationship between an undescribed *Trachylepis* species from the Adamaoua Massif in Cameroon and the montane form of *Trachylepis* cf. *irregularis* from Uganda.

In the Adamaoua Massif, Matthew LeBreton collected two specimens of *Leptosiaphos*, that were morphologically close to *L. kilimensis*, a species known from the mid to high altitude forests and woodlands of central Kenya and Tanzania (Spawls and Rotich, 1997). After careful examination of the two specimens, several important differences from the latter species were identified. Therefore, the identification of the east African species *Leptosiaphos aloysiisabaudiae* (type locality: Fort Portal, Ruwenzori, Uganda) in Nigeria and Cameroon must be seen as a preliminary assignment and differences between the true *L. kilimensis* and our two specimens from Cameroon lead us to describe the latter as new.

#### MATERIALS AND METHODS

Measurements were taken with a dial caliper to the nearest 0.1 mm. Our description of head and body scales, and body shape uses the terminology of Perret (1973, 1975, 1982). Sex was determined by dissection. Geographical coordinates of the study sites were obtained by means of a global positioning system (GPS) navigator. All specimens were photographed in situ to record their natural coloration. Specimens examined are listed in Appendix 1 and are deposited in the collection of The Natural History Museum, London (BMNH); the Kim Monroe Howell personal collection, Copenhagen (KMH); the Muséum national d'Histoire naturelle, Paris (MNHN); the Museo Regionale di Scienze Naturali, Torino (MZUT); the United States National Museum, Washington (USNM); and the Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn (ZFMK).

#### *Leptosiaphos koutoui* sp. nov.

##### Figure 1

*Holotype*.—MNHN 2001.0697, adult female, Meiganga, Adamaoua Massif (06°31'N, 14°17'E) Central-Northern Province, Cameroon, 1040 m, coll. Matthew LeBreton, Innocent Membilla, Roger Dafem and Filomain Nguemo, 13 March 2001.

*Paratype*.—MNHN 2001.0698, juvenile, same data as holotype.

*Diagnosis*.—A small (to 49 mm SVL) species of *Leptosiaphos*, distinguished from all other members of the genus by the following combination of

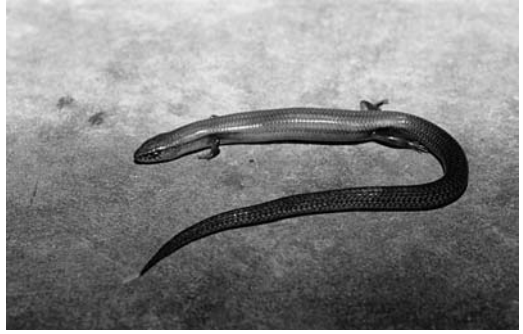


FIG. 1. *Leptosiaphos koutoui*. Holotype (MNHN 2001.0697), Cameroon, Central-Northern Province, Adamaoua Massif, Meiganga.

characters: head relatively pointed; lower eyelid with a median, large translucent window; no supranasals; prefrontals widely separated by the frontonasal; frontoparietals in contact along a long suture, about as long as wide; parietals not separated by interparietal; one pair of nuchals; 22 scales around midbody; pentadactyl limbs, 14–15 subdigital lamellae below the fourth toe; dorsal coloration continuously reddish-brown to brownish-grey throughout; dorsal scales iridescent; a dark band (about one scale wide) from just before the eye to just before the forelimbs, diminishing after the shoulder but weakly visible to the anal region.

*Leptosiaphos koutoui* is similar to *L. kilimensis* in several characters. However it can be distinguished by the following combination of characters. There are major differences in coloration of the two species. All *L. kilimensis* present a brown-red ground coloration, in contrast to the grey-brown coloration in *L. koutoui*. *Leptosiaphos koutoui* also possess a large dark band from the anterior edge of the eye to the anterior extremities. From there it diminishes but continues to be visible, running to just above the posterior extremities, where it again increases in size. This larger band is ventro-laterally followed by four smaller, hatched, straight, regular bands on each side. On the back, between the two largest dark bands, there are more or less eight hatched bands each placed in the middle of a scale row. On both the anterior and posterior limbs there are further dark bands clearly visible on the fingers and toes, especially on the base of the members. The supralabials and the infralabials are nearly all covered by a large dark spot in *L. kilimensis* like in *L. koutoui*. Morphologically, the main differences are as follows: there are 22 scales around midbody in the new species, whereas *L. kilimensis* has 24; further, there are small but distinct differences in the number of scales both dorsally between the nuchal scales (NuC) and the cloacal

region and ventrally between the postmentals to the cloacal region (PoC): *L. kilimensis*: NuC,  $N = 12$ , 60–68 (mean  $\pm$  SD =  $63.25 \pm 2.59$ ); PoC,  $N = 12$ , 56–63 ( $59.58 \pm 2.93$ ); *L. koutoui*: NuC 63 (holotype) and 59 (paratype); PoC 64 (holotype) and 57 (paratype).

The head of *L. koutoui* is smooth without any elevated features (e.g., vaulted eyes) and never reddish-brown, whereas the eyes of *L. kilimensis* are clearly vaulted and the color of the head is reddish-brown (often visible even in preservative). As the new species is most similar to *L. kilimensis*, a final remark should be made as to the status of *Lygosoma gromieri* Angel, 1925. This species was described by Angel (1925) from the "Tsavo District, British East Africa." It was later placed into the synonymy of *L. kilimensis* by Perret (1975). In his original description, Angel (1925) gave an erroneous measurement of SVL (40 mm) of his single specimen. Brygoo (1987) was the first to indicate this error. Additionally, the supranasals described by Angel (1925) in *L. gromieri* are an exceptional variant of the frontonasal. In that specimen the usually undivided frontonasal found in *L. kilimensis* is divided.

*Description of Holotype*.—Adult female with short, robust pentadactyl limbs; snout relatively pointed; head slightly broader than neck; SVL 49 mm, tail length (TL) 85 mm; head length from tip of snout to anterior border of ear opening 7.5 mm; center of nostril nearer to tip of snout (1.1 mm) than to anterior corner of eye (1.6 mm); internarial distance 1.6 mm; interocular distance at anterior corner of eyes 2.6 mm; head width at the posterior corner of eyes 4.6 mm; head height at center of eyes 3.5 mm; limbs from inner base to claw tip of fourth finger and toe, respectively: forelimbs 7.4 mm, hind limbs 12.9 mm; extremities of limbs widely separated when adpressed to body; tail width at base 4.4 mm. Ear opening small, with two lobules dorsally and 2–3 lobules ventrally. Dorsal, lateral and ventral scales subequal; preanals only slightly enlarged; subcaudals slightly enlarged; 63 dorsal scales (from nuchals to a line connecting posterior border of hind limbs), dorsals without keels; 22 scales around midbody; 64 ventrals (from behind chin shields to cloaca excluding row of slightly enlarged cloacal shields); 11 subdigital lamellae under the fourth finger, 14 under fourth toe. Lower eyelid with a median, large translucent window, separated from the supralabials by small scales; rostral broader than high; no supranasals; frontonasal undivided, broader than long; prefrontals widely separated by frontonasal; frontal much longer than broad; frontoparietals in contact on a long suture, about as long as wide, fused with third supraoculars; interparietal longer than wide, much smaller than frontoparietals and not separating parietals;

parietals in contact posteriorly; one pair of nuchals, both subdivided, the middle pair being the largest; nostril in a single nasal; no supranasals; six supralabials, five infralabials; a single loreal on the right side, but a second small, crescent-shaped loreal visible, clearly separated from the supralabials; the lower preocular large and in contact with second supralabial, posterior to loreal; second upper preocular slightly larger than first; four supraoculars, third largest fused with frontoparietals, the first three in contact with the frontal; six supraciliaries, third largest; two pretemporals; two primary temporals followed by two secondary temporals.

*Coloration in Preservative*.—The whole dorsum including the anterior part of the tail is brownish-grey to brown up to the dorso-lateral darkish bands; flanks slightly more light grey colored; only the posterior dorsal part of the tail starts getting grayish; venter completely white. An enlarged dark band (about as wide as a scale) runs from just before the eye about 6 mm to just before the forelimbs. After that point, it diminishes in strength and size but remains weakly visible. This band marks the separation between the darker coloration of the dorsum and the lighter dorso-lateral color. The head is brown without additional markings.

There are black markings on the medio-dorsal part of both supralabials and infralabials. Weaker and more diffuse black markings are present on the temporal scales. Laterally there are three black bands visible on each side of the tail, more weakly developed posteriorly.

*Variation*.—The only other specimen known is the paratype MNHN 2001.0698. It is a juvenile with a total length of 57.5 mm (SVL: 31.5; TL: 26 mm). Like the holotype it has 22 scales around midbody, and six supralabials. Contrary to the holotype it has six infralabials. It has 59 dorsal scales between the nuchalia to the cloacal region, and 57 scales between the postmentals to the cloacal region. Contrary to the condition in the holotype, the four supraoculars are separate without any sign of fusion. The specimen has 15 subdigital lamellae under the fourth toe. It has a crescent-shaped anterior right loreal separated from the supralabials. There are two loreals on the left side. The coloration of the specimen is similar to that of the holotype, but the medio-dorsal dark bands are more pronounced.

*Distribution*.—Presently known only from the type locality Meiganga, Adamaoua Massif ( $06^{\circ}31'N$ ,  $14^{\circ}17'E$ ), above 1000 m, Central-Northern Province, Cameroon (Fig. 2).

*Natural History*.—The holotype was found in gallery forest in a low-lying area with small villages in the Quartier Hausa. The understory had been removed and cultivated with lettuce and other vegetables. This specimen was found



FIG. 2. Open savanna habitat of *Leptosiphos koutoui* around Meiganga, Central-Northern Province, Cameroon.

in humid leaf-litter in a drainage line. The second specimen was found in disturbed savanna outside the town near the Quartier Ngoakélé. This site was drier, and the skink was found under laterite boulders that had been placed beside a track. There was abundant dry leaf litter around the boulders. The vegetation in the Meiganga area is a small tree soudano-guinean savana with *Daniella olivieri* and *Lophira lanceolata*, characteristic of the medium elevated tableland of the Adamaoua (800–1200 m); it concerns there more precisely a *Terminalia mollis* facies on stony hills, highly degraded by quasi-permanent pasturage.

*Etymology*.—The species is named after Denis Koulagna Koutou from Meiganga, formerly Director of Wildlife and Protected Areas in the Republic of Cameroon, Ministry of the Environment and Forests, in recognition of his contributions to research and conservation in Cameroon and especially his contribution to research and training undertaken by the Cameroon herpetology project CAMHERP.

*Acknowledgments*.—Authors wish to thank F. Andreone (Museo Regionale di Scienze Naturali, Torino), C. McCarthy (The Natural History Museum, London), J. B. Rasmussen and M. Andersen (Zoological Museum, Copenhagen), and G. Zug (United States National Museum,

Smithsonian Institution, Washington) for the loan of specimens. The research in Cameroon was partly funded by the World Bank through the PRGIE/ADIE and was supported by the Cameroon Biodiversity Conservation Society under the direction of G. Dzikouk. The Republic of Cameroon Ministry of Environment and Forests (MINEF) kindly provided all necessary permits and certificates. Thanks also to Innocent Membilla, R. Dafem and F. Nguemo for their help and companionship during fieldwork.

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Accepted: 18 August 2004.

## APPENDIX 1

### Specimens Examined

*Leptosiaphos aloysiisabaudiae*.—MZUT R 3037.1-2, syntypes of *Lygosoma aloysiisabaudiae* Peracca, 1907, Fort Portal, Ruwenzori, Uganda; BMNH 1938.1.2.16, Bukalasa, Mengo, Uganda.

*Leptosiaphos* cf. *aloyiisabaudiae*.—ZFMK 60573-574, 30 km NE Tignere, Cameroon; BMNH 1958.1.4.92–94, Bafut, Cameroon; BMNH 1973.16, Kigom Hills, near Jos, North Nigeria; BMNH 1973.17–21, Jos, North Nigeria.

*Leptosiaphos kilimensis*.—USNM 16749, holotype of *Lygosoma kilimensis* Stejneger, 1891, East Africa, Kilimandjaro; MNHN 1912.367, Kilimandjaro, Tanzania; MNHN 1928.115, Tsavo District, Kenya, holotype of *Lygosoma gromieri* Angel, 1925; MNHN 1980.15, 1980.17–19, 1980.32, 1980.123–124, 1980.565, 1995.9966, West Usambara, Amani, Tanzania; Kim Monroe Howell personal collection, KMH 19295, 19306, 19310, 19312, East Usambara Mountains, Amani Nature Reserve, Tanzania, 5°07'S, 38°05'E; KMH 19374, 19380, East Usambara Mountains, Amani Nature Reserve, Tanzania, 05°06'S, 38°36'E; ZFMK 77815, Usambara, Kwamkoro, Tanzania; ZFMK 77816, Tanzania, Usambara, Amani.