

Original article

A new species of *Trachylepis* Fitzinger, 1843 (Squamata: Scincidae) from Central African forests

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Abstract.—Intensive collection and field observations in the Central African Republic revealed a previously undescribed skink species of the genus *Trachylepis*. Morphologically this species seems to be related to *Trachylepis boulengeri* and/or *T. polytropis*, but genetic analysis showed that this is not the case. This species is unusual due to its large size (SVL up to 121 mm) and its rupicolous lifestyle. This species lives in habitats that are difficult to reach, which could explain why it remained undiscovered for such a long time. This species is not endemic to the Central African Republic, as individuals were recently also collected in southern Cameroon.

Résumé.—Des collectes intensives et des prospections récentes réalisées en République de Centrafrique ont permis la collecte d'une espèce de scinque non décrite du genre *Trachylepis*. Morphologiquement, cette espèce semble proche de *Trachylepis boulengeri* et/ou de *T. polytropis* mais l'analyse génétique réalisée a montré que ce n'était pas le cas. Cette espèce est originale par sa taille (longueur museau-cloaque jusqu'à 121 mm) et son mode de vie rupicole. Elle occupe des habitats difficiles d'accès, ce qui pourrait expliquer qu'elle soit passée inaperçue dans toutes les études antérieures. L'espèce n'est pas endémique de Centrafrique, car des collectes plus récentes ont permis de constater sa présence au sud du Cameroun.

Key words.—*Trachylepis*, Scincidae, Central African Republic, Cameroon, rupicolous species, description

Herpetological surveys undertaken by the primary author in the Central African Republic (CAR) from 1990 to 1996, yielded more than 4800 reptiles. These have been deposited into the Paris Natural History Museum collections (MNHN). Among the identified taxa from the collection, 62 were never reported from the CAR. This allowed for a more complete synthesis for the CAR (Chirio & Ineich 2005) than the species account by Joger (1990). In the MNHN collection, 676 skinks can be attributed to the genus

Trachylepis Fitzinger, 1843; note that the genus *Mabuya* Fitzinger, 1826 was recently split into four generic taxa: *Euprepis* Wagler, 1830 for the afro-malagasy forms, *Eutropis* Fitzinger, 1843 for Asiatic forms, *Mabuya sensu stricto* for neotropical forms and *Chioninia* Gray, 1845 for the forms from Cape Verde Islands (Mausfeld *et al.* 2002). Bauer (2003), however, has since reported that the generic name *Euprepis* Wagler, 1830 can not be retained for afro-malagasy forms of the former *Mabuya* genus and that the oldest available generic

name for them is *Trachylepis* Fitzinger, 1843 - we follow this modification.

Of the *Trachylepis* specimens in the MNHN, 11 collected in the CAR was recently assigned to a new species, *T. pendearna* (Ineich & Chirio 2000). Twenty more specimens, collected from nine different localities, cannot be assigned to any known species in the genus. Four specimens collected between 1996 and 2001 in southern Cameroon during the CAMHERP Project (8000 reptiles had been collected and deposited at MNHN), appear to belong to the same undescribed species. Coloration and sizes of these 24 specimens suggest close affinities with *Trachylepis boulengeri* (Sternfeld, 1911), an eastern and southern African species (Tanzania, Mozambique, Malawi and Zimbabwe), but more strikingly to *Trachylepis polytropis* (Boulenger, 1903) which is found in Western Africa (Ghana and Liberia) and Central Africa (Cameroon, CAR, Gabon, Democratic Republic of Congo, Popular Republic of Congo and Bioko). Our 24 specimens from the central African forests, however, appear to differ from these species and all other members of *Trachylepis* in several external characters. In this paper we also investigate genetic differences.

MATERIALS AND METHODS

CAR specimens examined have been fully accessioned into the MNHN collections (see Appendix). Cameroon specimens collected as a result of CAMHERP Project will eventually all be deposited into MNHN collections. Field tag numbers are reported for those specimens not yet deposited. Our 24 specimens were captured by hand, with rubber bands or glue traps, before being fixed in formalin (10% solution) and later stored in 70% ethanol; the specimens from Ndakane in CAR (MNHN 1997.3078) and from Kika in Cameroon (MNHN 2005.2504, formerly CAMHERP 3433I) were photographed *in vivo*. Precise locations of sam-

pling sites within the CAR can be found in Chirio & Ineich (2005). Tissue samples were taken from specimen MNHN 2005.2504 collected in Cameroon and included in a molecular DNA analysis. We collected our specimens in sympatry with *Trachylepis polytropis* (Boulenger, 1903) and *Trachylepis maculilabris* (Gray, 1845), two central African forms which appeared the closest relatives according to scalation characters. We also compared our specimens with data on *Trachylepis boulengeri* published in Broadley's (1974, 2000) revisions and with the type specimen of *T. boulengeri* (Berlin Museum, ZMB 22486; type locality: Makonde Highland ["Makonde-Hochland"], Lindi Province, Tanzania; collected by Grote).

For each examined specimen we determined sex and reported the following 13 morphometric and scalation characters (on both sides for symmetrical characters): snout-vent-length (SVL), ratio of tail length to body length [LQU(%)], ratio of head length (snout end to anterior tympanum border) to body length [RTC(%)], number of scale rows at midbody (EMC), number of scales dorsally from the nuchal (excluded from count) to tail base (EPQ), number of scales ventrally from the first post-mental pair (excluded from count) to the anal plates (also excluded) (RMA), number of subdigital lamellae under finger IV (LD4), number of subdigital lamellae under toe IV (LO4), number of supralabials with those widened in subocular position indicated between brackets (SLA), number of supraciliaries (SCL), number of keels on dorsal scales (CAR), kind of contact between supranasals (CSN), kind of contact between prefrontals (CPF). Finally, coloration patterns of all these specimens were carefully reported.

Molecular data were collected to examine the sequence variation between the new *Trachylepis* species and their morphologically closest relatives. We used a portion of the mito-

chondrial 16S rRNA gene and compared it with the molecular data obtained in several previous studies on the genus *Trachylepis* (e.g. Mausfeld *et al.* 2000, 2002; Mausfeld & Schmitz 2003; Mausfeld *et al.* 2004) as well as several newly sequenced specimens of the concerned species. DNA was extracted from the tissue samples using QuiAmp tissue extraction kits (Qiagen) or a modified Chelex-Protocol (Walsh *et al.* 1991; Schmitz 2003). The primers 16sar-L (light chain; 5' - CGC CTG TTT ATC AAA AAC AT - 3') and 16sbr-H (heavy chain; 5' - CCG GTC TGA ACT CAG ATC ACG T - 3') of Palumbi *et al.* (1991) were used to amplify a section of the mitochondrial 16S ribosomal RNA gene. PCR products were purified using QIAquick purification kits (Qiagen). Sequences (including complimentary strands for assuring the accuracy of the sequences) were obtained using an automatic sequencer (ABI 377). The obtained sequences (lengths referring to the aligned sequences including gaps) comprised 544 bp. Sequences were aligned using ClustalX (Thompson *et al.* 1997; default parameters) and manually checked using the original chromatograph data in the program BioEdit (Hall 1999). We used PAUP* 4.0b10 (Swofford 2002) to compute the uncorrected pairwise distances for all sequences.

The 24 specimens from CAR and Cameroon differed from individuals of all species investigated by a combination of morphometric, scalation, coloration and molecular characters, and we describe them as belonging to a new species.

SYSTEMATICS

(Reptilia: Squamata: Scincidae)

Trachylepis makolowodei Chirio, Ineich, Schmitz & LeBreton **sp. nov.**

Figs. 1A-B, 3-6

Holotype.—Muséum national d'Histoire naturelle, Paris: MNHN 1995.5612, adult male collected on the border of a forest river, near the village of Bélemboké, 45 km south of Nola in Central African Republic [about 3°17' N, 16°15' E] (Fig. 2; see also Chirio & Ineich 2005), 31 May 1994, by Laurent Chirio.

Paratypes.—19 specimens collected by Laurent Chirio and Paul Makolowodé in CAR: Bambio, MNHN 1997.3072-3073 - Bélemboké, MNHN 1995.5610-5611, 1995.5613-5614, 1997.3464-3467 - Kpoka, MNHN 1997.3075 - Mondika, MNHN 1997.3076-3077 - Ndakane, MNHN 1997.3078 - Ouazoua, MNHN 1997.3079-3080 - Salkapa, MNHN 1997.3081 - S.C.A.D., MNHN 1997.3082 - Zimba, MNHN 1997.3083 (see Chirio & Ineich 2005 for collection locations on map).

Diagnosis.—Moveable eyelids with a white border, the lower with a translucent palpebral disk; rectangular enlarged subocular, in direct contact with the lip and not reduced basally by the intrusion of adjacent supralabials; snout wide and massive; supra- and infralabials dark in formalin fixed specimens and mental plate often lighter; finger and toe lamellae not keeled and not spinose; absence of distinct longitudinal or transversal dorsal bands; back uniformly blackish and belly grey blue on formalin preserved specimens and whitish on alcohol preserved specimens. This species can be distinguished from all other members of the genus in western and central Africa (see Hoogmoed 1974) by its elevated number of dorsal scale keels (7 to 9), its size (up to 121 mm SVL), the relative length of its tail (approximately double the SVL), its high number of supraciliaries (6 to 8) and its coloration. It can be distinguished from *T. polytropis*, another sympatric species with an elevated number of dorsal keels, by the following combination of characters: large SVL, white marks on supralabials, black marks on supra- and infralabials which are weakly developed and most often absent, tail strongly

flattened transversally, body only weakly flattened dorso-ventrally which gives the animal a massive habitus, presence of three well developed ear lobules in front of tympanum, and finally the frequent occurrence of a large plate clearly individualised among the three largest plates located on the soles of the hand and foot. Its general scalation pattern is most similar to that encountered in *T. boulengeri*, but it can be distinguished from the later by its larger size (maximum known SVL 121 mm vs. 90 mm of *T. boulengeri*), its head is proportionately larger, its higher number of supraciliaries and its coloration.

Description of the holotype.—Adult male specimen in perfect shape; entire tail except the most distal part which is lacking; no lateral incision to determine sex has been made; SVL 121 mm; nearly entire tail length 216 mm, approximately 1.8 times SVL; right anterior extremity length 39 mm; right posterior extremity length 52 mm; distance between right anterior and posterior extremities insertions (axilla-groin) 60 mm; distance from mouth corner to snout end 17.35 mm; 7 right supralabials and 8 left supralabials, the 5th and 6th or 6th and 7th respectively located below eye (Fig. 1B); subocular wider than the other supralabials and in direct contact with lip, not narrowed at its base by insertion of adjacent supralabials; 9 right infralabials and 8 left infralabials; digits and fingers not amputated; 20 and 19 lamellae under toe IV on right and left respectively; 16 lamellae under finger IV on both sides; claws well developed and acerated; 33 scale rows at midbody; dorsal scales with 7 strong keels; 52 scales dorsally between nuchals and base of tail; 59 scales ventrally between first pair of postmentals and cloaca; large circular nostril, pierced in nasal plate and occupying about half of that plate; one supranasal; two loreals; large tympanum aperture vertically elongated with three well developed anterior lobules on each side; medio-ventral tail scales widened; tail clearly transversal-

ly flattened at its distal half; prefrontals in wide contact; supranasals separated; 4 supraoculars (Fig. 1A); 8 right and left supraciliaries; frontoparietal divided with an interparietal plate about twice as long as the contact between frontoparietals; parietals separated behind interparietal; one nuchal pair in weak contact anteriorly and separated posteriorly by an additional triangular shaped scale; massive snout; distance from the anterior portion of tympanum to snout end 25.4 mm. Coloration (formalin preserved specimen): dorsal body and members coloration uniformly black, without any band or cross bar; lighter coloured mite pockets developed and located at axilla; throat and belly grey-blue, lighter than back for the 16 ventral scale rows.

Variations.—We investigated the variations in the complete type series of *T. makolowodei*. For some of the retained characters, we provide variation range, mean (m) \pm standard deviation and number of considered specimens (n): SVL, 94-121 mm, m = 109.38 \pm 9.31, n=13; LQU(%), 190-220, m = 204 \pm 0.12, n=8; RTC (%), 21.41-23.80, m = 22.75 \pm 0.96, n=13; EMC, 30-34, m = 31.95 \pm 1.13, n=19; EPQ, 52-57, 54.39 \pm 1.38, n=18; RMA, 57-62, m = 59.81 \pm 1.97, n=16; LD4, 13-18, 15.16 \pm 1.12, n=19; LO4, 16-20, 18.26 \pm 1.15, n=19; SLA, 26 times 7(5), 12 times 8(6), n=38 (right and left sides combined); CAR, 3 keels dorsally on all juvenile specimens, 7 on adult males and 9 on all adult females; CSN, no contact on 16 specimens, point shaped contact on 2 specimens and large contact by only one specimen; CPF, always in contact, most often in large contact; SCL, 6 (on 2 specimens), 7 (on 31 specimens) and 8 (on 6 specimens), n=39 (right and left combined).

Colour (in life).—Dorsal surface is light brown to coppery brown, with irregular black mottlings extending until the middle of the flanks and forming transversal irregular faint bands; numerous white latero-dorsal spots regularly

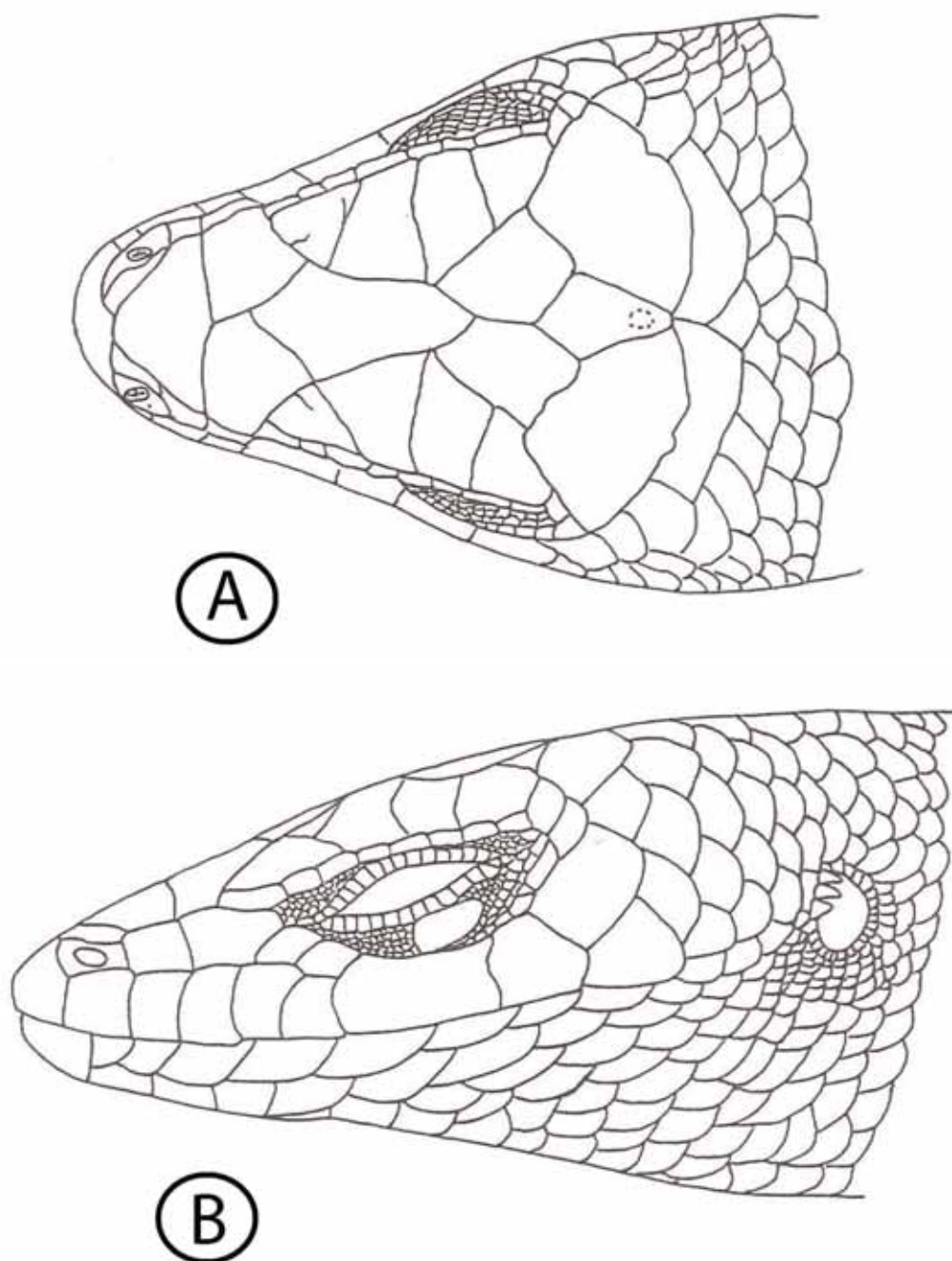


Figure 1. *Trachylepis makolowodei*, holotype MNHN 1995.5612. Upper view (A) and lateral view (B) of the head region.

disposed at the apical part of some flank scales (like by *T. maculilabris*); those white punctuations reach upper and lateral tail sides; on adult males, a pale green diffuse coloration zone can be distinguished extending laterally from snout end to tail which separates the brown dorsal coloration from the lemon yellow ventral coloration (Fig. 3); on adult females, the brown dorsal coloration is interrupted at the middle flanks, where the inferior part of the flanks and the belly are uniformly whitish green (Fig. 4). Eyelid borders are white and their coloration strongly contrast with the adjacent brownish scales; on the posterior two thirds of the supralabials, a wide white line can be distinguished, bordered by dark on both sides, beginning under the anterior part of the eye (Figs. 5, 6). It does not extend further than the last supralabial, whereas it extends until the tympanum in *Trachylepis maculilabris* and even sometimes extends to the base of the anterior extremities. Tympanum aperture is not circled by yellow-orange as in the sympatric *T. maculilabris*. Formalin fixation of the specimens has produced a strong general darkening of the specimens as often observed with that preservative. Only the specimens from Ndakane in CAR (MNHN 1997.3078) and that from Kika in Cameroon (MNHN 2005.2504) were fixed in alcohol, thus allowing partial conservation of their original coloration.

Sexual dimorphism.—*T. makolowodei* shows high sexual dimorphism for several characters: number of keels on medio-dorsal scales (always 7 on adult males and always 9 on adult females, 3 on juveniles); ratio of head length to SVL (22.33 to 24.39 by males, $m = 23.30 \pm 0.62$, $n = 8$ vs. 20.90 to 22.75 by females, $m = 21.88 \pm 0.73$, $n = 5$) (Mann-Whitney test, $U = 1$, $P = 0.002$); SVL (often around 120 mm on adult males and never above 117 mm on adult females). The different coloration of both sexes is shown in figures 3 and 4.

Genetic differences.—The uncorrected pairwise sequence divergence of *Trachylepis makolowodei* towards the other species were calculated as follows: *T. affinis*-species complex from 7.6% to 8.9%; *T. albilabris* from 8.3% to 8.8%; *T. maculilabris*-species complex from 7.3% to 9.1%; *T. perrotetii*-species complex from 8.7% to 10.1%; and *T. polytropis* from 7.0% to 7.4%. Intraspecific genetic differences within the comparison species were as follows: *T. affinis*-species complex from 0.0% to 5.7%; *T. albilabris* from 0.4% to 1.8%; *T. maculilabris*-species complex from 0.2% to 6.1%; *T. perrotetii*-species complex from 0.0% to 5.2%; and *T. polytropis* from 0.6% to 2.8%. Separating the genetically most divergent specimen(s) (i.e. the already identified but yet undescribed species) from the three species complexes the intraspecific distances were reduced to: *T. affinis* (0.0% to 2.7%); *T. maculilabris* (0.2% to 0.6%) and *T. perrotetii* (0.0% to 1.9%).

Etymology.—The specific epithet *makolowodei* is a masculine patronym used in homage to Paul Makolowodé, originating from the village of Zimba, Central African Republic, who has worked as a field herpetologist in CAR and Cameroon (CAMHERP project). He has made significant contributions to MNHN collections (among others) and has collected several new species (see e.g. *Hemidactylus makolowodei*; Bauer *et al.* 2006), including the first specimen of the *Trachylepis* species described in this paper.

Vernacular names.—This lizard is known by pygmy inhabitants of the area who fear it, thinking it is a venomous animal. We propose the French common name “*Trachylepis* de Makolowodé” and the English common name “Makolowodé’s *Trachylepis*”.

Distribution.—We have collected *Trachylepis makolowodei* at nine sites in CAR and four sites in Cameroon (Fig. 2). The MNHN collec-

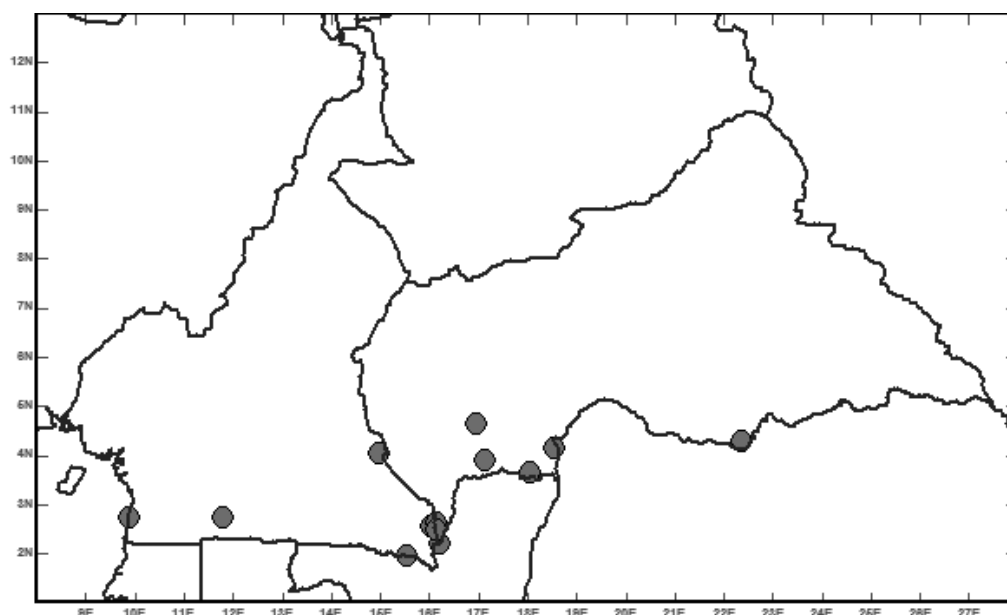


Figure 2: Distribution of *Trachylepis makolowodei*, a species from forested Central Africa.

tions house a large specimen (MNHN 1886.0204, SVL 112 mm) from Nganchon, Congo (most probably N'Gantchou, Democratic Republic of Congo, 3.17° S and 16.13° E, a locality situated on the borders of Congo River but far southeast of the country). That specimen, originally identified as *Trachylepis polytropis*, is in accordance with the diagnosis of our new species and we therefore tentatively refer it to *T. makolowodei*. We however do not report that site on our distribution map because of doubts about its collection locality.

Natural history.—It is a semi-arboricolous species, with high rupicolous tendencies and seems to be associated with the great semi-caducifolious forest of the guinea-congolian domain south of the country. It is always encountered at a low level on bushes bordering streams and rivers. The specimen of Salkapa was collected while hiding on the lower part of

the tree of an oil palm, at the base of a leaf. This skink is generally observed in sympatry with *Trachylepis maculilabris*, a forest species occupying the ground area. It does not hesitate to fall in the water when it feels threatened and swims well. The only gravid female observed in our sample contained six well formed eggs; it was collected at Salkapa (CAR) in February, at the end of the dry season.

DISCUSSION

Comparison with *Trachylepis boulengeri*.—*T. makolowodei* shows a similar coloration and size to *T. boulengeri* in Eastern and Southern Africa. It can be easily distinguished from the latter by the following combination of characters: higher number of supraciliaries (6 to 8 on *T. makolowodei* vs. 3 to 6 in *T. boulengeri* [Broadley 1974]); higher number of midbody scale rows (30 to 34 in *T. makolowodei* vs. 28 to 32 in *T. boulengeri* [Broadley 1974]); 7 to 9



Figure 3: Photograph of live male of *Trachylepis makolowodei* (MNHN 2005.2504, formerly CAMHERP 3433I) from Kika, Cameroon.



Figure 4: Photograph of live female of *Trachylepis makolowodei* (MNHN 1997.3078) from Ndakane, CAR.



Figure 5: *Trachylepis makolowodei* male (MNHN 2005.2504, formerly CAMHERP 3433I) from Kika, Cameroon: head details.



Figure 6: *Trachylepis makolowodei* female (MNHN 1997.3078) from Ndakane, CAR: head details.



Figure 7: Photograph of anterior body area of a live *Trachylepis polytropis*.

dorsal keels in *T. makolowodei* vs. 5 to 11 (11 uncommon) in *T. boulengeri*; higher SVL (up to 121 mm in *T. makolowodei* vs. only 93 mm in *T. boulengeri* [Broadley 1974]); higher head length to SVL ratio (20.90 to 24.39% in *T. makolowodei* vs. always less than 20% in *T. boulengeri* [Broadley 1974]); white punctuations on flanks in *T. makolowodei* lacking in *T. boulengeri* (Broadley 1974; Branch 1988); white band on supralabials in *T. makolowodei*, black band extended more posteriorly in *T. boulengeri* (Broadley 1974; Branch 1988). *T. boulengeri* is basically a savanna species, most commonly found in open habitats, including bamboo thickets and floodplain grassland.

Comparison with *Trachylepis maculilabris*.—*T. makolowodei* shows scalation and coloration characters similar to that of *T. maculilabris*. However, the species can be easily distinguished by the following combination of char-

acters: higher number of supraciliaries (6 to 8 in *T. makolowodei* vs. 4 to 7, generally 5, in *T. maculilabris* [Hoogmoed 1974]); prefrontals always in contact in *T. makolowodei* whereas often separated in *T. maculilabris* (Broadley 1974; Hoogmoed 1974); SVL up to 121 mm in *T. makolowodei* but never above 88 mm (Hoogmoed 1974) to 98 mm (Broadley 2000) in *T. maculilabris*; coloration: presence of a dark latero-dorsal band in *T. maculilabris*, always lacking in *T. makolowodei*.

Comparison with *Trachylepis polytropis*.—Classical scalation characters are relatively similar between both species and it is mostly coloration which permits us to differentiate between the species. Concerning coloration, without the presence of *T. makolowodei* juveniles in our sample, it would be easy to consider the specimens of our new species as giant adults of *T. polytropis* with a nearly uniform

coloration possibly related to ontogenesis, but this is not the case. The distinction between *makolowodei* and *polytropis* is not easy. Only the combination of the following characters allows the distinction of juveniles as well as adults of both species:

Habitus: despite its dorso-ventral flattening, *T. makolowodei* shows a rather lacertiform habitus (type *Lacerta* from the species complex *bilineata-viridis*) with a body that is dorsally rounded. *T. polytropis* presents a rather mabouiform body, flattened dorso-ventrally and widened. The neck is more heavily marked in *T. makolowodei*.

Size: *T. makolowodei* is a large sized *Trachylepis*: SVL 94 to 121 mm (mean 109.38 ± 9.31 ; $n = 13$). Taking into account the 13 largest *T. polytropis* in MNHN collections (except MNHN 1930.0048, see below), SVL ranges from 77 to 96 mm (mean 85.61 ± 5.57 ; $n = 13$). Note however that no CAR specimen shows a SVL above 100 mm. Hoogmoed (1974) noted that the largest male of *Trachylepis polytropis* available in his West African sample measured 70 mm SVL and the largest female 83 mm. It seems obvious that West African populations of *T. polytropis* are smaller than those of Central Africa, a situation which could at least attest their respective subspecific status (see Hoogmoed, 1974). A specimen from Cameroon (MNHN 1930.0048; no locality) collected by Théodore Monod is noteworthy by its size (SVL 112 mm), but upon examination of its scalation and coloration allows it to be allocated to *T. polytropis*. In the same way, among the six specimens of *Trachylepis polytropis* from Cameroon examined by Müller (1910: 576-579), 3 reach a SVL of 110, 111 and 111 mm respectively. Such sizes are near the known maximum for the species (114 mm; see below). In DRC (formerly Zaire), Schmidt (1919: 531-534) also refers to large specimens of *T. polytropis*; their SVL varies from 95 to 112 mm for 5 males and from

93 to 114 mm for 8 females. He noted a high number of dorsal keels going from 3 in juveniles to 12 to 15 in adults where it is generally above 10. We have not examined those specimens but it is likely that some of them may belong to *T. makolowodei*.

Anterior loreal: Anterior loreal is often higher than wide in *Trachylepis polytropis*, whereas in *T. makolowodei* it is wider than high. However, the large Cameroon specimen (MNHN 1930.0048) that we allocate to *T. polytropis* shows a wide anterior loreal similar to that of *T. makolowodei*, but its coloration pattern and its cylindrical tail cross section (see below) clearly placed it with *T. polytropis*.

Denticules in front of tympanum: *T. polytropis* shows nearly always 3 weakly developed denticules in front of its tympanum, often slightly larger than adjacent scales. On the other side, *T. makolowodei* always shows 3 large and well developed raised denticules, lanceolated, sometimes even a little emergent in preserved collection specimens.

Tail cross section: The tail of *T. makolowodei* is clearly transversally compressed, a character certainly in relation with its strictly rupicolous way of life: this lizard swims easily and does not hesitate to spring in the water when threatened and even stays under water. The tail of *T. polytropis*, a typical species that inhabits forested undergrowth and is not rupicolous, shows a cylindrical section.

Vertical marks on labial plates: *T. polytropis* often shows vertical black marks between supralabial plates; those marks are less frequent on infralabials. In *T. makolowodei*, those marks are most often absent or only faint.

Band on front of body: *T. polytropis* always shows in both sexes a dark lateral band extending in front of the snout area above the anterior extremities (shoulder level) and crossing the

eye; that dark band stays visible posteriorly until the tail base but there it is fragmented. That band separates the dorsal reddish brown coloration from the whitish ventral coloration. A second narrower dark latero-ventral band, on most ventral keeled scales, extends from the last infralabials to the base of anterior members, thus delimitating a light band between those two darker bands. That coloration pattern is more or less contrasted according to the specimen, but always visible, even in the largest specimens (Fig. 7). In contrast in *T. makolowodei* the three longitudinal bands are never visible: the darker dorsal coloration stops below the tympanum and the last latero-ventral keeled scales are of the same light green coloration than the belly (Fig. 3 to 6).

The molecular analyses also clearly support the distinctiveness of *T. makolowodei*. The new species showed high genetic differences towards all species which were considered as possible closely related species, based on morphological similarities. Molecular studies have only recently shown that three of the species included for comparative purposes (*T. affinis*, *T. maculilabris* and *T. perrotetii*) and which were thought to be rather variable, must be considered as species complexes (e.g. Mausfeld *et al.* 2004; Jesus *et al.* 2005). We deliberately included the different taxa of those species complexes to be able to estimate the intraspecific genetic variation for these groups as compared to *T. makolowodei*. In all cases the genetic differences between our new species and its congeners was significantly higher than general intraspecific variation within the comparison species, thus clearly indicating that *T. makolowodei* comprises a distinct species. This high difference becomes especially noteworthy when one corrects the calculated intraspecific genetic distances by removing the specimens representing the already identified but yet undescribed species, within the three species complexes from the analyses. In all cases the intraspecific distances were strongly reduced,

thus underlining the distinctness of *T. makolowodei* even more.

Trachylepis polytropis is a typical species from the forest undergrowth of the great Central African forest block; it is particularly associated with leaf litter, dead trees and roots on the soil and dead tree trunks, but never inhabits river borders. In contrast, *T. makolowodei* is a strictly rupicolous species, only found on river borders in deep forests, from the small marigots and raphials to the borders of big rivers like Oubangui and Congo. We never encountered both species in syntopy, even though they can be sympatric.

Trachylepis makolowodei was without any doubt misidentified as *T. polytropis* in the past. We collected it in 9 different forest sites in southern CAR and 4 other sites in southern Cameroon (Chirio & LeBreton 2008). A specimen present in MNHN collections since 1886 (MNHN 1886.0204) and labelled as *T. polytropis*, shows typical morphometric and coloration characters of *T. makolowodei*. It originated from south-eastern DRC, on the sides of the Congo River. It thus seems possible that *T. makolowodei* could occupy the whole west of the great forest block of Central Africa. The species has probably been missed until now because of the difficulties to reach its respective habitats: note in this regard that it was only after four years of intensive collecting in the whole CAR that the first specimen of this species was seen.

Morphologically, *Trachylepis makolowodei* shares many characters with *T. boulengeri* and *T. polytropis*. However the results of our molecular analysis clearly show that this species is notably separate from both the latter species. Future field surveys will hopefully determine the extent of the distribution of this species.

KEY TO *TRACHYLEPIS* KNOWN TO OCCUR IN CAR AND CAMEROON

We provide a key allowing identification of adults of all species of the genus *Trachylepis* presently known from Cameroon and CAR (after Hoogmoed 1974; Ineich & Chirio 2000, 2004; Chirio & Ineich 2000, 2005). Note that additional research is underway and that several of these taxa correspond to species complexes (*T. affinis*, *T. maculilabris*, *T. perrotetii*).

1. — Smooth dorsal scales; 4 longitudinal black bands well defined on the back, bordering 3 golden dorsal lighter bands
.....*Trachylepis mekuana*

— Keeled dorsal scales; no well defined black longitudinal bands on the back.....
.....2

2. — Strongly spinose foot and hand soles...
.....*T. nganghae*

— Smooth foot and hand soles.....
.....3

3. — More than 44 scale rows at midbody; head clearly flattened dorso-ventrally.....
.....*T. pendeana*

— Less than 44 scale rows at midbody; head not flattened dorso-ventrally.....
.....4

4. — 26 (rarely 28) scale rows at midbody; dorsal scales with 3 keels; supranasals generally not in contact; prefrontals in large median contact; body elongated and slender; entire tail length about four times body length.....
.....*T. buettneri*

— More than 26 scale rows at midbody; entire tail length less than 2.5 times body length5

5. — No enlarged nuchals, but sometimes some scales weakly enlarged behind parietals; body length up to 15 cm; dorsal scales with 3 keels; supranasals and prefrontals in contact
..... *T. perrotetii* (species complex)

— One pair of enlarged nuchals; body length below 12 cm.....
.....6

6. — Most dorsal scales with 3 keels.....
.....7

— Most dorsal scales with at least 5 keels
.....9

7. — 35-40 scale rows at midbody.....
.....*T. quinquetaeniata*

— 27-32 scale rows at midbody.....
.....8

8. — Only one scale between last supraocular and anterior supratemporal; white lateral band generally not going posteriorly further than anterior members.....
.....*T. albilabris*

— Two scales between last supraocular and anterior supratemporal; white lateral band most often extending posteriorly until posterior members.....
..... *T. affinis* (species complex)

9. — Generally 5 supraciliaries; 51-61 dorsal scales between nuchals and tail base; dorsal scales with 5 to 7 keels; one distinct white lateral band bordered by dark brown above and below extending from upper lips to the base of anterior members.....
.....*T. maculilabris* (species complex)

— 6 to 8 supraciliaries; 45-51 dorsal scales between nuchals and tail base; dorsal scales with 5 to 10 keels; no white lateral band..... 10

10. — Tail compressed transversally; anterior loreal higher than wide; no lateral longitudinal band between anterior and posterior members
.....*T. makolowodei*

— Tail cylindrical in cross section; anterior loreal wider than high; 1 light longitudinal lateral band bordered above and below by a darker band.....

.....*T. polytropis*

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APPENDIX

Material Examined

Trachylepis makolowodei sp. nov. – CAMEROON: Bussibilika [Atlantic evergreen forest, about 20km south of Kribi], MNHN 2000.4212 (formerly CAMHERP 0817X) - Kika, MNHN 2005.2504 (formerly CAMHERP 3433I), MNHN 2005.2505 (formerly CAMHERP 0892) – Mbitom, MNHN 2005.2506 (formerly CAMHERP 0122I) - Messama, CAMHERP 1185X - Ndelelé, CAMHERP 3387X. **CENTRAL AFRICAN REPUBLIC** (see Chirio & Ineich 2005): Bambio, MNHN 1997.3072-73 - Bélemboké, MNHN 1995.5610-14, 1997.3464-67 - Kpoka, MNHN 1997.3075 - Mondika, MNHN 1997.3076-77 - Ndakane, MNHN 1991.0386, 1997.3078 - Ouazoua, MNHN 1997.3079-80 - Salkapa, MNHN 1997.3081 - Société Centrafricaine de Débitage (SCAD; 45 km south of Mbaiki), MNHN 1997.3082 - Zimba, MNHN 1997.3083. **POPULAR REPUBLIC OF CONGO**: N'Gantchou, MNHN 1886.0204.

Trachylepis polytropis (Boulenger, 1903) - CAMEROON: without precise locality, MNHN 1930.0048 - Afan, CAMHERP 656X - Mwinkwing, CAMHERP 944G-945G, 4304I - Akom II, CAMHERP 950G – Area of Kribi, MNHN 1996.2350. **CENTRAL AFRICAN REPUBLIC**: Bambio, MNHN 1995.9633 - Bélemboké, MNHN 1995.9634-35 - Grima, MNHN 1997.2990-91 - Ibengué, MNHN 1995.4438, 1995.9637 - Mondika, MNHN 1997.2992-93, 1997.3084-85 - Ngotto, MNHN 1997.2994 - Société Centrafricaine de Débitage (SCAD; 45 km south of Mbaiki), MNHN 1995.9636 - Zimba, MNHN 1995.5583-84, 1995.9638-41, 1997.2995.

Trachylepis maculilabris (Gray, 1845) – **CENTRAL AFRICAN REPUBLIC**: Bélemboké, MNHN 1995.4464-75 - Ndakane, MNHN 1997.3087-89 - Ouazoua, MNHN 1997.2949-51 - Salkapa, MNHN 1997.2953-54 - Société Centrafricaine de Débitage (SCAD; 45 km south of Mbaiki), MNHN 1995.4497-98, 1995.5573, 1997.2955 - Zimba, MNHN 1992.4749-50, 1992.4752-53, 1992.4755-57, 1995.5574, 1997.3469-70.

Trachylepis boulengeri (Sternfeld, 1911) - TANZANIA: “Makonde-Hochland” = Makonde Highland, District of Lindi, southeast Tanzania, about 9.4° S, 34° E, holotype ZMB 22486 (Berlin).