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Typhlops weidholzi n. inedit., a new species of *Letheobia* from the Republic of Cameroon, and a synopsis of the genus

(Squamata: Serpentes: Scolecophidia: Typhlopidae)

Typhlops weidholzi n. inedit., eine neue Art der Gattung *Letheobia* aus der Republik Kamerun und Synopsis der Gattung
(Squamata: Serpentes: Scolecophidia: Typhlopidae)

VAN WALLACH & RICHARD GEMEL

KURZFASSUNG

Im Zuge der Bearbeitung der Aufsammlungen von Alfred Weidholz durch Otto Wettstein wurde das Belegexemplar einer Blindschlange aus Kamerun vor knapp achtzig Jahren für eine Neubeschreibung als Typus gekennzeichnet. Im Archiv der Herpetologischen Sammlung des Naturhistorischen Museums in Wien findet sich die handschriftliche Aufzeichnung dieser Beschreibung, die aber nie im Druck erschienen ist.

Die in dieser Handschrift wiedergegebene Beschreibung steht im Einklang mit der Diagnose der Autoren, welche die Einzigartigkeit des Exemplars und das Vorliegen einer unbeschriebenen Art der Gattung *Letheobia* bestätigt. Auf Grundlage der äußeren Morphologie wird eine Synopsis aller Arten der Gattung präsentiert.

ABSTRACT

In the course of examination and description of the collection of Alfred Weidholz by Otto Wettstein, a specimen of blind snake from Cameroon was labeled as typus nearly 80 years ago in preparation for the description of a new species. The archive of the Herpetological Collection at the Natural History Museum in Vienna contains the handwritten manuscript of this description, which never appeared in print.

This description is reproduced herein and used to confirm the uniqueness of the specimen, which is described as a new species of *Letheobia*. A synopsis of the external morphology is presented for all currently known species of *Letheobia.*

KEY WORDS

Reptilia; Squamata: Serpentes: Scolecophidia: Typhlopidae, *Letheobia weidholzi*, new species, systematics, taxonomy, distribution, history of science, Republic of Cameroon

INTRODUCTION

During the preparation of a new edition of an annotated type catalogue of amphibians and reptiles in the Herpetological Collection of the Vienna Natural History Museum (NMW) by the second author, a typhlopid snake was discovered that was previously recognized as a new species by the former curator Otto WETTSTEIN. WETTSTEIN had planned on publishing a description of this species but never accomplished this intention. The entry for NMW 23492 in the museum catalogue reads: "*Typhlops weidholzi* Typus Poli b. Garoua N-Kamerun, 1938/39 Coll. A. Weidholz." Since the description of "*Typhlops weidholzi*" was never published (*nomen inedi-tum*), it was not included in the former editions of the NMW type catalogues (TIEDEMANN & HÄUPL 1980, TIEDEMANN, HÄUPL & GRILLITSCH 1994 and TIEDEMANN & GRILLITSCH 1999). Its status was therefore investigated and the present examination of the specimen confirms that it represents an undescribed species new to science, which according to current taxonomy is a member of the genus *Letheobia*. The Republic of Cameroon forms the western border of the range of the scolecophidian genus *Lethe-*

obia, which is mainly a Central and East African taxon. *Letheobia caeca* (DUMÉRIL, 1856), *L. decorosa* (BUCHHOLZ & PETERS, 1875) and *L. zenkeri* (STERNFELD, 1908), are the only species in the genus definitely known from Cameroon, whereas *L. crossii* (BOULENGER, 1893) and *L. rufescens* (CHABANAUD, 1917), might occur within its borders due to proximity of specimens from Nigeria, the Central African Republic and the Democratic Republic of the Congo (PERRET 1961; LEBRETON 1999; CHIRIO & LEBRETON 2007; WALLACH et al. 2014).

Alfred WEIDHOLZ and his herpetological contributions

Alfred WEIDHOLZ was a Viennese private banker, who together with his friend, director of the famous Zoo of Vienna ("Menagerie Schönbrunn", "Schönbrunner Tiergarten") Prof. Dr. med. Otto ANTONIUS, is revered as one of the pioneers of scientifically oriented zootechnics. WEIDHOLZ undertook seven trips from 1910–1938 to Africa, visiting the Maghreb countries, Central and West Africa and published several books of his adventurous journeys, which encompassed the region from the Chari River of the Central African Republic through Cameroon to Senegal (WEIDHOLZ 1935, 1941, 1943). The primary goal of his self-financed collecting activities was the procurement of live animals, especially hoofed and predatory animals, for the "Tiergarten Schönbrunn." With the large animals he captured, he made a significant contribution to the zoo of Vienna. Additionally, the mammal and herpetological collections of the Vienna Natural History Museum received numerous valuable specimens from WEIDHOLZ, including more than 200 amphibians and reptiles. During this period, Otto WETTSTEIN was curator of the Herpetological Collection of the Natural History Museum in Vienna (EISELT 1967), he carefully curated WEIDHOLZ's specimens and penned detailed descriptions of most species. He also sent some selected specimens to Robert MERTENS at the Senckenberg Museum (Frankfurt a. M.) for examination. As a result, several new species were described from WEIDHOLZ's activities, namely *Afrixalus weidholzi* (MERTENS, 1938), *Emys orbicularis occidentalis* FRITZ, 1993, *Agama weidholzi* WETTSTEIN, 1932, *Macrovipera lebetina transmediterranea* (NILSON & ANDRÉN, 1988), and *Echis carinatus ocellatus* STEMMLER, 1970 (= *Echis ocellatus*, paratypes NMW 19378: 1, 2), also from the same locality of Poli, Cameroon, as was the NMW specimen of "*Typhlops weidholzi* n. sp." Below, the authors present WETTSTEIN's complete original description and its English translation by R. GEMEL:

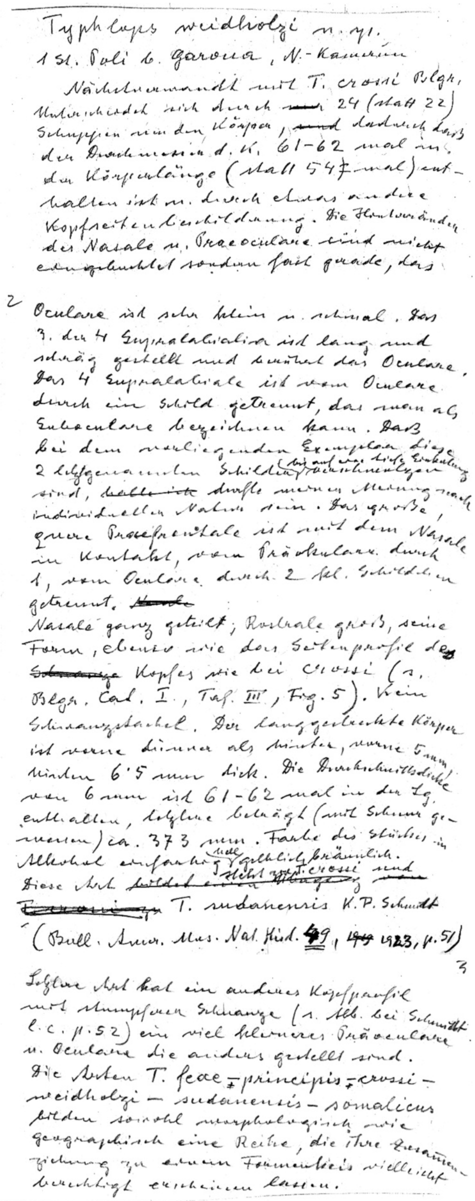
"*Typhlops weidholzi* n. sp.

1 St. Poli b. Garoua, N-Kamerun

Nächstverwandt mit *T. crossi* Blgr. Unterscheidet sich durch 24 (statt 22) Schuppen um den Körper, dadurch daß der Durchmesser d. K[örpers]. 61–62 mal in der Körperlänge (statt 54 mal) enthalten ist u. durch etwas andere Kopfseitenbeschilderung. Die Hinterränder des Nasale u. Praeoculare sind nicht eingebuchtet sondern fast gerade, das Oculare ist sehr klein und schmal. Das 3. der 4 Supralabialia ist lang und schräg gestellt und berührt das Oculare. Das 4. Supralabiale ist vom Oculare durch ein Schild getrennt, das man als Suboculare bezeichnen kann. Daß bei dem vorliegenden Exemplar diese 2 letztgenannten Schilder bis auf eine tiefe Einkerbung verschmolzen sind, dürfte meiner Meinung nach individueller Natur sein. Das große, quere Praefrontale ist mit dem Nasale in Kontakt, vom Präokulare durch 1, vom Oculare durch 2 kl. Schildchen getrennt.

Nasale ganz geteilt, Rostrale groß, seine Form, ebenso wie das Seitenprofil des Kopfes wie bei *crossi* (s. Blgr. Cat. I., Taf. III, Fig. 5). Kein Schwanzstachel. Der langgestreckte Körper ist vorne dünner als hinten, vorne 5 mm, hinten 6,5 mm dick. Die Durchschnittsdicke von 6 mm ist 61–62 mal in der Lg. enthalten, letztere beträgt (mit Schnur gemessen) ca. 373 mm. Farbe des Stückes in Alkohol einfarbig hell gelblich bräunlich. Diese Art steht zw. *T. crossi* und *T. sudanensis* K. P. Schmidt (Bull. Amer. Mus. Nat. Hist. 49, 1923, p. 51). Letztere Art hat ein anderes Kopfprofil mit stumpferer Schnauze (s. Abb. bei Schmidt l. c. p. 52) ein viel kleineres Präoculare u. Oculare die anders gestellt sind.

Die Arten *T. feae – principis – crossi – weidholzi – sudanensis – somalicus* bilden



Typhlops weidholzi n. sp.
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Die Arten T. feae – principis – crossi – weidholzi – sudanensis – somalicus bilden sowohl morphologisch wie geographisch eine Reihe, die ihre Zusammenziehung zu einem Formenkreis vielleicht berechtigt erscheinen lassen.

Fig 1: The three pages of O. WETTSTEIN's unpublished handwritten manuscript in which he describes *Typhlops weidholzi* n. sp. Photos by R. GEMEL. (reduced to about 50 % of original size).

Abb. 1: Die drei Seiten von O. WETTSTEINS unpubliziertem handschriftlichem Manuskript, auf denen er *Typhlops weidholzi* n. sp. beschreibt. Fotos: R. GEMEL. (verkleinert auf etwa 50 % der Originalgröße).

sowohl morphologisch wie geographisch eine Reihe, die ihre Zusammenziehung zu einem Formenkreis vielleicht berechtigt erscheinen lassen."

Typhlops weidholzi n. sp.

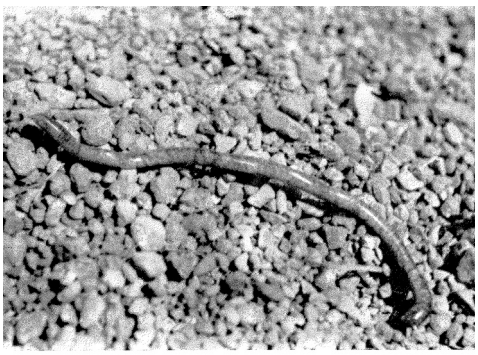
1 specimen from Poli, near Garoua, North Cameroon

Closely related to *T. crossi* Blgr. from which it is distinguished by 24 (instead of 22) scales around the body, the diameter of the body being 61–62 times (instead of 54 times) contained in the body length, and the somewhat differing lateral head scalation. Posterior margins of nasal and preocular not emarginate, almost straight instead, ocular very small and narrow. The 3rd of the four supralabials long, obliquely oriented and touching the ocular. The 4th supralabial separated from the ocular by a scale that might be named subocular. Both of the last mentioned scales are fused and only a notch is visible; this character is in my opinion individual. Prefrontal large, transversal and in contact with nasal; separated from preocular by one, from ocular by two, little scales.

Nasal completely divided, rostral large, its shape and the head in profile view like in *crossi* (see Blgr. Cat. I., Plate III, Fig. 5). No tail spine. Body elongate, anteriorly thinner than posteriorly; front part 5 mm, hind part 6.5 mm in diameter. The mean body diameter of 6 mm is 61–62 times contained in body length. Body length about 373 mm (measured with a cord). Color of the alcohol preserved specimen uniformly light yellowish-brown. This species is intermediate between *T. crossi* and *T. sudanensis* K. P. Schmidt (Bull. Amer. Mus. Nat. Hist. 49, 1923, p. 51). The latter species has a different head profile and a blunt snout (see fig. in Schmidt l. c. p. 52), a much smaller preocular and ocular, which are arranged in a different way.

The species *T. feae – principis – crossi – weidholzi – sudanensis – somalicus* form a series both from their morphological features and geographical range, which may justify their assignment to a particular species complex.

In addition to the above manuscript description by WETTSTEIN (Fig. 1), WEIDHOLZ (1941: 114, Fig. 11) provided a photograph of the specimen (Fig. 2) and mentioned it in his book thusly:



Eine neue Wurmſchlange

Fig. 2: "A new blind snake" as depicted in WEIDHOLZ (1941: 114, Fig. 11). Photo by R. GEMEL.

Abb. 2: "Eine neue Wurmschlange" wie in WEIDHOLZ (1941: 114, Abb. 11) dargestellt. Foto: R. GEMEL.

"Eine der von mir im Namschidlande gefundenen Wurmschlangen hat der Kustos am Naturhistorischen Museum zu Wien, Dr. Otto v. Wettstein, als neue Art beschrieben und *Typhlops weidholzi* benannt" [One of the worm snakes I found in the region of the Namschids was described by the curator Dr. Otto v. Wettstein of the Natural History Museum in Vienna as a new species and named *Typhlops weidholzi*].

Article 16.1 of the International Code of Zoological Nomenclature (IZCN 1999), stating that the intention to name a new taxon must be explicitly stated for it to be valid, indicates that WEIDHOLZ's 1941 usage of the name *Typhlops weidholzi* constituted a *nomen nudum*. The authors therefore take this opportunity to officially describe the species and name it in honor of its collector, Alfred WEIDHOLZ.

MATERIALS AND METHODS

Discussion of characters follows that of WALLACH (1995, 2003, 2005), FRANZEN & WALLACH (2002), and BROADLEY & WALLACH (2007b). Body length measurements were made to the nearest 1 mm; head shield and body diameter measurements made with digital calipers to 0.01 mm. Abbreviations of characters include LOA – total length, TL – tail length, MBD – midbody diameter, L/W – total length/midbody diameter ratio, T/LOA – relative tail length, TW – midtail diameter, TL/TW – relative tail width, ABD – anterior body diameter, MBD – midbody diameter, PBD – posterior body diameter, TMD – total middorsals, SC – subcaudals, DC – dorsocaudals, SIP – supralabial imbrication pattern, SL – supralabial, HW – head width at ocular level, RL – rostral length, RW – midscale rostral width, FL – frontal length, FW – frontal width. Supralabial imbrication patterns follow WALLACH (1993); T–0 and T–II illustrated in Figs. 3–6. Museum acronyms follow those listed in WALLACH et al. (2014) with the addition of NSP (Nairobi Snake Park, Republic of Kenya), SDSU (San Diego State University, California, USA) and TAU (Tel-Aviv University, Israel).

A few discrepancies will be noted below when comparing this report with WETTSTEIN's description. For example, WETTSTEIN calculated a L/W ratio of 61–62 whereas the authors of the present paper calculate it to be 96. All body and tail width measurements (and Table 1 data) are measured in the horizontal plane; if measured in the vertical plane, the L/W ratio comes to 65 (which corresponds exactly to WETTSTEIN's results when considering shrinkage over time in preservative), indicating that WETTSTEIN measured the specimen in the vertical plane. Secondly, WETTSTEIN stated the nasal to be semidivided yet there is a minute suture connecting the nostril to the rostral. This difference is attributed to the better optics available today in modern microscopes. Lastly, WETTSTEIN reported that SL 3 was in contact with the ocular and SL 4 was separated from the ocular by a subocular. This discrepancy is due to terminology. The shields termed the ocular and subocular by WETTSTEIN, which he correctly stated to be fused with a vestigial notch separating them in the middle, since present on both sides of the head, are taken to be an elongate but reduced ocular shield. We do not consider a subocular to be present but to be fused with an even smaller ocular shield. In the present paper, the full official country names were not consistenly used to improve readability.

RESULTS

Letheobia weidholzi sp. nov.
Weidholz's Pink Blindsnake
Figs. 13–17

Holotype.– NMW 23492, from Poli, Département de Faro, Région du Nord, Cameroun (8° 27' 16.4" N, 13° 15' 33.7" E, elevation 525 m), collected by Alfred Weidholz, between 1938–1939.

Diagnosis.– *Letheobia weidholzi* can be separated from all other members of the genus by the following combination of characters: dorsal and lateral head profiles tapered or pointed with keratinous keel on rostral, lateral head shields obliquely oriented to the vertical, and more than 650 total middorsals. Additional characters distinguishing it from other *Letheobia* with pointed snouts are: inferior nasal suture in contact with SL 2, length/width ratio greater than 95, and absence of an apical spine. As to the assignment to the genus *Letheobia*, see Discussion.

Description.– Female specimen, LOA 376 mm, TL 4.1 mm (TL/LOA 1.1 %), horizontal ABD 4.4 mm, MBD 3.9 mm (L/W ratio 96), PBD 5.7 mm (vertical ABD 4.0 mm, MBD 5.8 mm, PBD 6.0 mm), TW 4.0 mm (TL/TW 1.0), scales smooth, imbricate and pitless in 26-24-24 rows, TMD 651, SC 9, and DC 11. The body diameter gradually increases from head to tail. The costal scales vary from 1.5–2.0 times as broad as long. Dorsal snout (Figs. 13, 15) tapered in profile with large rostral, approximately 3/4 of the head width at ocular level (dorsal RW 2.7 mm, HW 3.8 mm, RW/HW 0.71), slightly longer than broad (dorsal RL 3.65 mm, dorsal RW 2.9 mm, RL/RW 1.26), with nearly parallel sides that are angled posteriorly, terminating in a transverse border at the level of the ocular; frontal transversely elongated, 3.5 times as broad as deep (FW 1.6 mm, FL 0.45 mm, FW/FL 3.56), separating nasals middorsally; postfrontal small, barely larger than adjacent scales, twice as broad as deep and semilunar in shape; supraocular small (1/3 size of frontal) and transversely oriented, in contact with preocular and supranasal, lateral edge wedged between preocular and lateralmost postfrontal scale; a series of 6 small postfrontal scales border the frontal and supraoculars, a narrow, moon-shaped scale along midline, bordered by 3 small scales on the left and 2 on the right (outermost two scales fused into a single scale).

In lateral view, snout (Figs. 14, 16) pointed, dorsal and ventral rostral strongly tapering to an anterior point forming an anteriorly-directed, horizontal keratinous keel or cutting edge; nasal semidivided, infranasal small and narrow, supranasal large and extending onto dorsum of head; inferior nasal suture originating from second supralabial on both sides of the head but it connects near the junction of first and second supralabial on the right side; superior nasal suture complete, extending across nostril-rostral gap; kidney-bean shaped nostril inferior, nearly horizontal in orientation, and directed laterally, overarched by weak *canthus rostralis* that extends only across the anterior portion of supranasal; width of supranasal slightly narrower than that of preocular, both of which are nearly twice as broad as the ocular (midscale length of supranasal 1.0 mm, preocular 1.1 mm, and ocular 0.6 mm); preocular and ocular obliquely oriented to the vertical; eyespot invisible; postoculars 2/2 (or 4/4 between last supralabial and frontal); supralabial imbrication pattern T–0, none of the supralabials overlaping the shileds above them; SL 1 equal in size to SL 2, both rectangular in shape, SL 3 is three times the size of SL 1 or SL 2 and is also crescent-shaped, SL 4 is five times as large as the first or second SL (or 1.5 times the size of SL 3) and is typically fused, as in many typhlopids, with a body scale as indicated by the notch along the inferior border. Ventral surface of snout (Fig. 17) with broad, flat bell-shaped rostral (ventral RL 1.9 mm, ventral RW 1.8 mm, ventral RL/RW 1.06) with slightly concave lateral borders anteriorly and convex lateral borders posteriorly, the lip border with a notch for protrusion of tongue; mental enlarged, roughly twice the size of adjacent scales; vent bordered anteriorly by 5 scales; terminus of the tail is rounded, covered by a scale, and lacking an apical spine. Pigmentless coloration, presumably pink in life, now pale buff (KÖHLER 2012).

Table 1a: Synopsis of external morphological information of 38 *Letheobia* species including species group classification. Data based on ROUX-ESTÈVE (1974), BROADLEY & WALLACH (2007b) and V. WALLACH (unpublished data). Parentheses include rare condition and sample size in column TMD *x* (*n*).

ASR – anterior scale rows; MSR – midbody scale rows; PSR – posterior scale rows; Red. – scale row reduction (yes – present, no – absent); SIP – supralabial imbrication pattern; TMD – total middorsal scale between rostral and terminal spine; TMD *x* (*n*) – mean of total middorsals with sample size; SC – subcaudal scales; LOA – total length in mm; L/W – total length/midbody diameter ratio; L/W $\bar{x}$ – mean of length/width ratios; T/LOA % – tail length/total length ratios as percent; RW/HW % – midrostral width/head width ratio at ocular level in percent; TL/TW % – tail length/midtail width ratio as percent.

Tab. 1a : Zusammenstellung von Angaben zur äußeren Morphologie von 38 *Letheobia* Arten sowie ihre Zuordnung zu Artengruppen. Die Daten stammen von ROUX-ESTÈVE (1974), BROADLEY & WALLACH (2007b) und V. WALLACH (unpubliziert). Klammern umfassen selten auftretende Werte und die Stichprobengröße in der Spalte TMD *x* (*n*).

ASR – Schuppenlängsreihen vorne; MSR – Schuppenlängsreihen in Körpermitte; PSR – Schuppenlängsreihen hinten; Red. – Reduktion der Zahl von Schuppenlängsreihen (yes – ja, no – nein); SIP – Überlappungstyp der Oberlippenschilde; TMD – Schuppen in Rückenmitte zwischen Rostrale und Schwanzdorn; TMD *x* (*n*) – Mittelwert von TMD, Stichprobengröße in Klammern; SC – Subcaudalschilde; LOA – Gesamtlänge in mm; L/W – Verhältnis Gesamtlänge/Durchmesser in Körpermitte; L/W $\bar{x}$ – Mittelwert der Verhältnisse L/W; T/LOA % – Schwanzlänge in % der Gesamtlänge; RW/HW % –Rostralebreite in % der Kopfbreite auf Höhe des Oculare; TL/TW % – Schwanzlänge in % der Schwanzdicke in Schwanzmitte.

	ASR	MSR	PSR	Red.	SIP	TMD	TMD *x* (*n*)	SC	LOA (mm)	L/W	L/W $\bar{x}$	T/LOA (%)	RW/HW (%)	TL/TW (%)
L. zenkeri	20	18	18	yes	T-0 2	50-281	260 (9)	9-10	105-150	35-52	46	1.7-3.0	32-35	1.0-1.2
L. uluguruensis	24	22 (20-24)	22	yes	T-II	376-416	391 (6)	8-13	150-245	41-60	49	1.2-2.6	49-54	1.1
L. leucosticta	24	22 (24)	20	yes	T-II	336-396	366 (2)	9	222-230	38-47	43	1.0-1.6	36-44	1.0
L. manni	?	26	?		T-II	480-508	494 (2)	8	343-360	40	40	1.4-1.5	56	0.9
L. angeli	24	24	22	yes	T-0	508	508 (1)		332-365	73-75	74	1.4	52	1.1
L. decorosa	24	24 (30)	24	no	T-0	460-542	490 (11)	10-12	204-510	45-66	56	1.1-1.8	59-67	1.0-1.1
L. jubana	26	24	20 (21-22)	yes	T-0	391-439	424 (7)	5-8	211-510	44-57	49	1.0-1.4	66-75	0.7-1.0
L. praeocularis	26-28	24-28	24-26	yes	T-II (0)	423-545	507 (5)	7-11	337-438	44-85	61	0.9-1.9	70-81	0.9-1.0
L. stejnegeri	?	28 (26-30)	?	yes	T-II	479-548	590 (6)	10-12	296-465	42-65	57	1.0-1.5	60-71	0.8-1.1
L. newtoni	28 (27-29)	28 (26)	26-28	yes	T-0	446-567	509 (7)	10-12	280-400	50-70	61	1.0-2.0	50-61	0.8-1.2
L. somalica	30 (26)	28 (24-30)	28 (24)	yes	T-0/T-II	510-696	619 (11)	11-15	220-670	44-90	66	0.7-1.5	53-67	1.0-1.2
L. crossii	24-26	22-24	22-24	yes	T-0	455-513	482 (10)	8-13	238-310	54-96	71	1.0-1.9	48-71	1.0-2.0
L. feae	22 (23-24)	20 (21-22)	20 (21-22)	yes	T-0	406-480	442 (9)	8-12	169-330	51-76	65	1.0-1.5	47-57	0.9-1.2
L. simoni	20 (22)	20 (22)	20	both	T-0	403-488	451 (10)	9-14	160-239	49-91	71	1.0-2.2	51-67	0.9-1.7
L. erythraea	24-26	20 (23)	20	yes	T-0	443-462	453 (3)	11-15	205-250	68-82	73	1.7-2.0	46-61	1.1-1.5
L. episcopus	22	20	20	yes	T-II	544-595	569 (8)	11-15	250-337	74-96	85	0.8-1.6	52-65	0.8-1.5

Table 1a (continued from preceding page). / Tab. 1a (Fortsetzung der vorangegangenen Seite).

	ASR	MSR	PSR	Red.	SIP	TMD	TMD *x* (*n*)	SC	LOA (mm)	L/W	L/W x̄	T/LOA (%)	RW/HW (%)	TL/TW (%)
Letheobia n. sp. 1	26	22	22	yes	T-0	451	451 (1)	12	134	49	49	1.5	55	1.0
L. largeni	24	22	22	yes	T-0	432	432 (1)	10	274	65	65	1.5	60	1.3
L. swahilica	24	22	22	yes	T-0	376-396	386 (7)	8-12	123-191	49-62	54	1.1-2.2	54-65	0.8-1.5
L. pallida	24	22 (23-24)	22	yes	T-0	380-466	429 (15)	7-10	113-265	44-79	58	0.9-2.3	61-83	0.8-1.5
L. toritensis	26 (24-25)	22 (24)	22 (20)	yes	T-0	427-487	461 (14)	7-13	106-270	56-90	71	0.9-1.8	70-82	0.9-1.6
L. pembana	26	24	24	yes	T-0	353	353 (1)	10	158	53	53	1.6	56	0.8
L. debilis	22 (20)	20 (18)	20 (18-22)	yes	T-II	547-668	608 (5)	7-11	334-480	98-129	113	0.7-0.9	63-77	0.8-1.0
L. mbeerensis	20	20	20	no	T-0	670	670 (1)	20	280	62	62	2.9	55	2.0
L. lumbriciformis	18 (20)	18	18	no	T-0	465-641	565 (15)	11-17	252-450	38-94	66	1.3-1.7	64-76	0.8-1.2
L. wittei	20	20	20	no	T-II	488-511	501 (2)	5-6	285-310	68-85	77	0.7-0.8	66-73	0.8
L. rufescens	22 (20)	20	20 (22)	both	T-II	585-656	626 (6)	7-9	296-520	69-91	82	0.7-0.8	62-78	0.8-1.0
L. akagerae	22	22	22	no	T-0	834	834 (1)	13	458	131	131	1.3	58	—
L. katangensis	22	22	22	no	T-0	608	608 (1)	10	350-495	82-124	105	1.0	69	0.9
L. gracilis	22 (24)	22 (24)	22	both	T-0	629-737	683 (23)	8-14	237-550	60-111	89	0.7-1.1	59-76	0.7-1.3
L. graueri	24	24	24	no	T-0	454-622	535 (21)	7-15	198-450	58-89	71	0.9-1.8	61-81	0.7-1.2
L. sudanensis	26 (24-28)	24-26 (25-27)	24 (22-26)	both	T-0 (II)	569-713	630 (19)	8-13	172-520	54-95	75	0.9-1.9	59-73	0.8-1.7
L. kibarae	26 (24-28)	26 (24)	24	yes	T-0	562-645	603 (7)	7-11	191-525	56-87	71	0.7-1.3	68-71	0.6-1.1
L. pauwelsi	22	22	22	no	T-0	483	483 (1)	11	310	82	82	1.6	66	1.2
Letheobia n. sp. 2	24	22	22	yes	T-0	555-563	559 (1)	7	261	87	87	1.0	53	0.8
L. caeca	22	24 (22-26)	22	both	T-0	417-561	493 (47)	10-12	100-443	38-96	70	0.9-1.7	56-68	0.9-1.3
L. acutirostrata	24	24	24 (22-26)	both	T-0	440-513	477 (7)	9-13	320-447	46-96	64	0.9-1.8	66-89	0.8-1.6
L. weidholzi n. sp.	26	24	24	yes	T-0	651	651 (1)	9	376	96	96	1.1	71	1.0

Table 1b: Synopsis of external morphological and distribution information of 38 *Letheobia* species including species group classification. Data based on ROUX-ESTÈVE (1974), BROADLEY & WALLACH (2007b) and V. WALLACH (unpublished data). Parentheses include rare condition.

INS – inferior nasal suture contact (PO – preocular, R – rostral shield, 1 – supralabial 1, 2 – supralabial 2); PO – number of postoculars; DHP – dorsal head profile (R – rounded, T – tapered, P – pointed); LHP – lateral head profile (R – round, B – blunt, BP – bluntly pointed, P – pointed; AP – acutely pointed, CP – conically pointed); CK – keratinous keel on rostral (yes – present, no – absent); AK – orientation of cutting edge of keel to horizontal plane in degrees (0 – 0° or anteriorly directed, 33 – 33° angle, 45 – 45° angle, 90 – 90° or ventrally directed); Eye – eyespot (yes – present, no – absent); LHS – orientation of lateral head shields (V – vertical, O – oblique); PO:O – relative size of preocular and ocular (approximately equal (–) in size, preocular slightly (>), moderatley (>>), or greatly (>>>) larger than ocular, ocular slightly (<) larger than preocular); AS – apical or terminal spine (O – absent, 1 – tiny or minute, 2 – moderate); C – coloration (B – brown dorsum, P – pigmentless); R-E 1974 – species group classification after ROUX-ESTÈVE (1974) (T – *Typhlops*, R – *Rhinotyphlops*); Sp. Grp. – proposed species groups; Distribution – countries with known presence; Elevation – known elevation in meters (leading minus – below sea level).

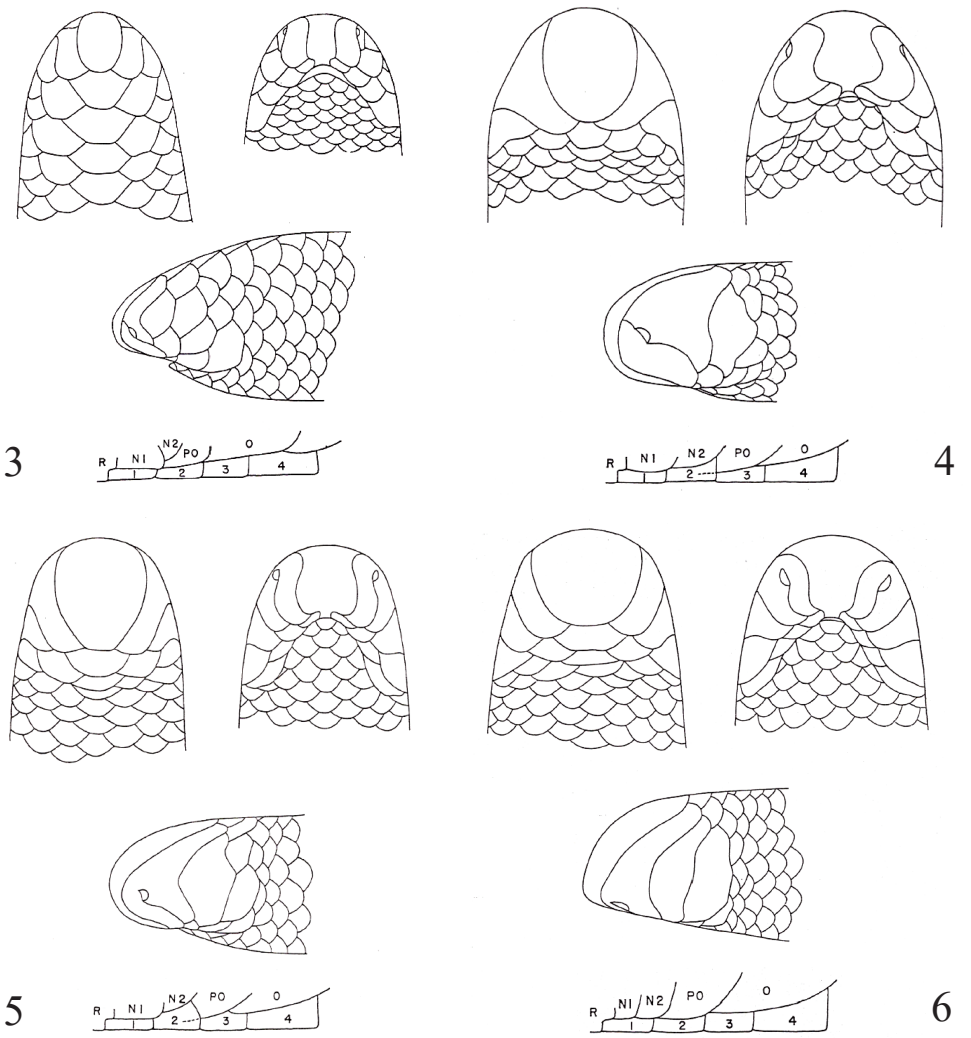
Tab. 1b : Zusammenstellung von Angaben zur äußeren Morphologie und Verbreitung für 38 *Letheobia* Arten sowie ihre Zuordnung zu Artengruppen. Die Daten stammen von ROUX-ESTÈVE (1974), BROADLEY & WALLACH (2007b) und V. WALLACH (unpubliziert). Klammern umfassen selten auftretende Werte.

INS – Naht des Nasale unterhalb der Nasenöffnung hat Kontakt mit (PO – Präoculare, R – Rostrale, 1 – Supralabiale 1, 2 – Supralabiale 2); PO – Postocularia; DHP – Kopfprofil von dorsal (R – gerundet, T – kegelig, P – spitz zulaufend); LHP – Kopfprofil von lateral (R – abgerundet, B – stumpf, BP – stumpf gespitzt, P – zugespitzt; AP – scharf zugespitzt, CP – kegelig gespitzt); CK – Kiel auf dem Rostrale (yes – vorhanden, no – fehlend); AK – Ausrichtung der Schneidekante des Kieles zur Horizontalebene in Graden (0 – 0° oder nach vorne gerichtet, 33 – 33° Winkel, 45 – 45° Winkel, 90 – 90° oder nach ventral gerichtet); Eye [Auge – Augenfleck] (yes – vorhanden, no – fehlend); LHS – Ausrichtung der seitlichen Kopfschilde (V – vertikal, O – schräg); PO:O – relative Größe von Präoculare zu Oculare (etwa gleich groß (–), Präoculare wenig (>), mäßig (>>) oder deutlich (>>>) größer als Oculare, Oculare etwas größer (<) als Präoculare); AS – Schwanzdorn (O – fehlend, 1 – winzig, 2 – mäßig entwickelt); C – coloration [Färbung] (B – Rücken braun, P – farblos); R-E 1974 – Artengruppeneinteilung nach ROUX-ESTÈVE (1974) (T – *Typhlops*, R – *Rhinotyphlops*); Sp. Grp. – hier vorgeschlagene Artengruppeneinteilung; Distribution / Verbreitung – Länder mit bekannten Vorkommen; Elevation – bekannte Höhenlage (führendes Minuszeichen – unter dem Meeresniveau).

	INS	PO	DHP	LHP	CK	AK	Eye	LHS	PO:O	AS	C	R-E 1974	Sp. Grp. *Letheobia*	Distribution/Verbreitung	Elevation (m)/ Höhenlage (m)
L. zenkeri	PO	1-2	R	R	no	—	no	V	-	O	P	T I	*zenkeri*	S Cameroon	20-620
L. uluguruensis	2	3 (5)	R	R	no	—	no	V	>>>	1	P	T II	*leucosticta*	E Tanzania	760-1,000
L. leucosticta	2	3	R	R	no	—	yes	V	<	O	P	T II	*leucosticta*	Guinea, Liberia	100
L. manni	2	3-4	R	R	no	—	no	V	>	1	B	T V	*decorosa*	W Liberia	100
L. angeli	2	2	R	R	no	—	no	V	>		B	T V	*decorosa*	SE Guinea	500
L. decorosa	R (1)	4	R	B	no	—	no	V	-	1	B	T V	*decorosa*	Cameroon, W Central African Republic	10-1,775
L. jubana	1	3-4	R	B	no	—	yes	V	<	1	B	T V	*decorosa*	S Somalia	20
L. praeocularis	1-2	3-5	T	P	yes	0	no	V	<	1	P	R V	*praeocularis*	E Nigeria, S Congo, SW Dem. Rep. Congo, NW Angola	200-700
L. stejnegeri	1	2-3	T	P	yes	0	no	V	<	1	P	R V	*praeocularis*	E Congo, W Dem.Rep. Congo	300-500
L. newtoni	2	3-4	P	P	yes	0	no	V	-	O	P	R IV	*simoni*	São Tomé Is., Rolas Is.	5-515
L. somalica	1-2	4-6 (3)	P	P	yes	0	no	V	-	1	P	R IV	*simoni*	Ethiopia	600-2,300
L. crossii	2	4 (3-5)	P	P	yes	0	no	V	-	O	P	R IV	*simoni*	S Nigeria, central Togo	55-545
L. feae	1-2	2-3	P	AP	yes	0	no	V	-	O	P	R IV	*simoni*	São Tomé Is.	165-1,220
L. simoni	2	2 (3)	P	AP	yes	0	no	V	>	O	P	R IV	*simoni*	Israel, Palestine, NW Jordan, W Syria	-250 to 965
L. erythraea	2	3 (4)	P	CP	yes	0	no	V	>>	O	P	R IV	*simoni*	N Eritrea	1,800-2,200
L. episcopus	2	2 (3-4)	P	AP	yes	0	no	V	>>>	O	P	R IV	*simoni*	SE Turkey	500-640

Table 1b (continued from preceding page). / Tab. 1b (Fortsetzung der vorangegangenen Seite).

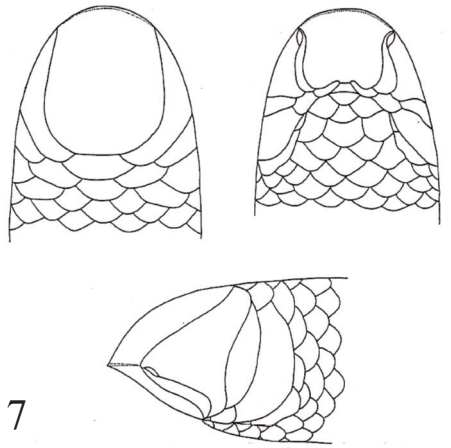
	INS	PO	DHP	LHP	CK	AK	Eye	LHS	PO:O	AS	C	R-E 1974	Sp. Grp. *Letheobia*	Distribution / Verbreitung	Elevation (m) / Höhenlage (m)
Letheobia nov. sp. 1	2	3-4	R	R	no	—	yes	O	>	O	P	R VI	*pallida*	Central Nigeria	135
L. largeni	2 (1)	4	R	R	no	—	no	O	>	1	P	R VI	*pallida*	W Ethiopia	515
L. swahilica	2	3-4	R	R	no	—	no	O	>	1	P	R VI	*pallida*	SE Kenya, NE Tanzania	0-50
L. pallida	1-2	3-4	R	R	no	—	no	O	>	1	P	R VI	*pallida*	Zanzibar Is.	0-55
L. toritensis	1-2	4 (3-5)	R	R	no	—	no	O	>	1	P	R VI	*pallida*	SE South Sudan	620-1,200
L. pembana	2	4	R	R	no	—	no	O	>	2	P	R VI	*pallida*	Pemba Is.	0-100
L. debilis	2	3-4	R	B	no	—	no	O	>	1	P	R VI	*pallida*	S Central African Republic	400-800
L. mbeerensis	2	3	R	B	no	—	yes	O	>>	O	P	R VI	*pallida*	Central Kenya	1,220
L. lumbriciformis	2 (1)	3-4 (2-5)	R	B	yes	0	no	O	>>>	1	B	R VI	*gracilis*	SE Kenya, NE Tanzania, Zanzibar Is.	0-55
L. wittei	2	3 (4)	R	B	yes	90	no	O	>	1	P	R VI	*gracilis*	NW Dem. Rep. Congo	520
L. rufescens	2	3 (4-6)	R	B	yes	45/90	no	O	>	O	P	R VI	*gracilis*	W Central African Republic, N Dem. Rep. Congo	430-650
L. akagerae	1	4	R	B	yes	45	no	O	>	1	P	R VI	*gracilis*	E Rwanda	1,290
L. katangensis	2	4	R	B	yes	45	no	O	>	1	P	R VI	*gracilis*	SE Dem. Rep. Congo	930
L. gracilis	2 (1)	3 (4-5)	R	B	yes	45	no	O	>	1	P	R VI	*gracilis*	SW Tanzania, SE Dem. Rep. Congo, NE Zambia	600-1,600
L. graueri	2 (1)	3-4 (2-5)	R	B	yes	45	no	O	>>	1	P	R VI	*gracilis*	E Dem. Rep. Congo, W Uganda, Rwanda, Burundi, W Tanzania	700-2,500
L. sudanensis	2 (1)	4-6 (3)	R	B	yes	45/90	no	O	>>	1	P	R VI	*gracilis*	NE Dem. Rep. Congo	700-1,300
L. kibarae	2 (1)	4 (3-5)	R	BP	yes	45	no	O	>>>	1	P	R VI	*gracilis*	SE Dem. Rep. Congo	700-1,250
L. pauwelsi	1	3	T	BP	yes	45	no	O	>>>	1	P	R V	*caeca*	Central Gabon	580
Letheobia nov. sp. 2	2	4	T	BP	yes	33	yes	O	>	O	P	R V	*caeca*	NE Central African Republic	600
L. caeca	R	3-4	T	P	yes	0	no	O	>	1	P	R V	*caeca*	S Cameroon, Eq. Guinea, W Gabon, S Congo	65-1,300
L. acutirostrata	1	3-4	T	P	yes	45	no	O	>	1	P	R V	*caeca*	N & W Dem. Rep. Congo	150-600
L. weidholzi nov. sp.	2	3	T	P	yes	0	no	O	>	O	P	R V	*caeca*	N Cameroon	525



Figs. 3–12: Dorsal, ventral and lateral views of the heads of ten species of *Letheobia* after ROUX-ESTÈVE (1974). In brackets, the species group which is represented by the taxon. The supralabial imbrication pattern (SIP) is indicated and illustrated below head views 3–6.

Abb. 3–12: Dorsal-, Ventral- und Lateralansichten der Köpfe von vier *Letheobia*–Arten nach ROUX-ESTÈVE (1974). In eckigen Klammern die Artengruppe, für welche das Taxon stellvertretend abgebildet ist. Der Supralabial-Überlappungstyp (SIP) ist angegeben und unterhalb der Kopfansichten 3–6 dargestellt.

3 – *Letheobia zenkeri* (STERNFELD, 1908) [*L. zenkeri*]; T–0 SIP.
4 – *Letheobia uluguruensis* (BARBOUR & LOVERIDGE, 1928) [*L. leucosticta*]; T–II SIP.
5 – *Letheobia manni* (LOVERIDGE, 1941) [*L. decorosa*]; T–II SIP.
6 – *Letheobia decorosa* (BUCHHOLZ & PETERS in PETERS, 1875) [*L. decorosa*]; T–0 SIP.
7 – *Letheobia stejnegeri* (LOVERIDGE, 1931) [*L. praeocularis*].
8 – *Letheobia somalica* (BOULENGER, 1895) [*L. simoni*].
9 – *Letheobia feae* (BOULENGER, 1906) [*L. simoni*].
10 – *Letheobia pallida* COPE, 1869 [*L. pallida*].
11 – *Letheobia rufescens* (CHABANAUD, 1917) [*L. gracilis*].
12 – *Letheobia caeca* (DUMÉRIL, 1856) [*L. caeca*].



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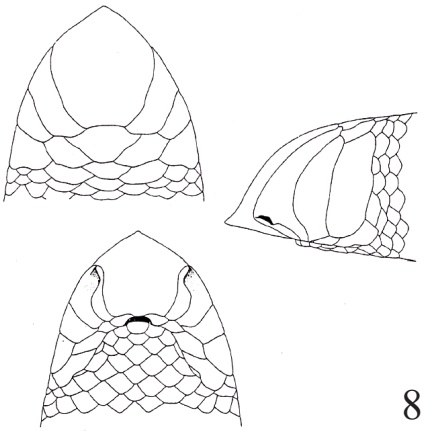

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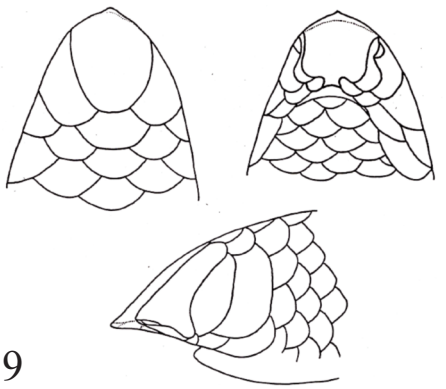

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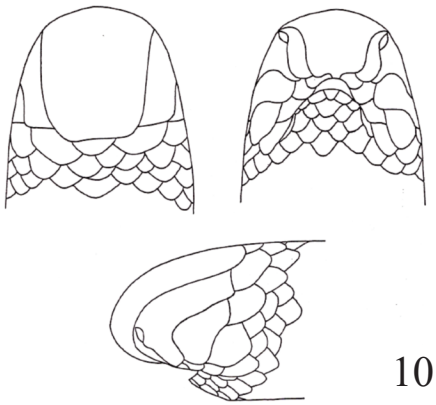

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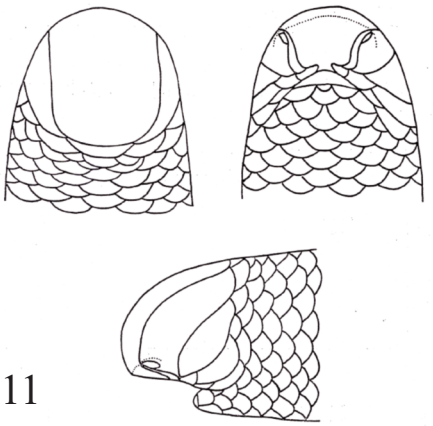

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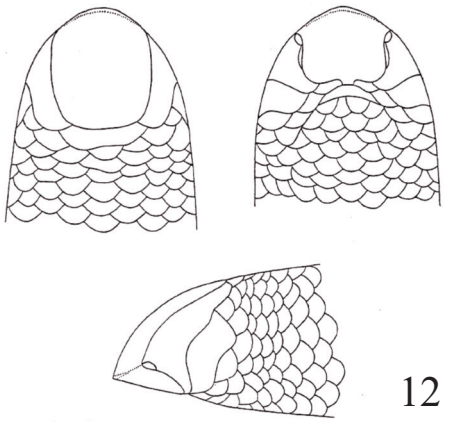


12

Habitat.– The type locality is grassland with scrub trees around 500 m elevation. It is found within the humid Sudan-Guinea Savanna biome or the Tropical Wet-Dry Savanna (Aw) climate of KÖPPEN (1884). The wet season occurs from late April to early October with a mean annual precipitation of 1,000 mm. The mean minimum and maximum temperatures year-round are 21.7 °C and 34.5 °C ($\bar{x}$ = 28.1 °C), respectively, with the cool season coinciding with the wet season (dry season occurs during the hottest months of November to March with no precipitation). Data from OLDENBORGH (2018) for WMO station (code 64860.1) near Poli for the years 1934–1996, available at < https://climexp.knmi.nl/getprcpall.cgi?id=someone@somewhere&WMO=64860.1&STATION=POLI&extraargs= >.

Comparisons.– Reference to Table 1 reveals that *L. weidholzi* is closest in scale counts to *L. graueri* (STERNFELD, 1913), and *L. gracilis* (STERNFELD, 1910), and closest in head profiles to *L. acutirostrata* (ANDERSSON, 1916), and *L. praeocularis* (STEJNEGER, 1894). *Letheobia weidholzi* differs from *L. graueri* (of Uganda, Tanzania and SE Democratic Republic of the Congo) in having an anterior scale row reduction (26-24-24 vs. 24-24-24), a higher number of mean total middorsal scales (651 vs. 535), a slightly more attenuate body (L/W ratio 96 vs. 58–89), a tapered dorsal head profile (vs. round), a pointed lateral head profile (vs. blunt), an elongate ocular shield (vs. small scale), and absence of an apical spine (vs. present). It differs from *L. gracilis* (of SE Democratic Republic of the Congo and Zambia) in the numbers of anterior and midbody scale rows (26 vs. 22–24 and 24 vs. 22), having fewer mean middorsal scale counts (651 vs. 685), a tapered dorsal head profile (vs. round), a pointed lateral head profile (vs. blunt), an elongate ocular shield (vs. small scale), and absence of an apical spine (vs. present). *Letheobia weidholzi* differs from *L. acutirostris* (of the Democratic Republic of the Congo) in middorsal scale count (651 vs. 440–513, $\bar{x}$ = 477), inferior nasal suture contact (SL 2 vs. SL 1), and in absence of an apical spine (vs. present). It differs from *L. praeocularis* (of Democratic Republic of the Congo and Angola) in number of middorsal scales (651 vs. 423–545, $\bar{x}$ = 507), in orientation of lateral head shields (oblique vs. vertical), in having the preocular larger than the ocular (vs. smaller than ocular), and absence of an apical spine (vs. present).

Within the borders of, or in proximity to, Cameroon are six species of *Letheobia*: *L. caeca*, *L. crossii*, *L. decorosa*, *L. rufescens*, *L. zenkeri* and an undescribed species (nov. sp. 2). *Letheobia weidholzi* can be distinguished from *L. caeca* by a greater number of middorsals (651 vs. 417–561, $\bar{x}$ = 493), fewer subcaudals (9 vs. 10–12), higher length/width ratio (96 vs. 46–87, $\bar{x}$ = 70), location of inferior nasal suture conact (SL 2 vs. R), and absence of apical spine (vs. present). It can be separated from *L. crossii* by having more total middorsals (651 vs. 455–513, $\bar{x}$ = 482), a larger length/width ratio (96 vs. 54–96, $\bar{x}$ = 71), a tapered dorsal profile (vs. pointed), and obliquely oriented lateral head shields (vs. vertically). *Letheobia weidholzi* can be identified in comparison with *L. decorosa* by anterior and posterior scale row reductions (vs. none), more total middorsals (651 vs. 460–542, $\bar{x}$ = 490), fewer subcaudals (9 vs. 10–12), a more attenuate body (L/W 96 vs. 45–66, $\bar{x}$ = 56), a broader rostral shield (RW/HW 0.71 vs. 0.59–0.67), location of contact of inferior nasal suture (SL 2 vs. R or SL 1), snout tapering or pointed in both profiles (vs. rounded or blunted), presence of a horizontal keratinous cutting edge to rostral (vs. absence), lateral head shield with oblique orientation (vs. vertical), preocular larger than ocular (vs. equal in size), and absence of apical spine (vs. present). Compared to *L. rufescens*, *L. weidholzi* can be identified by a greater number of scale rows (26-24-24 vs. 20-20-20 or 22-20-22), a T–0 supralabial imbrication pattern (vs. T–II), a larger tail length ratio (1.1 % vs. 0.7–0.8 %), and tapered or pointed head profile (vs. rounded or blunted). *Letheobia weidholzi* can be separated from *L. zenkeri* by number of scale rows (26-24-24 vs. 20-18-18), total middorsals (651 vs. 250–281), total length (376 mm vs. 130–150 mm), length/width ratio (96 vs. 41–52), relative tail length (1.1 % vs. 1.7 %), relative rostral width (0.71 vs. 0.32), location of contact of infranasal suture (SL 2 vs. subocular), number of postoculars (3 vs. 1–2), head profiles (tapered/

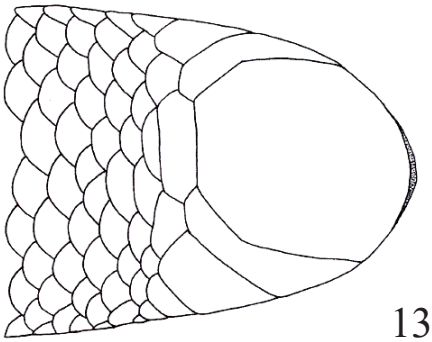
pointed vs. rounded), horizontal keratinous edge present on rostral (vs. absent), lateral head shield orientation (oblique vs. vertical), and preocular larger than ocular (vs. equal in size). From *Letheobia* nov. sp. 2, *L. weidholzi* can be distinguished by the numbers of midbody scale rows (24 vs. 22), total middorsals (651 vs. 451) and subcaudals (9 vs. 12), total length (376 mm vs. 134 mm), length/width ratio (96 vs. 49), relative tail length (1.1 % vs. 1.5 %), relative rostral width (0.71 vs. 0.55), head profiles (tapered/pointed vs. rounded/blunted), horizontal keratinous keel on rostral (present vs. absent), eyespot (absent vs. present), and lateral head shield orientation (oblique vs. vertical).

DISCUSSION

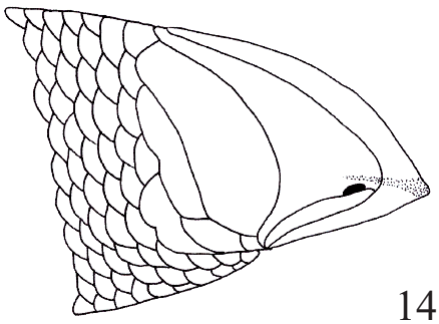
Scolecopidians, most of which are small to miniature in size, are fossorial and semi-fossorial vertebrates that form the basal group of snakes (Vidal et al. 2010; Pyron et al. 2013; Zheng & Wiens 2016). They are phylogenetically the most primitive living snake group and currently are divided into five families: Anomalepididae (with 18 species), Leptotyphlopidae (119 species), Gerrhopilidae (18 species), Xenotyphlopidae (one species), and Typhlopidae (261 species) (Vidal et al. 2010). Among the cosmopolitan Typhlopidae, the following genera (and approximate number of species) are currently recognized (Hedges et al. 2014; Pyron & Wallach 2014; Wallach et al. 2014): *Acutotyphlops* (5 species), *Afrotyphlops* (23±4 species), *Amerotyphlops* (15 species), *Anilios* (50 species), *Antillotyphlops* (12 species), *Argyrophis* (11 species), *Cubatyphlops* (12 species), *Cyclotyphlops* (one species), *Grypotyphlops* (one species), *Indotyphlops* (22 species), *Letheobia* (34±1 species), *Madatyphlops* (13±4 species), *Malayotyphlops* (13 species), *Ramphotyphlops* (19 species), *Rhinotyphlops* (6 species), *Typhlops* (22 species), and *Xerotyphlops* (5 species).

Within the subfamily Afrotyphloinae, endemic to Africa, except for the extralimital *Letheobia episcopus* (Franzen & Wallach, 2002) and *L. simony* (Boettger, 1879), all typhlopids except *Typhlops coecatus* Jan, 1864, and *Madatyphlops calabresii* (Gans & Laurent, 1965), *M. cuneirostris* (Peters, 1879), *M. leucocephalus*, (Parker, 1930), and *M. platyrhynchus* (Sternfeld 1910) can be referred to one of three genera: *Afrotyphlops*, *Letheobia*, or *Rhinotyphlops*. Allocation to one of these three genera is complicated due to the fact that synapomorphies are unknown for any of them. Species at the extreme ends of the generic spectrum are easily recognizable but with some 65 species involved, there is an overlap of diagnostic characters for certain taxa, resulting in controversy about their correct affinity. However, in general, *Afrotyphlops* is characterized by dark brown or black dorsal pigmentation, posterior scale row reduction, large body size (400–900 mm), thick body (L/W 20–50), distinct eyes with pupils, and mainly T–II SIP; *Rhinotyphlops* is characterized by light brown or pigmentless dorsum, with or without posterior scale row reduction, moderate body size (< 500 mm), moderate body width (L/W 30–75), indistinct eyes (usually a black dot), and mainly T–0 SIP; *Letheobia* is characterized by a pigmentless or pink body, normal absence of posterior scale row reduction, small body size (200–500 mm), thin body (L/W 45–130), absence of eyes, and mainly a T–0 SIP and an keratinous keel on the rostral.

The genus *Letheobia* Cope, 1869, an Africa endemic with two extralimital species in the Middle East, now comprises 34 or 35 recognized species (with at least two undescribed taxa, see Table 1): *L. acutirostrata* (Andersson, 1916), *L. akagerae* Dehling et al., 2018, *L. angeli* (Guibé, 1952), *L. caeca* (Duméril, 1856), *L. crossii* (Boulenger, 1893), *L. debilis* (Joger, 1990), *L. decorosa* (Buchholz & Peters *in* Peters, 1875), *L. episcopus* (Franzen & Wallach, 2002), *L. erythraea* (Scortecci, 1928), *L. feae* (Boulenger, 1906), *L. gracilis* (Sternfeld, 1910), *L. graueri* (Sternfeld, 1913), *L. jubana* Broadley & Wal-



13



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LACH, 2007, *L. kibarae* (WITTE, 1953), *L. largeni* BROADLEY & WALLACH, 2007, *L. leucosticta* (BOULENGER, 1898), *L. lumbriciformis* (PETERS, 1874), *L. manni* (LOVERIDGE, 1941), *L. mbeerensis* MALONZA et al., 2016, *L. newtoni* (BOCAGE, 1890), *L. pallida* COPE, 1869, *L. pauwelsi* WALLACH, 2005, *L. pembana* BROADLEY & WALLACH, 2007, *L. praeocularis* (STEJNEGER, 1894), *L. rufescens* (CHABANAUD, 1917), *L. simoni* (BOETTGER, 1879), *L. somalica* (BOULENGER, 1895), *L. stejnegeri* (LOVERIDGE, 1931), *L. sudanensis* (K. P. SCHMIDT, 1923), *L. swahilica* BROADLEY & WALLACH, 2007, *L. toritensis* BROADLEY & WALLACH, 2007, *L. uluguruensis* (BARBOUR & LOVERIDGE, 1928), *L. wittei* (ROUX-ESTÈVE, 1974), and *L. zenkeri* (STERNFELD, 1908). *Letheobia katangensis* (WITTE, 1933) is not currently recognized but appears to be a valid species (WALLACH, unpubl. data).

Figs. 13–17: Holotype of *Letheobia weidholzi* sp. nov. (NMW 23492).

Abb. 13–17: Holotypus von *Letheobia weidholzi* sp. nov. (NMW 23492).

13 – Illustration of dorsal head. / Graphik Kopf von dorsal.

14 – Illustration of lateral head. / Zeichnung Kopf von lateral.

15 – Dorsal view of head. / Foto Kopf von dorsal.

16 – Lateral view of head. / Foto Kopf von lateral.

17 – Ventral view of head. / Foto Kopf von ventral.

Letheobia (type species *L. pallida*) was proposed by Cope (1869) and recognized by Hoffmann (1890) but synonymized with *Typhlops* by Boulenger (1893), reaffirmed by Werner (1921). Further authors continued to recognize a universal *Typhlops* (Ditmars 1910; Loveridge 1957; Terent'ev 1961; Witte 1962; Isemonger 1968) until Roux-Estève (1974) resurrected *Rhinotyphlops* with *Letheobia* as a synonym. Species of *Letheobia* remained submerged within *Rhinotyphlops* (Hahn 1980 [with 22 sp.]; Welch 1982 [22 sp.]; Sokolov 1988 [21 sp.]; Welch 1994 [25 sp.]; Frank & Ramus 1995 [23 sp.]; McDiarmid et al. 1999 [28 sp.]; Mattison 1999 [28 sp.]; Brogard 2005 [27 sp.]; Delhay 2009 [30 sp.]) until Broadley & Wallach (2007b) removed it and recognized 22 species (17 former *Rhinotyphlops* species with five new ones). In the past decade, the composition of *Letheobia* has undergone minor changes. Hedges et al. (2014) allocated 31 species to *Letheobia* whereas Pyron & Wallach (2014) recognized 28 species and Wallach et al. (2014) recognized 33 species. Differences between the three publications are as follows. In Wallach et al. (2014), *Letheobia ataeniata* (Boulenger, 1912) and *L. unitaeniata* (Peters, 1878) were shown to be memebers of *Rhinotyphlops* and *L. obtusa* (Peters, 1865) a member of *Afrotyphlops* based on molecular evidence (Hedges et al. 2014). West African *T. coecatus* (not examined) appears to be related to Caribbean *Typhlops* as it shares a T–III SIP, narrow rostral, and a concave supranasal shield (synapomorphy for *Typhlops*). If *L. zenkeri* is a true *Letheobia*, it must be the most primitive member of the genus as it has the lowest scale row count (18-18-18), lowest middorsal count (250– 281), a relatively long tail (1.7–3.0%), the narrowest rostral (1/3 head width) and the fewest postoculars (1–2), in addition to a primitive unicameral tracheal lung (Pyron & Wallach 2014). It is retained here in *Letheobia* until molecular data are available. Molecular data placed *A. obtusus* at the base of the *Afrotyphlops* clade so Hedges et al. (2014) transferred Broadley and Wallach's (2007) *L. obtusa* group (*decorosa*, *jubana*, *obtusa*) to *Afrotyphlops*. However, the authors of the present paper retain *L. decorosa* and *L. jubana* in *Letheobia* based on the blunt lateral profile and visceral data (Pyron & Wallach 2014: tab. 6).

Within *Letheobia*, in addition to midbody scale row variation from 18–30, middorsal scale variation from 250–737, length/width ratios from 38–129, eyespots and apical spines present or absent, and supralabial imbrication patterns of T–0 or T–II, there is morphological variation in dorsal and lateral snout shapes in species with round, blunt, tapered, bluntly pointed, pointed and acutely pointed profiles. Unfortunately, molecular data are known for only four species (*Letheobia episcopus*, *L. feae*, *L. newtoni*, *L. simoni*), all of which belong to the *L. simoni* species group (Roux-Estève's 1974, *Rhinotyphlops* Group IV), so relationships of the numerous other species remain unresolved and rest on morphological data. Currently, all that is certain is that *Letheobia feae* and *L. newtoni* are sister taxa to *L. episcopa* and *L. simoni*. Futhermore, *Letheobia* is the sister group to *Rhinotyphlops* and together they form the sister group to *Afrotyphlops* to complete the African typhlopid clade (Hedges et al. 2014). Below, the authors informally group the *Letheobia* species into two clades of eight species groups: one clade has five groups with vertically-oriented ocular and preocular shields (Figs. 3–9) and the other has three groups with obliquely arranged shields (Figs. 10–12). Each of these clades has basal species with rounded and blunt profiles (Figs. 3–5, 10–11) and derived species with tapered and pointed profiles (Figs. 7–9, 12). Likewise, some groups lack a horizontal keratinous rostral keel (Figs. 3–6, 10) while others possess one (Figs. 7–9, 11–12). The "vertical" groups are *L. zenkeri* (one sp.), *L. leucosticta* (2 sp.), *L. decorosa* (4 sp.), *L. praeocularis* (2 sp.) and *L. simoni* (7 sp.), and the "oblique" groups are *L. pallida* (8 sp.), *L. gracilis* (9 sp.) and *L. caeca* (5 sp.). This arangement is obviously artificial and we must await molecular data on these species to sort out the phylogenetic relationships. It would not be surprising if the true relationships show a mixture of these proposed groups.

CONCLUSIONS

The Cameroon blind snake collected by Alfred WEIDHOLZ and described by Otto WETTSTEIN in an unpublished draft note, almost 80 years ago, was forgotten to memory and resided in the NMW herpetology collection until brought to light by R. GEMEL, second author of this paper. The rediscovery and description of *Letheobia weidholzi*, which appears to be most closely allied to *L. acutirostrata*, *L. caeca*, *L. praeocularis* and *L. stejnegeri*, now brings the total number of species in the genus to 35 or 36 (depending upon recognition of *L. katangensis*) with two additional species as yet undescribed (V. WALLACH, unpubl. data), making *Letheobia* the most diverse genus of snakes in Africa. However, the nearly 40 known species of *Letheobia* most assuredly do not represent their true composition as the biodiversity of most scolecophidians is greatly underestimated, based on both morphological and molecular studies. A study of internal and external morphology by BROADLEY & WALLACH (2007a) demonstrated that "*Leptotyphlops nigricans*" was actually a complex of 10 species ranging from north to south in Africa, THOMAS & HEDGES (2008) described 11 new Caribbean *Typhlops* based on morphology, WALLACH (2016) discovered six new cryptic species of *Epictia* in Mesoamerica based on morphology, and numerous molecular studies have revealed hidden diversity of cryptic species. For example, ADALSTEINSSON et al. (2009) revealed 53 cryptic species in the Leptotyphlopidae (24 in America and 29 in Africa), MARIN et al. (2013) found that the actual number of *Ramphotyphlops* (*Anilios*) species is at least twice that of the known fauna, and KORNILIOS et al. (2012, 2017) discovered that 10 genetic species are masquerading under the name of *Xerotyphlops vermicularis* (MERREM, 1820), from Greece to Iran. The fact that scolecophidians are much more diverse than actually realized is based partly on their rarity in collections due to small size and fossorial lifestyle but also because of their small geographic ranges. Apparently they lack the inclination or ability for long-range dispersal like their terrestrial, above-ground counterparts.

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Museum acronyms follow those listed in WALLACH et al. (2014) with the addition of NSP (Nairobi Snake Park, Republic of Kenya) and SDSU (San Diego State University, California, USA).

MATERIAL EXAMINED

In addition to the *Letheobia* material examined in BROADLEY & WALLACH (2007b – *debilis*, *decorosa*, *erythraeus*, *gracilis*, *graueri*, *jubana*, *kibarae*, *largeni*, *lumbriciformis*, *pallida*, *pembana*, *rufescens*, *somalica*, *sudanensis*, *swahilica*, *toritensis*, *uluguruensis*, *wittei*), the following specimens were also examined:

L. acutirostrata – DEMOCRATIC REPUBLIC OF THE CONGO: Kisangani (CM 90395, SDSU uncat. (2), USNM 515944), Kisantu (BMNH 1980.28), Madimba (FMNH 212324), Medje (MCZ 13600);

L. caeca – GABONESE REPUBLIC: no specific locality (ZMB 6320); FEDERAL REPUBLIC OF NIGERIA: bet. Gana-Gana & Sagbama (ZMH 1485);

L. crossii – FEDERAL REPUBLIC OF NIGERIA: Calabar (CM 92682–83, 92730), Emiga (BYU 18075) Keana (PEM–AM 4172, 4901), Wushishi (FMNH 25055, MCZ 49012);

L. decorosa – REPUBLIC OF CAMEROON: Sakbayeme (MCZ 14996), no specific locality (MNHN 2002.723);

L. episcopus – REPUBLIC OF TURKEY: Halfeti (ZFMK 74225–26; Michael Franzen (ZSM), 949/2000, 950/2000);

L. feae – SÃO TOMÉ & PRÍNCIPE: bet. Bombain & Santa (CAS 218907), bet. Bom Sucesso & Lago Amelia (CAS 219335), Cruzeiro (CAS 219310), Macambrara (CAS 219337), no specific locality (ZMUC R527);

L. gracilis – DEMOCRATIC REPUBLIC OF THE CONGO: Kaswabilenga (IRSNB 15391); REPUBLIC OF ZAMBIA: Mbala (MCZ dupl. uncat. (2), CM 90396–97);

L. graueri – DEMOCRATIC REPUBLIC OF THE CONGO: Randbergen (ZMB 27161); REPUBLIC OF TANZANIA: Ujiji (MCZ 30034), Uvinza (MCZ 54812);

L. leucosticta – REPUBLIC OF GUINEA: Conakry (MNHG 722.93);

L. lumbriciformis – REPUBLIC OF KENYA: Chaugamwe (USNM 43097), Mombasa (CM 22611);

L. newtoni – SÃO TOMÉ & PRÍNCIPE: bet. Bombain & Santa Adelaide (CAS 218908), Ribeira Peixe (UMMZ 187932);

L. pauwelsi – GABONESE REPUBLIC: Mont Iboundsi (IRSNB 2580);

L. pembana – ZANZIBAR: Pemba Is. (SMF 16688);

L. praeocularis – DEMOCRATIC REPUBLIC OF THE CONGO: Tshikaji (USNM 167001); REPUBLIC OF NIGERIA: Yola (R52197); WEST AFRICA: no specific locality (FMNH 75088);

L. simoni – ISRAEL: Tiberias (FMNH 69219), no specific locality (FMNH 69220; TAU R163, R1250–51, R2127, R8218; USNM 336231); SYRIAN ARAB REPUBLIC: Haiffa (MCZ 22083);

L. somalicus – FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA: Addis Ababa (MCZ 126236), Gondar (MSNM 2904a–c), Sheik Hussein (ANSP 4692–93;

L. stejnegeri – DEMOCRATIC REPUBLIC OF THE CONGO: Kafumba (BMNH 1980.32, SDSU uncat.), Luebo (USNM 23979);

L. sudanensis – DEMOCRATIC REPUBLIC OF THE CONGO: Bagbele (IRSNB 11516), Uélé (IRSNB 11515, 11517–58, 11520);

L. toritensis – REPUBLIC OF SOUTH SUDAN: Torit (FMNH 62344–46; MCZ 165045–48 [corrections from Broadley & Wallach 2007b]);

L. zenkeri – REPUBLIC OF CAMEROON: Bitye (MCZ 28465), Metet (MCZ 13242).

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