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from Angola (Amphisbaenia, Reptilia)





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## Three New Spade-Snouted Amphisbaenians from Angola (Amphisbaenia, Reptilia)

CARL GANS<sup>1</sup>

### ABSTRACT

Angola has a diverse herpetofauna that includes seven species of amphisbaenians. Besides two of the generalized genus *Zygaspis*, there are five species of the spade-snouted genus *Monopeltis*, and three of the spade-snouted genus

*Dalophia*. Two *Monopeltis* each from a single locality are here described as new, as is the most widely ranging species of *Dalophia* reported from seven localities in Angola and one in Zambia.

### INTRODUCTION

The extensive territory of Angola is for herpetologists one of the least known parts of Africa. This is particularly unfortunate because there are indications that it may be one of the most interesting areas of the continent. Angola is ecologically diverse. Its central and coastal regions are intermediate between the humid forests of Zaire and the extreme deserts of Southwest Africa, whereas these central and coastal regions are delimited inland by the Central African highlands. This suggests that the region has high potential for relict coastal, swamp, and plains populations.

A revision of the spade-snouted amphisbaenians of southern Africa (Broadley, Gans, and Visser, MS.) has permitted me to re-examine specimens from about 17 localities (fig. 1).

Most of the specimens came from museum collections; some were donated by Dr. J. Quartau and Mr. John Visser. The analysis disclosed specimens of *Monopeltis anchietae* (Bocage, 1873), *M. capensis* (Smith, 1848), *M. vanderysti* (Witte, 1922), and *Dalophia pistillum* (Boettger, 1895)<sup>1</sup>, as well as *D. welwitschii* Gray

<sup>1</sup>I here resurrect the name *Dalophia* Gray (1865), most recently used by Loveridge (1941). The reasons for setting aside *Tomuropeltis* (Laurent, 1947), a name which I used in my checklist (Gans, 1967), are given in Broadley, Gans, and Visser, MS. They are based entirely upon a reconsideration of the status and character pattern of the types of *Dalophia welwitschii* Gray, which show the truncate tail and tendency toward internasal contact characteristic of the assemblage that I (1967) referred to *Tomuropeltis*.

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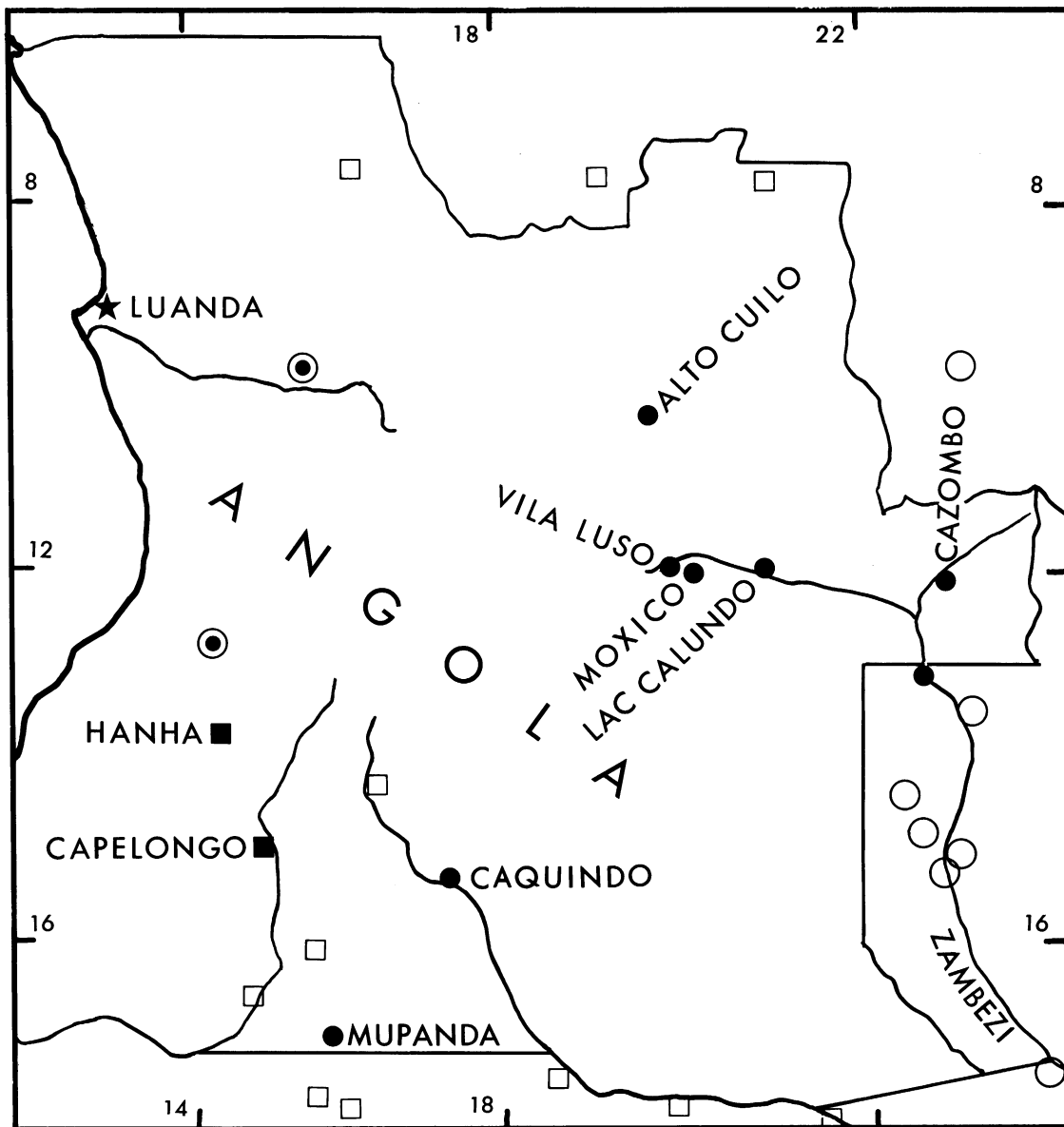


FIG. 1. Records for *Dalophia* and *Monopeltis* in Angola and environs. Solid star, *M. luandae*; solid squares, *M. perplexus*; open squares, other *Monopeltis*; solid circles, *D. angolensis*; bulls-eyes, *D. welwitschii*; open circles, other *Dalophia*.

(1865). With the exception of the last form, all records represent peripheral populations of otherwise wide-ranging species. The review led to the discovery that two interesting forms of *Monopeltis* and what was clearly the most widely distributed Angolan species of *Dalophia* were un-

named. Since the main report is still incomplete, the new species are here described in the hope that additional specimens may come to hand.

Terminology in this report is the same as in earlier descriptions for this group (Gans and Latifi, 1971; Gans and Lehman, 1973; Gans and

Broadley, 1974). Specimens derive from the following collections and I thank the curators (names in parentheses) who made the loans possible:

- AMNH, the American Museum of Natural History (R. G. Zweifel)
- CG, Gans collection, Ann Arbor
- CZL, Centro de Zoologia, Ministerio do Ultramar, Lisbon (J. F. L. Nunes, J. V. dos Santos, and Maria M. L. de C. Roque e Pinheiro)
- LCFM, Musée de la Chaux de Fonds, Switzerland (J. L. Perret)
- MD, Museo du Dundo Laboratoria de Biologia, Dundo, Lunda, Angola (these specimens were not examined)
- NMB, Naturhistorisches Museum, Basel, Switzerland (K. Kramer)
- NMSR, National Museum of (Southern) Rhodesia; collection now at Umtali Museum, Rhodesia (D. G. Broadley)
- USNM, National Museum of Natural History, Smithsonian Institution, (J. A. Peters and George Zug)

I am also grateful to the collectors for gifts of specimens, to Dr. Donald G. Broadley for hospitality and counsel, to the staff of the Centro de Zoologia for information on the ecology of *Dalophia angolensis*, to Ms. Jean Barks for technical assistance and to the National Science Foundation for support of these studies. Ms. Peggy Hees drew the animals.

#### ***Monopeltis luandae*, new species**

**Holotype.** AMNH 111338, a male (subadult or out of breeding season), collected during February, 1973, by Dr. J. A. Quartau on the ground in Luanda on the road toward the mouth of the Quanza River, Angola.

**Paratypes.** CG 5219, a smaller subadult male collected on January 21, 1971, by J. A. Quartau at the airport, Luanda, Angola, and USNM 20037 and 20038, respectively an adult male and a very immature female collected during 1892 by Heli Chatelain, at "Loanda," Angola.

**Diagnosis.** *Monopeltis luandae* has a higher number (29 to 36) of dorsal segments to a midbody annulus than does either *M. scalper* (13 to 19) or *M. vanderysti* (18 to 23) and differs from *M. vanderysti* in lacking contact between nasals and preoculars and in having 14 to 19 rather

than fewer than seven supernumerary dorsal half-annuli to the first 50 body annuli. It differs further from *M. scalper* in lacking precloacal pores. It is easily differentiated from *M. guentheri* and *M. schoutedeni* by absence of precloacal pores, from *M. anchietae* by the fusion of head shields in adults, and from *M. anchietae*, *M. capensis*, *M. zambezensis*, and *M. leonhardi* by having 15 to 16 rather than fewer than 11 caudal annuli. Its low number (fewer than 230) of body annuli distinguishes it from *M. sphenorhynchus mauricei*, which has more than 275.

**Description.** A small to medium-sized (203 to 385 mm. snout-vent length) species of *Monopeltis* with the (apparently faded) dorsal surface of the trunk and tail speckled with dark pigment that fuses into an accentuated area on the dorsal surface of the tail. The species has 223 to 227 body and 15 to 16 caudal annuli (up to the oval tip that shows some lateral compression), 29 to 36 (generally 30 or 32) dorsal and 14 to 20 ventral segments to a midbody annulus, and four first plus five to eight second postgenial segments. The azygous head shields are discrete at 218 mm. snout-vent length and show a broad isthmus of keratin at 385 mm., but with significant lateral notches in the heavily keratinized shield (fig. 2). There are no preoculars. The posterior processes of the nasals (which segments neither touch each other nor the lip) are excluded from contact with the ocular by a wide contact zone between the third supralabial and head shield. The pectoral region is wide and very short. The medial pair of shields are by far the largest. They are widest posteriorly and are joined anteriorly by a second and smaller medial pair (derivative of the first pectoral annulus) that widens anteriorly, with three to five pairs of much smaller shields clustering around the junction. One of the two of these may be replaced by a roughly parallel-sided lateral pair flanking the medial shields along their length. The lateral sulci are poorly expressed and the dorsal ones are absent. Both zones show major and crossing diagonal folding lines. Supernumerary dorsal half-annuli number 14 to 19 in the first 50 (14 to 24 in the first 100) body annuli and very few thereafter. The dorsal interannular sutures cross the trunk at right angles to its long axis. There are no precloacal pores. Autotomy occurs at the third to fourth caudal annulus.

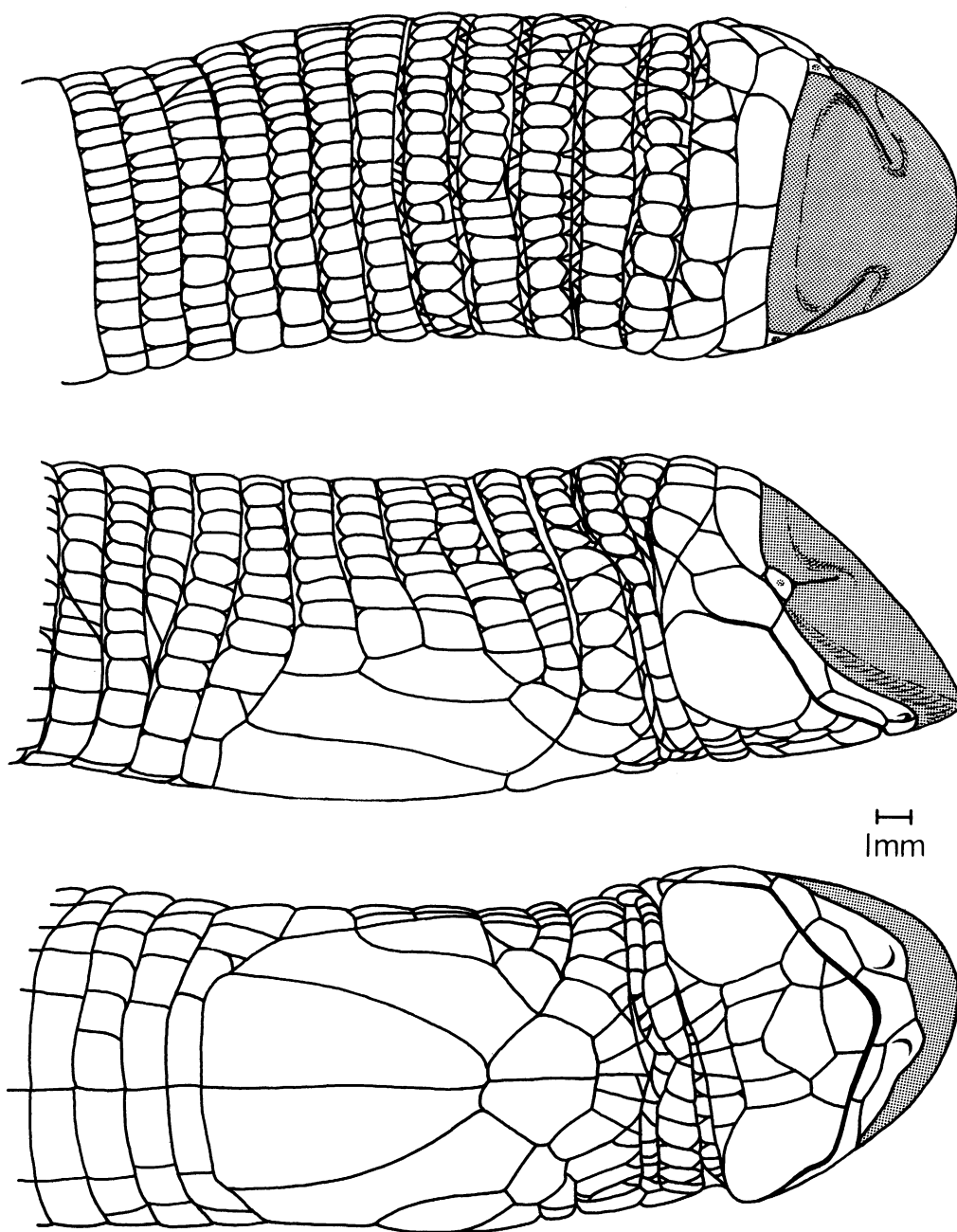


FIG. 2. *Monopeltis luandae*. Dorsal (top), lateral (middle), and ventral (bottom) views of anterior portion of holotype, CG 5232.

*Etymology.* The specific name refers to Luanda, the type locality.

*Locality Records.* ANGOLA: Luanda: CG

5219 (near airport after rain); AMNH 111338 (road to mouth of Quanza River); USNM 20037, 20038.



TABLE 1  
Data for Specimens of *Monopeltis luandae*

	1	2	3	4	5	6	7	8	9	10	11	12	13 + 14	15	16	17	18	19
CG 5219	(9)	226	4	(4)	15	19	5	0	-2	0	-	32-33 + 16	218 + 14	7	0	3/3	4	8
AMNH 111338	(9)	227	4	(3)	15	18	1	0	0	0	-	32-36 + 20	358 + 24	11	0	3/3/2	4	8
USNM 20037	(9)	226	5/4	(4)	16	19	2	1	0	0	-	29-30 + 14-15	385 + 27	12	0	3/3	4	5
USNM 20038	(9)	223	4	(3)	15	14	0	0	0	1	-	29-30 + 16	203 + 15	7	0	3/3	4	6

Key to the columns: 1. Number of anterior lateral annuli. 2. Number of total body annuli (including 1). 3. Number of laterals (when asymmetric, recorded left/right). 4. Autotomy site. 5. Number of caudal annuli. 6-11. Number of additional dorsal half-annuli corresponding respectively to the ventrally counted body annuli 1-50 (6), 51-100 (7), 101-150 (8), 151-200 (9), 201-250 (10), over 250 (11). 12. Number of segments to a midbody annulus (dorsal + ventral). 13. Snout-vent length (mm.). 14. Tail length (mm.). 15. Midbody diameter (mm.). 16. Number of precloacal pores. 17. Labial pattern (upper/lower). 18. number of segments to the first postgenital row. 19. Number of segments to the second postgenital row.

TABLE 2  
Data for Specimens of *Monopeltis perplexus*

	1	2	3	4	5	6	7	8	9	10	11	12	13 + 14	15	16	17	18	19
AMNH 47731	(9)	261	5	(6)	22	1	3	0	0	0	0	15-16 + 14-16	215 + 26	5	0	2/3	4	-
AMNH 47732	(10)	266	4/3	(7)	24	2	-1	0	0	0	1	16-17 + 16	255 + 29	6.5	0	2/3	4	-
AMNH 47733	(10)	261	4	(7)	22	0	3	0	0	0	2	15-16 + 14-16	260 + 28	6	0	2/3	4	-
AMNH 47734	(9)	270	4	(6)	22	1	2	0	0	0	1	16-17 + 16	300 + 32	6.5	0	4/4	4	-
AMNH 47735	(9)	270	5	(5)	22	1	-2	0	0	0	1	12-14 + 14	295 + 33	6	0	3/3	4	-

For key to columns see table 1.

***Monopeltis perplexus*, new species**

*Holotype.* AMNH 47732, a male taken by the Vernay-Angola expedition at "Hanha or Cape-longo," Angola, between May 3 and July 20, 1925.

*Paratypes.* 3 males (AMNH 47731, 47733, 47734) and one female (AMNH 47735), part of the same series.

*Diagnosis.* *Monopeltis perplexus* differs from *M. sphenorhynchus mauricei* in the greater number of caudal annuli (22 to 24 rather than 8 to 12) and the clearly marked autotomy site; from *M. anchietae*, *M. leonhardi*, and *M. capensis* in the higher number of body annuli (more than 261 rather than fewer than 221); and from these as well as *M. zambezensis* by the more slender body shape and elongate tail with clear caudal autotomy, which these lack. It differs from the forms *M. scalper*, *M. luandae*, and *M. vanderysti* by the higher number of body (more than 261 rather than fewer than 245) and caudal (more than 21 rather than fewer than 19) annuli. It has fewer supernumerary dorsal half-annuli (below 3 as contrasted with above 10) than any of the last group, except for *M. vanderysti*, from which it is easily distinguished by its broad fusion of the head shields.

*Description.* A small (215- to 300-mm. snout-vent length in adults), slender species of *Monopeltis* with the dorsal surface darkened by a speckling of individual melanophores evenly spaced across the segments (mainly after the first third of the body and to just ventral of the lateral sulci, but onto the ventral surface of the tail). The speckles fuse into a darker tone on the anterior part of the dorsal surface of the tail. The species has 261 to 270 body and 22 to 24 caudal annuli (up to the smoothly and parabolically rounded tip), 12 to 17 (generally 16) dorsal and 14 to 16 ventral segments to a midbody annulus, and four postgenial plus five postmalar segments. The azygous head shields are broadly fused and only a short, blind suture remains anterior to the ocular at the base of a notch in the heavy keratinous shield (fig. 3). There are no preoculars. The slender posterior processes of the nasals (which segments do not contact each other medially, but may touch the lip) are excluded from touching the ocular by a wide contact zone of the third supralabial and head shield. The pectoral region is relatively short and wide.

It is formed of six main shields, partial fusion occurring azygously between the lateral pairs, and the almost triangular medial pair being by far the largest. Sutures radiate from the front and a pair of enlarged segments of the prepectoral annulus inserts lateral to the medial pair. Lateral and middorsal sulci are clearly expressed. Fewer than three supernumerary dorsal half-annuli occur, mainly in the first and second 50 body annuli. The dorsal interannular sutures cross the trunk at right angles to its long axis. There are no precloacal pores. Autotomy occurs at the fifth to seventh caudal annulus.

*Etymology.* The specific name characterizes the uncertainty of affinities and type locality of this series.

*Locality Records.* ANGOLA: Hanha or Cape-longo: AMNH 47731-47735.

***Dalophia angolensis*, new species**

*Holotype.* CZL 167 collected during 1959 at Calombe, 7 km. "west" of Vila Luso, on Vila Luso-Moxico Road, Angola.

*Paratypes.* AMNH 111339; CZL 50, 204, 265, 292-300, 317, 318, 387, 388, 399, 400, part of the same series.

*Diagnosis.* The new species of *Dalophia* can immediately be separated from the wide-ranging *D. pistillum*, as well as *D. gigantea* (cf. Gans, 1967, for the status of these names), *D. longicauda*, and *D. luluae* (new combination), by the presence of caudal autotomy. Adults are much shorter (shorter than 362 mm. rather than longer than 365 mm.) and stouter than *D. ellenbergeri*, and *D. angolensis* also has a much shorter tail (approximately 40 mm., rather than 80 mm. in adults), and fewer caudal annuli (20 to 27, rather than 30 to 43). It differs from *D. welwitschii* by having a greater number of body annuli (302 to 324, rather than 264 to 270) and more regular contact of the two nasals, as well as nasalocular contact and angling of the interannular sutures along the dorsal surface of the anterior trunk and of the tail. The species can in each case be further defined by supplementary characteristics.

*Description.* A slender, medium-sized (290- to 362-mm. snout-vent length) species of *Dalophia* that lacks pigmentation and has 302 to 324 body and 20 to 27 caudal annuli, 16 to 24 (generally 18) dorsal and 12 to 18 (generally 14) ventral



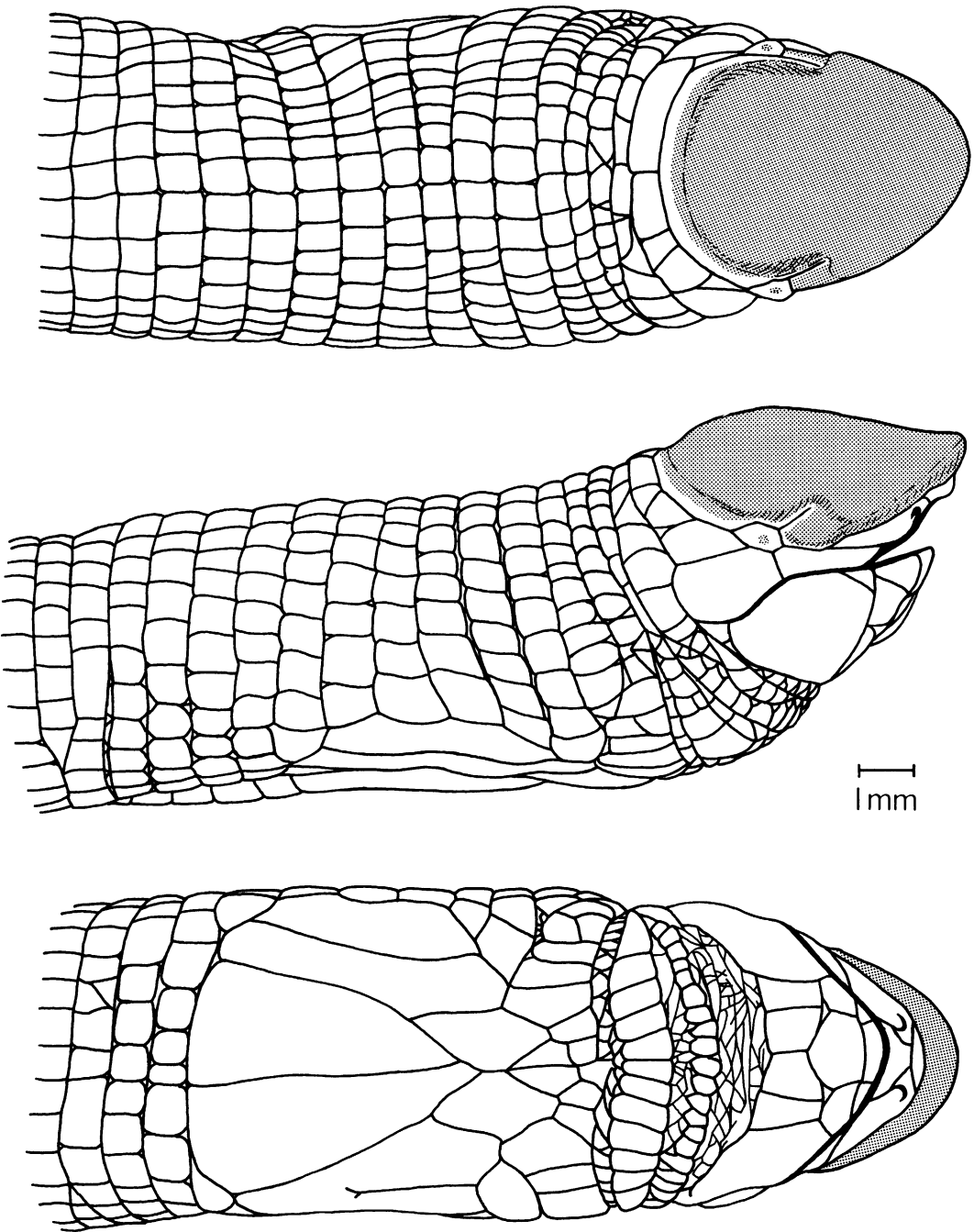


FIG. 3. *Monopeltis perplexus*. Dorsal (top), lateral (middle), and ventral (bottom) views of anterior portion of AMNH 47732.

segments to a midbody annulus and four or five first plus eight to 11 (generally eight or nine)

second postgenials. The head shields are broadly fused and only the lateral blind sutures remain

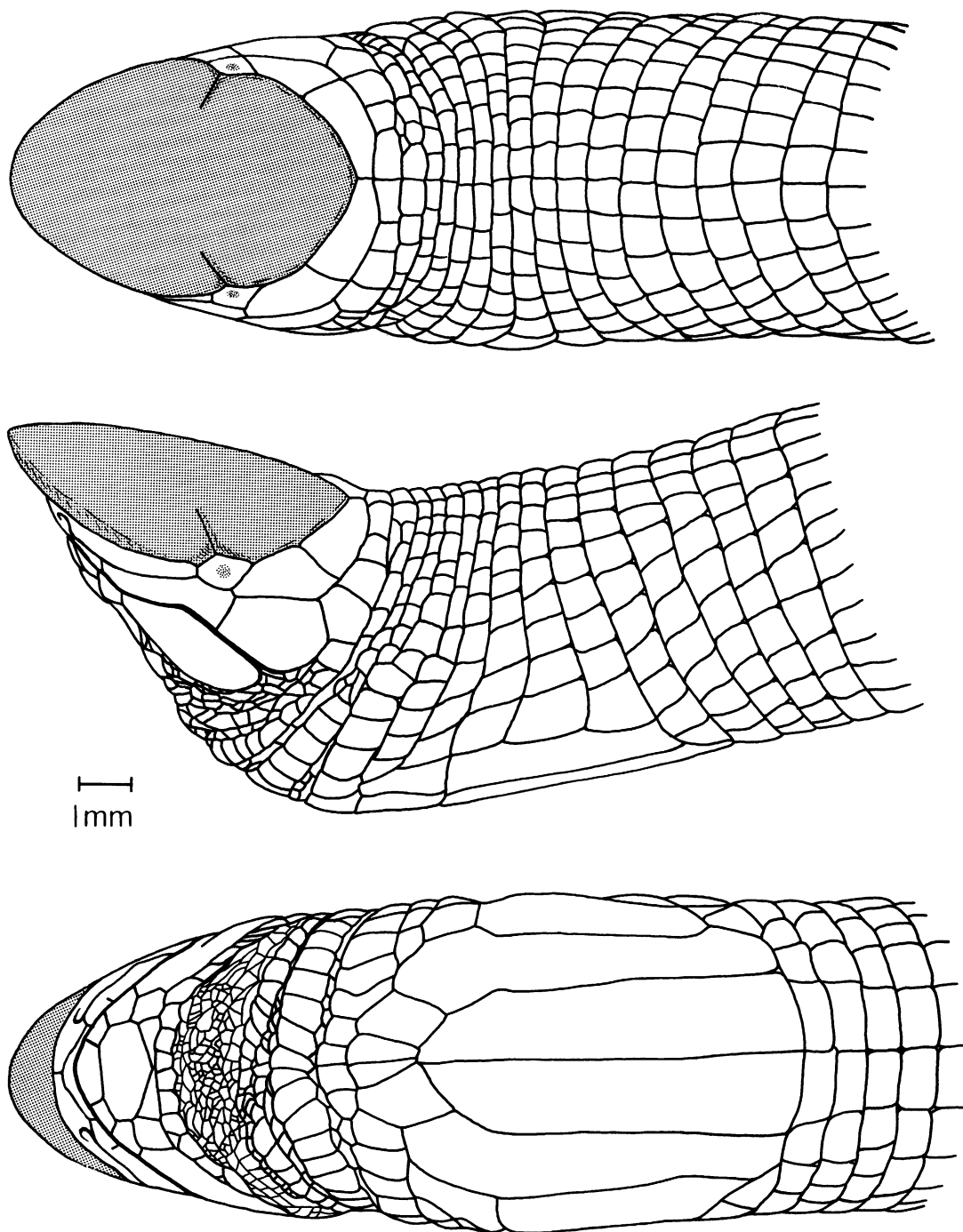


FIG. 4. *Dalophia angolensis*. Dorsal (top), lateral (middle), and ventral (bottom) views of anterior portion of CZL 297.

TABLE 3  
Data for Specimens of *Dalophia angolensis*

	1	2	3	4	5	6	7	8	9	10	11	12	13+14	15	16	17	18	19
LCFM (Unnumbered)	(11)	317	3	(7)	23	0	0	0	0	0	0	18-20+15-16	269+28	6	0	3/3	5	8
LCFM 848.46	(11)	315	4/3	(7)	23	3	3	-1	0	1	0	23-24+16-18	336+37	7	0	3/3	4	9
AMNH 111339	(11)	316	5	(7)	25	0	0	0	0	0	0	16-17+14	315+34	7	0	3/3	4	8
CZL 50	(11)	310	5	(6)	23	0	2	0	0	0	0	20+14	272+34	6	0	3/3	4	8
CZL 167	(11)	314	5	(6)	24	0	3	0	0	0	0	18-20+14	271+31	6	0	3/3	4	9
CZL 167 egg 43 × 7 mm.																		
CZL 167 egg 45 × 8 mm.																		
CZL 204	(10)	310	5	(6)	23	0	3	0	0	0	0	16-18+12-14	294+30	6	0	3/3	4	6
CZL 265	Head missing											18+14	240+31					
CZL 293	(11)	319	3	(7)	27	0	0	0	0	0	0	16-17+14	296+34	6	0	3/3	5	9
CZL 294	(11)	313	5	(7)	26	0	2	0	0	0	0	17-18+14	277+36	5	0	3/3	4	11
CZL 295	(11)	317	4	(7)	27	0	0	0	0	0	0	17-18+12	273+33	6	0	3/3	4	9
CZL 296	(12)	322	5	(6)	25	0	2	5	0	0	0	17-18+14	303+38	6	0	3/3	4	9
CZL 297	(11)	321	4	(7)	24	0	0	0	0	0	0	18-19+12	324+36	8	0	3/3	4	9
CZL 298	(11)	324	5	(7)	26	0	0	0	0	0	0	18-20+14	308+39	7	0	3/3	5	9
CZL 299	(12)	315	4	(7)	26	0	0	0	0	0	0	16-18+13-14	274+25	6	0	3/3	5	6
CZL 300	(11/12)	312	4	(7)	26	0	0	0	0	0	0	16-18+14-15	265+35	5	0	3/3	4	9
CZL 317	(12)	316	4	(6)	27	0	1	1	0	0	0	16+14	259+33	5	0	2/3	5	8
CZL 318	(11)	~	5	(6)	~	0	0	0	0	0	0	18+14	~180+x	-	0	3/3	4	8
CZL 387	(11)	311	6	(7)	23	2	2	0	0	0	0	18+14	131+12	3.5	0	3/3	4(5)	10
CZL 388	(11)	317	4	(6)	X	0	0	0	0	0	0	16-17+12-14	239+18	5	0	3/3	5	10
CZL 399	(10)	315	5/4	(6)	25	1	3	0	0	0	0	18-19+12	292+37	7	0	3/3	4	8
CZL 430	(11)	314	4	(6)	27	0	2	0	0	0	0	18+13-14	343+41	8	0	3/3	5	8
LCFM a.	(10)	302	4/3	(6)	20	0	3	0	0	0	1	18-20+14-15	276+-	7	0	3/3	4	8
LCFM b.	(11)	>314	-	(X)	-	-5	-3	-2	0	0	0	18-19+16	-+ -	8	0	3/3	4	10
LCFM c.	(11)	314	4	(6)	21	0	2	1	0	0	0	18+15-16	240+27	6	0	3/3	5	11
NMB 13332	(10)	324	2	(8)	25	0	2	0	0	0	0	17-18+14	333+39	7	0	3/3	4	8
NMB 13333	(10)	307	3	(6)	20	0	2	-1	0	0	0	19-21+15	362+38	8	0	3/3	4	9
NMSR 2826	(11)	>212	4/3	(7)	25	1	0	0	0	0	0	16-18+12	296+36	6	0	3/3	4	8

For key to columns see table 1.

(fig. 4). There are no preoculars, and the nasals (in narrow contact medially) almost always extend long wings laterally to touch the oculars. There are six elongate pectoral shields, the lateral ones often asymmetrically subdivided and the two medial pairs generally extending anteriorly into one or two annular rows. Lateral sulci are clearly expressed, but the dorsal sulcus is only indicated by intersegmental alignment. The sixth or seventh caudal annulus bears the well-defined autotomy constriction. There are few supernumerary dorsal half-annuli but the second 50 body annuli tend to show irregular dorsoventral alignments. The intersegmental sutures of the first 100 or so body annuli form anteriorly acute angles with the midline. The middorsal caudal segments posterior to the autotomy constriction are twice or more as wide as those near the base of the tail; the caudal interannular sutures form an anteriorly acute angle on the middorsal surface.

*Locality Records.* ANGOLA: — (Monard, 1937<sup>1</sup>); LCFM (unnumbered); LCFM 848.46. Alto Cuilo: MD 5344 (Laurent, 1964). Cazombo: MD 5790 (Laurent, 1964). Between Vila Luso and Moxico, Calombe, 7 km. "west" of Vila Luso: AMNH 111339; CZL 50, 167 (specimen and two eggs) 204, 265, 292-300, 317, 318, 387-388, 399, 430. Lac Calundo: MD 5601, 5705, 5744 (Laurent, 1964). Kakindo (Caquindo): LCFM (3 unnumbered); NMB 13332; (Monard, 1931, 1937; Loveridge, 1941). Mupanda<sup>2</sup>: NMB 13333 (Monard, 1937; Loveridge, 1941).

ZAMBIA: Zambezi River (13°01'S, 22°44'E): NMSR 2826.

*Etymology.* The specific name refers to the country.

*Biological Miscellanea.* The Alto Cuilo specimen had been caught by a hen (Laurent, 1964).

<sup>1</sup>Monard (1937) referred to seven specimens from Kakindo on the Kuvangu River and Kuvangu Mission, identified first as *M. ellenbergeri* and then as *M. granti transvaalensis*. Unfortunately he did not number his material nor are most of the LCFM specimens numbered. Nevertheless it appears that those "no locality" specimens do derive from Kakindo (=Caquindo).

<sup>2</sup>This locality was not mentioned for this form (Monard, 1937). It may represent a cataloging error as does NMB 13330 the paratype of *Amphisbaena ambuellensis* Monard, 1931, which is entered as "Kuvangu" from which locality Monard did not have specimens.

All the CZL specimens were apparently collected within an area of about one hectare that was being cleared of vegetation and the very sandy soil dug up to a depth of 15 to 20 cm. They were taken in slightly moist sandy soil covered with low scrub and isolated trees, representing secondary growth over an area that had formerly been planted. Approximately equal numbers of *Dalophia angolensis* and *Zygaspis niger* Broadley and Gans (1969) were taken and the collectors did not note ecological differences. The latter species does overlap the geographic ranges of *D. angolensis* and *D. ellenbergeri*. See Nunes and Tordo (1960) for a description of the region.

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