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Original article

A review of the genus *Thelotornis* A. Smith in eastern Africa, with the description of a new species from the Usambara Mountains (Serpentes: Colubridae: Dispholidini)

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Abstract.—The populations of *Thelotornis* in eastern Africa are reviewed. *Thelotornis kirtlandii* extends east of the Albertine rift to Uganda and the Imatong Mountains in southern Sudan, but in Tanzania it is only represented by a few relict populations in montane forests, surrounded by *T. mossambicanus* (Bocage) in the savanna. The latter taxon is recognised as a good evolutionary species, as it is sympatric with *T. capensis oatesii* (Günther) in Mutare District on the eastern escarpment of Zimbabwe. *Thelotornis usambaricus* sp. nov., intermediate between *T. kirtlandii* and *T. mossambicanus*, is described from coastal forests in northeastern Tanzania.

Key words.—*Thelotornis*, Dispholidini, Colubridae, taxonomy, East Africa.

In the last review of the genus *Thelotornis* (Broadley 1979), three subspecies of the savanna species *T. capensis* were recognised, *T. c. capensis* A. Smith in the southeast, *T. c. oatesii* (Günther) in the southwest, and *T. c. mossambicanus* (Bocage) in the east. Populations in northeastern Tanzania, eastern Kenya and southern Somalia, mainly in coastal forests, were considered to represent *T. c. mossambicanus* which had retained some primitive features of the western forest species *T. kirtlandii* (Hallowell). Rasmussen (1981) noted that specimens from the East Usambaras looked like intergrades between *T. kirtlandii* and *T. c. mossambicanus*. Derleyn (1978) had described *T. c. schilsi* from the Ruzizi plain in Burundi, but this form is known from only a few specimens and differs from *T. c. mossambicanus* only in its shorter tail and consequently lower subcaudal counts.

Riquier & Böhme (1996) suggested that *T. c. mossambicanus* might be conspecific with *T. kirtlandii*, but Rasmussen (1997) recorded a second Tanzanian specimen of the latter species from the Udzungwa Mountains, where it is at least parapatric with *T. c. mossambicanus*. While preparing the species accounts for Snakes of Zambia (Broadley *et al.*, in press), I realised that *Thelotornis* in eastern Africa required further investigation.

MATERIALS AND METHODS

This study was founded on the database from my 1979 study, supplemented by much additional material accessioned in the Natural History Museum of Zimbabwe and some data from the literature. The area covered lies east of Longitude 25° E, although additional data

from my 1979 study was tabulated for comparative purposes.

The same characters were used as in my 1979 study, but it was found that the colour patterns of head and neck provided more reliable characters than ventral counts, resulting in reinterpretation of the populations previously considered to represent intergradation between the subspecies of *T. capensis* and also those thought to represent *T. c. mossambicanus* with features of *T. kirtlandii*.

Lists of material examined appear as an appendix. Institutional acronyms follow Leviton *et al.* (1985), with the addition of: DCM = D.C. Moyer collection; JPT = J.P. Tello collection; KMH = Department of Zoology and Marine Biology, University of Dar es Salaam.

RESULTS AND DISCUSSION

CHARACTER ANALYSIS

1. Colour pattern of head: This is diagnostic for the four species and shows a clear sequence as the taxa adapt from a forest to a savanna habitat. The forest species *T. kirtlandii* and *T. usambaricus* both have crown of head and temporal region uniform bright green. In the former the supralabials may be uniform white or finely stippled in green or grey, whereas in the latter they are sparsely spotted with black, usually including a spotted triangle on the sixth labial (Fig. 1).

In *T. mossambicanus* the top of the head may be uniform bright green, there may be a speckled black Y-marking with the stem along the parietal sulcus and the arms across the supraoculars, or the head may be entirely speckled, in which case the ground colour becomes brownish. However, in this form the temporal region is always brown speckled with black.

In *T. capensis* the top of the head is blue-green, with a heavy pink and black speckled Y-marking, except in some arid savannas, where the whole of the crown is speckled with black. The temporal region is pink, each shield bordered with black. Head markings are poorly developed or absent in juveniles of all taxa.

2. Colour pattern of neck: *Thelotornis kirtlandii* has a series of black crossbars on the neck, the first one narrow and sometimes broken dorsally (Schmidt 1923, Pl. xiv, fig. 1; Riquier & Böhme 1996, fig. 1; Drewes & Vindum 1998, fig. 28). In *T. usambaricus* there are black, anteriorly directed chevrons (more distinct in subadults). In *T. mossambicanus* the anterior crossbars have metamorphosed into one or two elongate, black lateral blotches, the remaining crossbars being lost (Branch 1988, 1998, Pl. 31). *Thelotornis capensis* retains faint black crossbars, but also has two large black lateral blotches anteriorly, which may be confluent (Pienaar 1978, Pl. 72A; Broadley 1983, fig. 149; Auerbach 1987, Pl. 18/2).

3. Colour pattern of body: The two forest species have mottled dorsal patterns of brown, green and pale grey and are lighter below, whereas the two savanna species are ash grey, with diagonal series of whitish blotches edged with black anteriorly (vestiges of black chevrons), and scattered blotches of pink or orange; the ventrum is greyish white, streaked with brown, tending to darken posteriorly.

4. Rostral and nasals recurved onto upper surface of snout: This is a distinctive feature of *T. kirtlandii*, as pointed out by Bocage (1895) and Bogert (1940). It was used as a diagnostic character by Loveridge (1944), although not present in material from Somalia, Kenya and Tanzania that he assigned to "*T. kirtlandii kirtlandii*."

5. Infralabial counts (Table 1): *Thelotornis kirtlandii* is distinguished from all other taxa by its

Table 1. *Thelotornis*: variation in number of infralabials (sides). Modes are in bold.

Species	<i>N</i>	7	8	9	10	11	12	13	Mean
<i>kirtlandii</i>	108	1	40	97	7	8	0	0	9.20
<i>usambaricus</i>	46	0	0	3	21	44	21	3	11.00
<i>mossambicanus</i>	238	0	0	14	90	270	86	15	11.00
<i>capensis capensis</i>	154	0	0	4	54	209	37	3	10.94
<i>capensis oatesii</i>	362	0	0	13	125	467	112	7	10.97

low counts of 7 to 11, with a mode of 9, the rest have ranges from 9 to 13, with a mode of 11.

6. Loreals: In 1979, I showed that in *T. kirtlandii* there is clinal variation in this character; populations west of Benin have two loreals, the proportion of specimens with a single loreal increasing eastwards from Nigeria towards the Congo basin, until populations in the east all have a single loreal. In contrast, the incidence of two loreals in *T. usambaricus* is 72% and the percentage is even higher in *T. mossambicanus* and *T. capensis*, although occasional specimens of the latter species may have three loreals or none (due to fusion with internasal and prefrontal).

7. Ventral counts (Table 2): Female counts average only slightly higher than those of males. *Thelotornis kirtlandii* has counts usually averaging more than 170, *T. usambaricus* averages above 160 and *T. mossambicanus* below 160. In *T. capensis*, the typical form averages less than 160 and the subspecies *oatesii* more than 160.

8. Subcaudal counts (Table 3): Unfortunately a high proportion of adult snakes have truncated tails and, if damaged early in life, it is often difficult to identify a healed tip, so many of the low counts recorded in the literature are suspect. *Thelotornis usambaricus* seems to have the highest average counts, followed by *T. kirtlandii*, while *T. c. oatesii* generally averages higher than either *T. c. capensis* or *T. mossambicanus*.

9. Dentition: In four *T. kirtlandii* from the Congo, Bogert (1940) recorded 11 to 14 anterior maxillary teeth followed after an interspace by three grooved fangs, while a *T. usambaricus* has 15 + III. I have recorded 11 or 12 + III in two *T. mossambicanus* from Zimbabwe and Mozambique, but Bogert found 16 + III in a specimen from Rungwe Mountain in Malawi. I recorded 12 + III in three *T. capensis oatesii* from Zimbabwe and Bogert found 11 + III in one from Angola.

10. Hemipenes: The hemipenis of *T. capensis* is simple, capitate, with an undivided sulcus, terminating in a pronounced groove, that runs from sulcal to asulcal surface. In the distal cap the sulcal folds are unadorned and unraised.

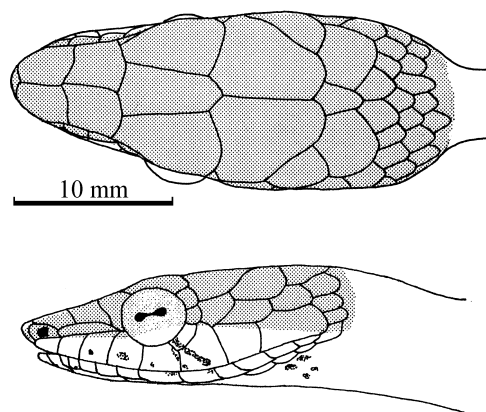


Figure 1. *Thelotornis usambaricus* sp. nov. (Holotype, NMZB 16182): dorsal and lateral views of the head. Uniform green pigment is indicated by stipple.

Table 2. *Thelotornis* ventral counts.

Species and region.	Males				Females			
	N	Range	Mean	S.D.	N	Range	Mean	S.D.
<i>Thelotornis kirtlandii</i>								
West of Longitude 25° E	38	163-182	170.97	4.24	25	162-187	175.00	5.11
East of Longitude 25° E	21	164-179	171.71	4.85	21	164-189	175.29	6.33
<i>Thelotornis usambaricus</i> sp. nov.								
East Usambara Mountains	17	156-166	161.41	2.85	28	145-169	162.60	4.25
<i>Thelotornis mossambicanus</i>								
South Somalia & Kenya	3	161-164	162.33	1.53	7	162-172	168.86	3.63
Tanzania, Burundi, D.R.C. & Zambia	38	151-168	157.13	3.53	33	145-169	157.73	4.56
Malawi & north Mozambique	33	145-163	155.58	4.20	22	146-163	155.86	4.44
Zimbabwe & central Mozambique	40	144-164	155.62	4.02	40	150-164	157.75	3.16
<i>Thelotornis capensis capensis</i>								
Botswana & southwest Zimbabwe	23	150-160	155.91	2.50	14	148-162	156.93	3.77
N. Sth Africa, Swaziland, S. Mozambique	23	144-158	152.57	3.72	32	150-164	157.09	3.20
KwaZulu-Natal	25	145-155	149.96	2.37	27	148-159	152.63	2.72
<i>Thelotornis capensis oatesii</i>								
Angola, Namibia, Botswana & D.R.C.	20	159-168	165.55	2.95	24	158-173	167.29	3.47
Zambia	49	157-172	165.06	3.16	49	160-177	169.06	3.82
Malawi & Mozambique	16	155-170	163.25	4.68	17	161-176	166.06	3.78
Zimbabwe (north-west)	35	162-177	166.00	3.14	58	160-176	167.59	3.44
Zimbabwe (south-east)	36	150-167	158.58	6.81	35	153-171	162.71	3.61

Ornamentation: distal cap covered in shallow spinose calyces; there is an abrupt transition to a proximal region of ossified, non-webbed spines, that increase in size proximally to form a ring of six basal hooks, the three on the asulcal surface being the largest (Branch, *pers. comm.*). The asulcal surface of the hemipenis of *T. kirtlandii* has been illustrated by Doucet (1963: fig. 40) and the sulcal surface by Dowling & Duellman (1978: fig. 112c. 13).

Bogert (1940) found that the hemipenes extended to the sixth subcaudal in four specimens of *T. kirtlandii* from the Congo, and to the ninth in specimens that are now assigned to *T. mossambicanus* (Mulanje, Malawi) and *T. capensis oatesii* (Hanha, Angola). In two *T. usambaricus* the hemipenes reach the seventh or eighth subcaudal.

11. Size: Snout-vent lengths for four of the taxa have previously been shown as a histogram

(Broadley 1979, fig. 3), the “*capensis* intergrades” are now assigned to *T. c. oatesii*. *Thelotornis c. oatesii* is the largest and most robust form, adults averaging about 800 mm, with a maximum of 1062 mm. Although one specimen of *T. kirtlandii* attained 1050 mm (Rasmussen 1997) it is the sole representative of the most eastern isolate on the Udzungwa Mountains, adults of this species average about 750 mm and the other three taxa about 700 mm.

12. Habitat: *Thelotornis kirtlandii* and *T. usambaricus* are both forest species, but in Tanzania the former occurs as relict populations in montane forest, whereas the latter inhabits coastal forest. *T. mossambicanus* is a versatile species inhabiting both forest-savanna mosaic and drier savanna inland, while *T. capensis* seems to be a derived species more adapted for a savanna habitat.

Table 3. *Thelotornis* subcaudal counts.

Species and region.	Males				Females			
	<i>N</i>	Range	Mean	S.D.	<i>N</i>	Range	Mean	S.D.
<i>Thelotornis kirtlandii</i>								
West of Longitude 25° E	26	152-172	158.92	7.68	13	132-164	149.69	8.42
East of Longitude 25° E	11	135-157	151.27	6.87	8	138-165	151.62	10.2
<i>Thelotornis usambaricus</i> sp. nov.								
East Usambara Mountains	7	146-175	163.29	9.60	18	143-169	155.61	6.71
<i>Thelotornis mossambicanus</i>								
South Somalia & Kenya	1	155			3	137-150	142.67	6.66
Tanzania, Burundi, D.R.C. & Zambia	27	132-167	153.11	8.55	16	123-151	135.12	7.56
Malawi & north Mozambique	14	131-146	139.14	5.22	10	126-136	131.00	3.33
Zimbabwe & central Mozambique	25	133-164	145.24	8.24	36	124-153	136.97	6.54
<i>Thelotornis capensis capensis</i>								
Botswana & southwest Zimbabwe	13	135-155	145.14	6.82	7	130-147	137.14	6.34
N. Sth Africa, Swaziland, S. Mozambique	11	135-152	143.36	4.99	7	132-146	136.86	4.67
KwaZulu-Natal	8	133-149	142.50	4.81	11	127-146	136.00	5.97
<i>Thelotornis capensis oatesii</i>								
Angola, Namibia, Botswana & D.R.C.	8	137-159	147.37	7.69	12	126-154	143.00	6.78
Zambia	33	132-157	146.30	6.73	30	128-165	141.83	8.03
Malawi & Mozambique	4	149-166	157.75	9.00	10	136-156	146.50	6.13
Zimbabwe (north-west)	26	134-173	154.65	8.47	35	136-159	147.66	5.98
Zimbabwe (south-east)	26	140-168	151.15	7.29	20	127-168	141.85	7.67

SYSTEMATIC ACCOUNT

***THELOTORNIS KIRTLANDII* (Hallowell)
FOREST VINE-SNAKE**

Leptophis kirtlandii Hallowell 1844, Proc. Acad. nat. Sci. Philadelphia: 62. Type locality: Liberia, type ANSP 5271.

Oxybelis Lecomtei Duméril & Bibron 1854, Erpét. Gen., 7: 821. Type locality: Gabon.

Tragophis rufulus Duméril & Bibron 1854, Erpét. Gen., 7: 827. Type locality: Senegal.

Oxybelis violacea Fischer 1856, Abhand. Nat. Ver. Hamburg, 3: 91, Pl. ii, fig. 7. Type locality: Edina, Grand Bassa County, Liberia.

Drylophis kirtlandii Bocage 1895: 119 (part).

Thelotornis kirtlandii Schmidt 1923: 112, Pl. xiv; Witte, 1933: 94 (part); Loveridge 1936: 39 (part); Bogert 1940: 69, fig. 10; Witte 1941: 215; 1952: 20 (part) & 1953: 247, fig. 82; Laurent 1954: 59; 1956: 229; 1960: 54 & 1964: 116; Pitman 1974: 143; Witte 1975: 89; Lanza & Vanni 1976: 151; Broadley 1991: 533 & 1993: 20; Hinkel 1992: 141, fig. 129; Drewes & Vindum 1998: 63, fig. 28.

Thelotornis kirtlandii kirtlandii Loveridge 1942: 292 & 1944: 149 (part).

Thelotornis kitlandi (sic) Witte 1962: 118, Pl. viii, fig. 1.

Description.—Rostral and anterior nasals recurved onto top of snout; a single loreal (in eastern populations); preocular 1; postoculars 3 (2 in two specimens from Digba through fusions with supraocular or fifth labial: Lanza & Vanni 1976); temporals 1+2 (very rarely 1+1 or 2+2); supralabials 8 (rarely 9 or 10), the fourth and fifth (rarely fifth and sixth) entering the orbit: infralabials 7 to 11, the first 4 or 5 (very rarely 3) in contact with the anterior sublinguals. Dorsal scales feebly keeled in 19-19-13 rows (17 rows at midbody in four specimens from Kivu); ventrals 164-179 in ♂♂, 164-189 in ♀♀; anal divided; subcaudals 135-157 in ♂♂, 138-165 in ♀♀.

Top of head uniform green, supralabials white, often with fine green or grey stipple; body mottled grey, green and brown, with black cross-bars anteriorly (ZMUC R631282 lacks black markings on the neck), lighter below. The specimen illustrated by Hinkel (1992: fig. 129) appears to be uniform dark brown on top of the

head, with heavy brown infuscation on the labials. This could be a captive specimen that has been exposed to strong sunlight, such a change has been observed in a captive *Thelotornis* at Watamu on the Kenya coast (S. Spawls, pers comm.).

Size.—Largest ♂ (AMNH 12279 - Niangara, D.R.C.) 850 + 480 = 1330 mm, largest ♀ (ZMUC R631282 - Massisiswi, Udzungwa Mts, Tanzania) 1050 + 660 = 1710 mm.

Distribution.—Islands of the Bijagós Archipelago, Guinea Bissau (Riquier & Böhme 1996) east through forested areas of west Africa and the Congo basin to Uganda and southern Sudan, south to northern Angola, northwestern Zambia (Broadley 1991) and south-central Tanzania (Rasmussen 1997). Distribution in the east shown in Fig. 2a.

***THELOTORNIS USAMBARICUS* sp. nov.**

Fig. 1. USAMBARA VINE SNAKE

Thelotornis kirtlandii (not Hallowell) Stejneger 1893: 733; Tornier 1896: 83 (part); Sternfeld 1910: 31 (part); Barbour & Loveridge 1928: 128 (part); Loveridge 1929: 33.

Thelotornis kirtlandii kirtlandii (not Hallowell) Loveridge 1942: 292 (part), 1944: 149 (part) & 1957: 274 (part).

Thelotornis capensis mossambicanus (not Bocage) Broadley 1979: 126 (part); Rasmussen 1981: 178 & 1997: 138 (part); Broadley & Howell 1991: 32 (part).

Holotype.—NMZB 16182, an adult male from Amani Nature Reserve (Kwamkoro/Kwemsambia Forest Reserve), East Usambara Mountains (05° 07' S: 38° 39' E), collected by a Frontier-Tanzania team (a collaboration between the University of Dar es Salaam and the Society for Environmental Exploration in the U.K.) on 18 February 1999 (Field No. KMH 16325).

Paratypes. — NMZB 16181, 16183 & 16400, with the same data as the holotype, but collected on 28 Jan, 15 Mar and 7 Nov respectively;

MCZ 23338-48 from Amani, collected by A. Loveridge in Nov/Dec 1926; BMNH 1971.211-2, 1974.547 and ZMUC R631190, 631307-8, 631310 from Amani. Also collected from Forest Reserves northeast of Amani by Frontier-Tanzania: NMZB 14103, 15590 Manga; NMZB 14818 Bamba; NMZB 15374-5 Mtai; NMZB 15627-9 Segoma; KMH 21306, 21352, 21369, 23214, 23405-6 Nilo; ZMUC R631276 Kwamgumi.

Diagnosis.—A species inhabiting coastal forest and somewhat intermediate between *T. kirtlandii* and *T. mossambicanus*. It resembles the former in having both the crown of the head and the temporal region uniform bright green, in having some green pigment on the body and in having transverse black markings (chevrons) on the neck (more obvious in subadults), also in its high subcaudal counts. It agrees with *T. mossambicanus* in lacking the extension of rostral and nasals onto the dorsal surface of the head, in having some black spotting on labials, chin and throat, usually including a speckled black triangle on the sixth supralabial (Fig. 1), and in having infralabial counts averaging more than 10. Ventral counts and hemipenal length are intermediate between those of the other two species.

Description (paratype variations in parentheses).—Rostral twice as broad as deep, just visible from above; nasal entire; internasals as broad as long, shorter than the prefrontals; frontal wedge-shaped, twice as long as its anterior width, subequal to its distance from end of snout and end of parietals; loreals 1 (left) or 2 (right; variable in paratypes); preocular 1; eye very large, its diameter greater than its distance from lip; postoculars 3; temporals 1 + 2 (1 + 3 on left side of MCZ 23344); occipitals 2, separated by a small interoccipital; supralabials 8 (9 on one side of MCZ 23341), the fourth and fifth (third, fourth and fifth in some paratypes) entering the orbit; infralabials 11 or 12 (9 to 13), the first 4 or 5 in contact with the anterior sublinguals, which are much shorter than the

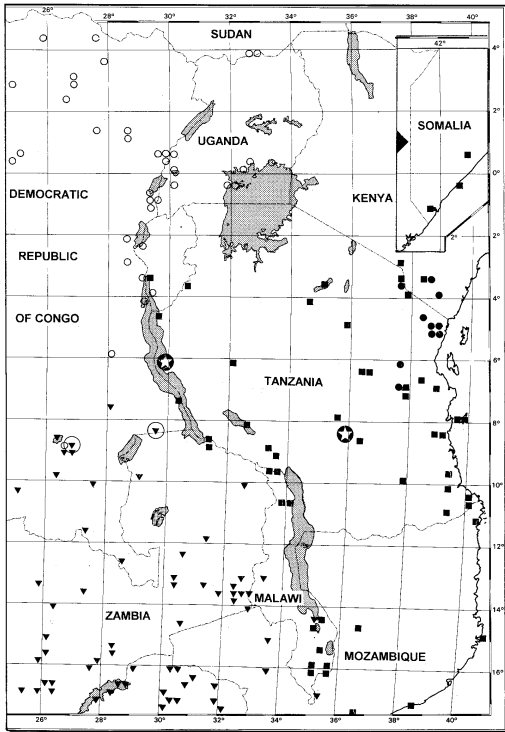


Figure 2a. *Thelotornis* distribution in East Africa.

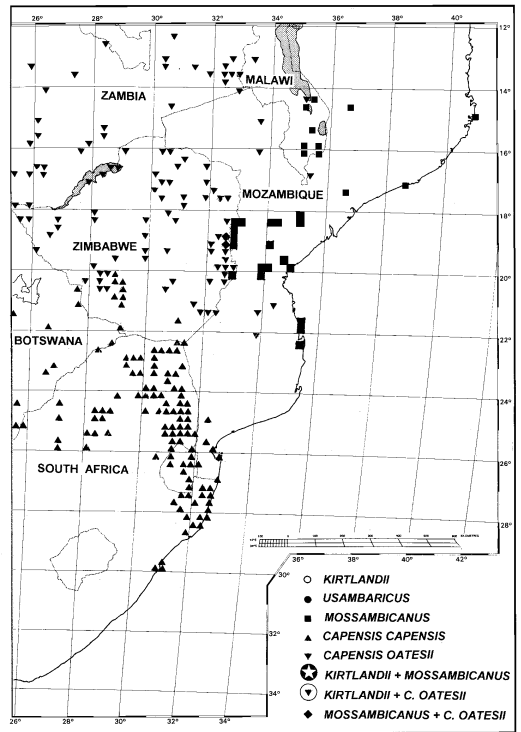


Figure 2b. *Thelotornis* distribution in south-east Africa, with key to symbols.

posterior. Dorsal scales narrow, oblique and very feebly keeled, in 19-19-13 rows (19-19-11 in some paratypes); ventrals 157 (156-169); anal divided; paired subcaudals 167 [tip missing] (143-175 in paratypes).

Top of head, including temporals, uniform green in life (purple in alcohol), supralabials, chin and throat white (pale orange in some paratypes), with a few black spots and a speckled black triangle extending back from the eye through the lower postocular and sixth labial to the lip (absent in some paratypes), a few black spots on posterior sublinguals and gulars; dorsum mottled brown, green and pale grey, three or four vague black chevrons on neck (more distinct in subadults); ventrum mottled pale brown and green (colour in life from Frontier-Tanzania field data sheets).

Length 610 + 450 mm (tail truncated). Largest ♂ (BMNH 1974.547) 640 + 454 = 1094 mm;

largest ♀ (ZMUC R631310) 790 + 490 = 1280 mm, all from Amani.

Dentition.—Maxillary teeth 15 + III in NMZB 15629.

Hemipenis.—Extends to eighth subcaudal in the holotype and seventh in NMZB 15627.

Habitat.—Coastal forest.

Distribution.—Eastern Usambara Mountains, with apparently relict populations on the lower slopes of other isolated mountains in the Eastern Arc chain and on the Kenya coast (Fig. 2a).

Additional material.—KENYA. “East Africa” (? = Kilimanjaro) NMZB 3347 (Ex USNM 16924); Kilibasi AMNH 61657; Tana River USNM 20097; Voi AMNH 61640-1. TANZANIA. Mazumbai, West Usambara Mts ZMB

48245; Mlalo, West Usambara Mts MCZ 23349; Mramba Forest, North Pare Mts NMZB 8807; Nguru Mts above Turiani NMZB 6680; Vituri, Uluguru Mts MCZ 23337.

THELOTORNIS MOSSAMBICANUS (Bocage)
EASTERN VINE SNAKE

Oxybelis Lecomtei (not Duméril & Bibron) Peters 1854: 623 (part).

Thelotornis Kirtlandii (not Hallowell) Peters 1882: 131 (part), Pl. xix, fig. 2; Boulenger 1896: 185 (part); Tornier 1896: 83 (part); Sternfeld 1910a: 31 (part); Lönnberg & Andersson 1913: 4; Loveridge 1928: 57; 1933: 257 & 1936: 39 (part); Witte 1952: 20 (part); Vesey-FitzGerald 1958: 55 (part) and 1975: 22.

Dryiophis Kirtlandii var. *mossambicana* Bocage 1895, *Herp. Angola & Congo*: 119. Type locality: Manica, Mozambique. Lectotype MBL 1843 (destroyed).

Thelotornis kirtlandii capensis (not A. Smith) Mertens 1937: 14; Loveridge 1942: 294; 1944: 154 (part); 1953: 279; 1955: 186; 1956: 12; FitzSimons, D. & Smith, H.M. 1958: 198; Broadley 1959: 38 (part); Broadley & Pitman 1960: 443; Broadley 1962: 832 & 1968: 405 (part).

Thelotornis capensis (not A. Smith) Bogert 1940: 70 (part), fig. 11; Broadley & Cock 1975: 66 (part).

Thelotornis capensis capensis (not A. Smith) Laurent 1956: 230 & 378; Broadley 1971: 91.

Thelotornis capensis mossambicanus Broadley 1979: 129; Broadley & Blake 1979: 13; Lanza 1983: 228 & 1990: 441; Broadley 1990: 488; 1992: 547 & 1993: 19; Broadley & Howell 1991: 32; Flemming & Bates 1999: 422.

Description.—Rostral and nasals barely visible from above; loreals usually 2 (rarely 1, very rarely 0 or 3); preocular 1; postoculars 3 (rarely 2 or 4); temporals 1 + 2 (very rarely 1 + 1, 1 + 3 or 2 + 2); supralabials 8 (rarely 9, very rarely 6 or 7), the fourth and fifth (rarely fifth and sixth, very rarely third and fourth, or third, or fifth only) entering orbit; infralabials 9-13, mode 11, the first 4 or 5 in contact with the anterior sublinguals; dorsal scales usually in 19-19-11 or 19-19-13 rows, very rarely 17, 21 or 23 rows at midbody (23 recorded by Rasmussen, 1997); ventrals 144-169 in ♂♂, 145-172 in ♀♀; anal divided; subcaudals 131-168 in ♂♂, 123-153 in ♀♀.

Crown of head uniform green or with a black speckled Y-shaped marking, or brownish, entirely speckled with black (the two extremes may occur within a population, as on Mafia Island); temporal region always brown, speckled with black; supralabials white spotted with black, including a triangle on sixth labial, chin and throat speckled with black; dorsum ash grey with diagonal rows of whitish blotches and flecks of brown and pink or orange, neck with one or two elongate black blotches; ventrum greyish, streaked with brown.

Size.—Largest ♂ (MHNG 1376.34 - Newala, Tanzania) 910 + 525+ (tail truncated); largest ♀ (NMZB-UM 4157 - Mutare, Zimbabwe) 895 + 510 = 1405 mm, but MCZ 18476 from Zengeragusu, Tanzania, has a snout-vent length of 920 mm (tail truncated).

Distribution.—Southern Somalia south to central Mozambique at about 22° 30' S, west to the shores of Lake Tanganyika, Malawi and eastern Zimbabwe (Fig. 2a & b).

THELOTORNIS CAPENSIS CAPENSIS
A. Smith SOUTHEASTERN SAVANNA
VINE SNAKE

Thelotornis capensis A. Smith 1849, *Ill. Zool. S. Africa, Rept. App.*: 19. Type locality: "Kaffirland and the country towards Port Natal", i.e. Durban (type lost); Broadley & Cock 1975: 66 (part).

Thelotornis kirtlandii (not Hallowell) Boulenger 1908: 229 & 1910: 515 (part); Gough 1908: 32; Hewitt & Power 1913: 164 (part); FitzSimons, V. 1937: 274.

Thelotornis kirtlandii capensis Loveridge 1944: 154 (part); Broadley 1957: 297 (part) & 1959: 38 (part); FitzSimons, V. 1962: 201 (part); Pooley 1965: 51; FitzSimons, V. 1966: 57 (part); Pienaar 1966: 177, Pl. 77-78; Visser, J. 1966: 21; Broadley 1968: 405 (part); FitzSimons, V. 1970: 123; Bourquin *et al.* 1971: 24.

Thelotornis capensis capensis Witte 1962: 118; Visser, J. 1972: 39; Pienaar 1978: 160, Pl. 72, 72A; Visser, J. & Chapman 1978: 64 (part); Broadley 1979: 126; Broadley & Blake 1979: 13; Bruton & Haacke 1980: 271; Broadley 1983: 256, Pl. 59 & 1993: 19; Pienaar *et al.* 1983: 200, Pl. 91, 91A; Auerbach 1987: 188, Pl. 18/2; Jacobsen 1989: 1057.

Description.—Rostral and nasals barely visible from above; loreals usually 2 (rarely 1, very rarely 0 or 3); preocular 1; postoculars 3 (rarely 2 or 4); temporals 1 + 2 (very rarely 1 + 1 or 1 + 3); supralabials 8 (very rarely 7 or 9), the fourth and fifth (very rarely third and fourth, fifth and sixth or third, fourth and fifth) entering orbit; infralabials 9-13, mode 11, the first 4 or 5 (very rarely 3 or 6) in contact with anterior sublinguals; dorsal scales usually in 19-19-13 rows, rarely in 17 rows at midbody (15 rows only in TMP 45554); ventrals 144-160 in ♂♂, 148-162 in ♀♀; anal divided; subcaudals 133-155 in ♂♂, 127-147 in ♀♀.

Size.—Largest ♂ (NMZB 6389 - Gwanda, Zimbabwe) 830 + 506 = 1336 mm; largest ♀ (TMP 5615 - Hectorspruit, Mpumalanga, South Africa) 911 + 455 = 1366 mm.

Distribution.—Southwestern Zimbabwe and southeastern Botswana, south through the northern provinces of South Africa and Swaziland to southern Mozambique and KwaZulu-Natal (Fig. 2b).

THELOTORNIS CAPENSIS OATESII
(Günther) OATES' SAVANNA VINE SNAKE

Oxybelis Lecomtei (not Duméril & Bibron) Peters 1854: 623 (part, Tete).

Dryiophis oatesii Günther 1881, In Oates' Matabeleland and the Victoria Falls, App. : 330, Col. Pl. D. Type locality: Matabeleland (= western Zimbabwe), type BMNH 1946.1.9.76.

Thelotornis Kirtlandii (not Hallowell) Peters 1882: 131 (part); Boulenger 1896: 185 (part); Chubb 1908: 221; 1909a: 596 & 1909b: 36; Sternfeld 1910b: 29, fig. 33 & 1910c: 56; Hewitt & Power 1913: 164 (part); Werner 1915: 363; FitzSimons, V. 1939: 23; Vesey-FitzGerald 1958: 55 (part); Johnsen 1962: 123.

Thelotornis kirtlandii capensis Loveridge 1944: 154 (part); Mertens 1955: 103; Broadley 1957: 297 (part); Mertens 1971: 93.

Thelotornis capensis (not A. Smith) Witte 1953: 249, fig. 82; Laurent 1954: 58.

Thelotornis kirtlandii oatesii Loveridge 1953: 277; Broadley 1959: 37 & 1962: 832; FitzSimons, V. 1962: 205 & 1966: 58; Broadley 1968: 405; FitzSimons, V. 1970: 124.

Thelotornis capensis oatesii Laurent 1956: 231, fig. 35; Witte 1962: 119, fig. 68; Laurent 1964: 116; Visser, J. 1972: 42; Visser, J. & Chapman 1978: 65; Broadley 1979: 126; Broadley & Blake 1979: 66; Broadley 1983: 259, fig. 149; Auerbach 1987: 189; Broadley 1991: 533 & 1993: 20.

Description.—Rostral and nasals barely visible from above; loreals usually 2 (rarely 1, very rarely 0); preocular 1; postoculars 3 (rarely 2, very rarely 1 or 4); temporals 1 + 2 (very rarely 1 + 3 or 1 + 1); supralabials 8 (rarely 7, very rarely 9), the fourth and fifth (very rarely third and fourth, fifth and sixth, third, fourth and fifth, or third, or fourth only) entering orbit; infralabials 9-13, mode 11, the first 4 or 5 (rarely 3) in contact with anterior sublinguals; dorsal scales usually in 19-19-11 or 19-19-13 rows, very rarely 17 rows at midbody; ventrals 150-177 in ♂♂, 153-177 in ♀♀; anal divided; subcaudals 132-173 in ♂♂, 126-168 in ♀♀.

Size.—Largest ♂ (NMZB 3828 - Mtorashanga, Zimbabwe) 1062 + 620 = 1682 mm; largest ♀ (NMZB 3600 - Lake Kariba, Zimbabwe) 975 + 560 = 1535 mm, but NMZB-UM 1061 from Shurugwe, Zimbabwe, has a snout-vent length of 1050 mm (tail truncated).

Distribution.—Southern Angola and northern Namibia, west through northern Botswana, Zambia and southeast Katanga (D.R.C.) to Zimbabwe, western Mozambique and Malawi (Fig. 2a & b).

KEY TO THE GENUS *THELOTORNIS* A. SMITH

- 1a. Top of head, including temporal region, uniform green; black crossbands or chevrons on neck; habitat forest.....2
- 1b. Top of head uniform green or black speckled, temporal region always brown, speckled with black, or pink, shields margined with black; neck with black lateral blotches; habitat usually savanna.....3
- 2a. Rostral and nasals strongly recurved onto top of snout; infralabials 7-11, mode 9;

- supralabials immaculate or with fine green or grey stipple.....*T. kirtlandii*
- 2b. Rostral and nasals not, or only slightly, recurved onto top of snout; infralabials, 9-13, mode 11; supralabials with scattered black spots, usually including a triangle on the sixth labial*T. usambaricus* sp. nov.
- 3a. Top of head bright green to pale brown, uniform or speckled with black; temporals brown speckled with black
.....*T. mossambicanus*
- 3b. Top of head blue-green with pink and black speckling forming a 'Y' or 'T' marking, or speckling covering entire top of head; temporals pink margined with black4
- 4a. Top of head always with a 'Y' or 'T' shaped marking, with its stem along the parietal sulcus and the arms across the supraoculars; ventrals usually more than 160.....
.....*T. capensis oatesii*
- 4b. Top of head with extensive dark speckling or restricted to a 'Y' or 'T' shaped marking; ventrals usually less than 160
.....*T. capensis capensis*

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APPENDIX

Comparative material examined (excluding *Thelotornis usambaricus* sp. nov.) and specimens for which data was available from the literature, in particular Rasmussen (1997).

Thelotornis kirtlandii: GUINEA-BISSAU. Bubaque Island ZFMK 60764. GUINEA. Ziama Forest ZFMK 60767. SIERRA LEONE. No locality BMNH 66.1.28.14; Bo BMNH 1958.1.1.48; Niale FMNH 121978; Njala BMNH 1955.1.4.15; Rokupru BMNH 1955.1.4.16. LIBERIA. No locality USNM 56207; Harbel FMNH 118996, 178884-5, 178933; Mindi Mission USNM 149486; Monrovia Aarhus Mus. 135; Mount Coffee USNM 24166, 24225; Yangaja Aarhus Mus. 1160. IVORY COAST. Adiopodoumé MHNG 1463.64-5; NMZB-UM 32183-4; Bonake FMNH 170705-6. GHANA. Adjah Bippo BMNH 86.10.23.1; Ashanti BMNH 49.3.2.40; "Fantee" BMNH 44.1.16.2. NIGERIA.. Ifon FMNH 19835; Lagos BMNH 1929.8.7.1; Nko BMNH 1971.403; Oil River BMNH 88.8.29.11. CAMEROON. Bertoua MHNG 1520.50; Dja River AMNH 5266; FMNH 4020; Djabilobé MHNG 1520.51; Efulen BMNH 1906.5.28.16, 1907.5.22.54-5; UMMZ 38839, 65825; Foulassi CM 6816; MHNG 1520.52; Kindonge BMNH 1969.1677; Kondéyébae NMZB-UM 32185; Victoria BMNH 1950.1.2.9. EQUATORIAL GUINEA. Benito River BMNH 1900.2.17.21-2; FMNH 4019. GABON. No locality BMNH 58.2.23.3, 66.1.28.17; Elobey Island BMNH 74.10.6.17; Fernan Vaz USNM 62152. CONGO-BRAZ-ZAVILLE. Mouth of the Loango BMNH 94.8.4.20. ANGOLA. Bena-Mai Island DM 5192; Canhoca BMNH 1904.5.2.76; Dundo DM 6004; Piri-Dembos (Hellmich 1957); Quirimbo BMNH 1936.8.1.718-9. ZAMBIA. Ikelenge NMZB 10785. DEMOCRATIC REPUBLIC OF CONGO. No locality AMNH 12286; FMNH 19456; Akenge NMZB 3371; Avakubi BMNH 1919.8.16.94; Binza (P.N.

Virunga) MRAC 14372; Bulape AMNH 104102-3; USNM 167090-5; Digba MZUF 20399-400; Kalimbo (P. N. Virunga) MRAC 14371; Kitwabaluzi AMNH 65391; Lake Kaluwe BMNH 1953.1.10.88; "Lower Congo" BMNH 98.11.24.4; Lukolela AMNH 50531; Mushofi MRAC 21574-5; NMZB-UM 20596; Niangara AMNH 12272-9; Niapu AMNH 12285; Nyunzu MRAC 18588; Poko AMNH 12280-1; Umangi BMNH 1901.3.12.102; Uvira MRAC 18587, 21413; Yangambi NMZB-UM 20595. SUDAN. Talanga Forest FMNH 62299; 48 km S of Torit FMNH 52911. UGANDA. Buhoma Camp, Bwindi Forest CAS 176932; Bundibugyo MCZ 48421; Entebbe BMNH 1901.6.24.55; Jinja BMNH 1910.2.4.3; Kampala MUZM 107; Kilembe BMNH 1976.2269; Kingani MCZ 54736; Lake Nagugabo BMNH 1953.1.6.18-9; Masaka BMNH 1952.1.3.48; Ruwenzori BMNH 1954.1.13 25; West Ankole BMNH 1952.1.3.49. TANZANIA. Massisiswi, Udzungwa Mts ZMUC/R 631282; Pasagulu, Mahali Peninsula BMNH 1970.2174.

Thelotornis mossambicanus: SOMALIA. Alessandra Island, Juba River MZUF 2062-4, 2177; Ola Uager MZUF 5706 & 10 km north MZUF 5719. KENYA. Mount Mbololo, Teita MCZ 40677-8; Oloitokitok MCZ 56922; Taveta BMNH 91.10.15.20. TANZANIA. Gombe National Park NMZB 6923, 11622; Gulwe BMNH 1952.1.3.50; Ibaya Camp, Mkomazi Game Reserve NMBO 7944; Kibaha ZMUC 63862-4; Kibondo MCZ 51628; Kigwembimbi ZMUC 631312-3; Kilombero valley NMZB16346-7; Kitaya MCZ 48422-3; Kitungulu MCZ 30388; Kiwengoma Forest Reserve NMZB 9956; Liwale FMNH 81122-3, 81125, 81661-6; NMZB 202; Lubugwe, Mahali Peninsula BMNH 1970.2173; Mafia Island BMNH 1937.7.25.9; NMZB 11261, 11272; Mangola NMZB 8337; Mikindani MCZ 48424; Morogoro UMMZ 61174; Mpwapwa BMNH 79.11.13.17; Msolwa, Rubeho Mts ZMUC 631197-200; Naliende, Mtwara

- NMZB 7879; Nchingidi MCZ 48425-6; Newala FMNH 81124, 81667; Nyangao NMZB 12006; Nyange, Uluguru Mts MCZ 23336; Rungwe Mtn AMNH 39170, ZMUC 631277-81; Ruvu South Forest Reserve NMZB 11320-1; "Southern Province" NMZB3895-6; Tegemeo Farm, Mbeya DCM 424; Tendaguru BMNH 1928.10.19.71; Tong'omba Forest Reserve NMZB 11939; Udzungwa Scarp Forest Reserve ZMUC 631283; Ugalla NMZB 1563; Uleia FMNH 12288; Victoria Nyanza (south shore) BMNH 90.5.14.3; Zengeragusu MCZ 18476. BURUNDI. Imbo MRAC [76-59-R3, 77-5-R3, 77-5-R8] (holotype & paratypes of *T. capensis schilsi* Derleyn). DEMOCRATIC REPUBLIC OF CONGO. Mwerazi Bay IRSNB 5288. ZAMBIA. Mbala IRSNB 18284; NMZB 1582. MALAWI. Blantyre BMNH 95.4.17.26; NMZB 1921; NMZB-UM 25403-5; Chowe MCZ 51250; Livingstonia BMNH 88.7.14.4, 91.12.17.4; Lujeri Estate NMZB-UM 4249; Mangochi BMNH 97.6.9.250; TMP 13454; Misuku Mts MCZ 51224-9; NMZB-UM 24419-20; Mulanje Mtn AMNH 44303-5, 67757-8; BMNH 93.10.26.62-3; MCZ 51236-9; "Nyika Plateau" BMNH 97.6.9.139-40; Thyolo MCZ 51240-9; NMZB 1922; Zomba BMNH 93.10.26.58-61, 94.2.13.16, 1933.4.5.3; NMZB-UM 4205; Zomba Plateau 1948.1.1.99. MOZAMBIQUE. Amamba NMZB-UM 27697; Bazaruto Island NMZB 9651, 9997, 10068, 11434-5; Benguerua Island NMZB 11390; Cabaceira Peninsula MBL 1841; Canganetole CMP 40442-3; UMMZ 65706; Dondo NMZB-UM 7501; Goonda NMZB-UM 9067; Gorongosa Mtn NMZB-UM 21766-7; Inhamitanga NMZB-UM 21914; Lower Revue Bridge NMZB-UM 27608; Manga NMZB-UM 9616-7; Manica MBL 1843 (lectotype of *Dryiophis Kirtlandii* var. *mossambicana* Bocage); Mitucué Mtn NMZB-UM 8022-3, 8026-8; Nhamanene Lake JPT 1490; Praso Boror MBL 1842; Xiluvo NMZB-UM 7184-5, 7187. ZIMBABWE. Aberfoyle Tea Estate NMZB 12204, 14401; Holdenby East NMZB-UM 20319; Inyangani Tea Estates NMZB-UM 8304-5, 8937, 33650; Manga C.L. NMZB-UM 8350; Mutare NMZB 1460-1, 1736, 4042, 4154-7, 8799, 9467, 10281, 15773; NMZB-UM 3058, 8621, 8653, 10897, 10905, 11974, 12388-9, 12421, 12900, 16068, 16393, 16404, 17969-70, 18412, 19036, 19175, 19305, 20131, 21669, 21754, 22741, 23086, 23381, 23771, 24060, 27426, 27832, 28297, 28633, 29367, 29503, 29647, 31101, 31275, 31359, 31454-5, 31587, 31654, 32103, 32254, 32379, 32339, 32635, 32637, 32803, 32952, 32962-4, 33551; Ngorima C.L. NMZB-UM 9168, 16938; Orkney Farm, Mutare NMZB-UM 10554, 10557; Pungwe Bridge NMZB 1969; Lower Vumba NMZB-UM 8351, 27832; TMP 47242; Stapleford, Mutare NMZB-UM 10636, 16478.
- Thelotornis capensis capensis*: BOTSWANA. Akiles Farm TMP 41614; Francistown MMK - (2); Maladiepe Hill NMZB 8678, 8760; Mahalapye NMZB 877; M'mouve AMG -; ca.10 km NW of Molepolole NMZB 8609, 8613-5, 8627; Orapa (Auerbach 1987: Pl. 18/2); 10 km SSW of Otse NMZB 7811, 8412; Serowe SAM 8079; TMP 31228; Tshesebe AMG 1677. ZIMBABWE. Bezwe River, Mwenezi TMP 5625; Bushtick NMZB 14484; 6km W of Colleen Bawn; Esigodini NMZB-UM 31817; Gwanda NMZB-UM 5382, NMZB 6389; Insindi Ranch, Gwanda NMZB 5735; Irisvale NMZB 472, 920, 1484; USNM 142087; Lumane NMZB 1394-5, 1398, 1424; NMZB-UM 17529; Mbalabala BMNH 1914.10.24.3; Sinkukwe NMZB-UM 17530; Tuli NMZB 3379, 3460. SOUTH AFRICA (NORTH-WEST, GAUTENG, NORTHERN & MPUMALANGA PROVINCES). Bandolierkop NMZB-UM 1933; TMP 5636; Barberton TMP 5632, 5643; Boekenhout TMP 46033; Brondal PEM 906-8, 910; Drars River TMP 5627; Ehlatini TMP 47515, 47520; Hammankraal TMP 5619; Hectorspruit TMP 5615, 5622-3, 5626, 5631; Kaapmuiden TMP 5614; Komatipoort TMP 5617; Kruger National Park KNP 2, 76, 153, 217, 293; TMP 5620; Lake

Fundusi TMP 13902,13984; Legogot BMNH 1907.4.9.35; Letsitile TMP 29798; Louws Creek TMP 5637; Malta Farm, Leydsdorp TMP 13056-7, 13059; Mariepskop TMP 12368, 12387, 12505, 12577; Metlepetsi River TMP 5638; Newington AM 1520; Noordkaap TMP 47514; Nylstroom TMP 5644; Olivenbosch TMP 5640; Pretoria FMNH 17676; Saltpan, Pretoria TMP 12723; Selati NMZB-UM 32556; Soekmekaar PEM 904; Soutpansberg TMP 5616; Tzaneen TMP 44735; Umzinzi - Potgietersrust TMP 34715; Vygeboompoort TMP 5624, 5639, 5641-2; Warmbaths TMP 5621. SWAZILAND. Hlane Game Reserve TMP 48012; Mbabane NMZB-UM 31588. MOZAMBIQUE. Chimonso TMP 29395; Delagoa Bay SAM 921; Estatuane NMZB-UM 30685-7; Inhaca Island TMP 24586; Vundica TMP 29462-3. SOUTH AFRICA (KWAZULU-NATAL). No locality DM 86/1; NMP 379; SAM 532, 1736-7, 1795; Bethseda Hospital, Mseleni 44477, 45526; Charters Creek NMZB 44617; Compensation Beach NMP 1282; Dukuduku TMP 21819; Durban BMNH 97.9.2.5; MMK - ; TMP 10069; Empangeni NMP 425; Hlabiza NMP 401; Ingwenya TMP 5645; Kosi Bay BMNH 1907.4.17.73; NMP 378; NMZB 2316; Lake Sibaya TMP 44018, 44041, 44226, 44476, 44478; Leeuwspeer Farm TMP 45728; Manaba AMG 7607; TMP 13767; Manzengwenya TMP 44223; Mariannhill AMG 1472; Mbazwane TMP 43988, 44658, 45554, 45639, 48284; Mbibi TMP 44235, 44245; Mkokorte SAM 19271; Mseleni NMP 371, 427; PEM 1440/40; Mtongosi NMP 426; Ngotshe TMP 36682; Nhlosinga TMP 47991; Ngxwala Hill TMP 5634; Ntambanana AMG 4603 (2); Pinetown SAM 1738; Pongola TMP 36682; St Lucia FMNH 191163; TMP 14077, 45832; Somkele UMMZ 61241; Sordwana Bay TMP 42859; Ubombo NMP 369; TMP 13677; USNM 50936; Vergeval TMP 33375; White Umfolosi TMP 5613.

Thelotornis capensis oatesii: ANGOLA. Alto Chipata MD 5374, 5391; Caconda FMNH 15462; Chitado (Hellmich 1957); Hanha AMNH 51951-2; Huila FMNH 74252-5; Jõa de Almeida TMP 45167; Sombo MD 2045. NAMIBIA. Gaucha USNM 132524; Grootfontein TMP 39929; Harasib 317, Grootfontein SMWN 2358 (4); Kaoko Otavi SAM 17487; Kamanjab SMWN 2360; Kapaku SMWN 2359; 15 km WSW of Katima Mulilo NMZB 21279; Mariental SMWN 2592; Nkurunkuru SMWN 2361; Okavango SAM 19708; Operet 312, Tsumeb TMP 45108; Orumana SMWN 2363; Rundu SMWN 2362. BOTSWANA. Chief's Island, Okavango TMP 44811; Chobe River on Ngamiland border NMZB-UM 16182; Kasane NMZB-UM 13335; Kgwebe Hills BMNH 99.3.20.11; Khwai Camp, Moremi Game Reserve NMZB-UM 25448; Magwegwana NMZB-UM 23264; Sepopa NMZB-UM 16194-5; USNM 164985-6, 164993; Seronga NMZB-UM 16199; Shakawe TMP 31097; Shorobe NMZB-UM 20144, 20783; Sokwane NMZB-UM 33128; Tamafupa NMZB-UM 7208; Tsodilo Hills TMP 31017; Xugana USNM 200340. DEMOCRATIC REPUBLIC OF CONGO (KATANGA PROVINCE). Kilwezi, Upemba Nat. Park FMNH 154731; Mpala, Kanzenze TMP 38148. ZAMBIA. Chilanga NMZB-UM 689; Chipangali NMZB-UM 3103, 17310, 17313-4; Chipata NMZB 1597, 1859 + 1 duplicate; Chipelu's, Mumbwa District BMNH 1932.5.3.104; Chiundaponde BMNH 1932.9.9.144; Chunga (in stomach of *Bitis arietans* NMZB-UM 30042); Dumdumwenzi NMZB 1986-8; Ikelenge NMZB 10690-1, 10711, 10719-20; Isoka AMG 6946; Kabompo NMZB 1307, 4323; Kacholola NMZB-UM 2942; Kalabo FMNH 134244; NMZB-UM 4840, 20927, 20922; Kalichero NMZB-UM 2759-61, 2941, 2943-4, 2947-8, 18553 + 23 duplicates (some to BMNH & MCZ); Kasempa NMZB 1620, 1627, 4218-9; Kasusu NMZB 4256-8; Katanda NMZB 3114; Katchulu BMNH 1932.12.13.232; Kaungashi NMZB-

- UM 4519; Kawambwa ZMUC R6393; Kayingu BMNH 1932.5.3.102; Livingstone NMZB 1984-5; Lower Lushwishi River NMZB 1292; Luangwa valley BMNH 1906.11.22.17; Lusaka NMZB 4518; Machile NMZB 4251; Mashonga BMNH 1932.9.9.143; Matabele Plain NMZB 15897; Mazabuka DM 1330; Mkanda NMZB-UM 17312; Mpika NMZB 1651; Msandile NMZB-UM 2945; Msoro NMZB-UM 2946 + 3 duplicates; Musungwa Lodge, Lake Itzhi-Tezhi CAS 147134; Ngoma Camp, Kafue National Park NMZB-UM 20843; Ndola (Johnsen 1962); "North-West Province" NMZB 1316; Sayiri NMZB-UM 17311; Serenje BMNH 1932.9.9.142; Siantamba AMNH 82414-5; NMP -; NMZB 2563, 3115, 3448, 3775-6; 4252-5 + 2 duplicates. MALAWI. Kasungu AMNH 67776-8; Mtimbuka MCZ 51230-5; Nsanje USNM 145581-2. MOZAMBIQUE. Alves de Lima JPT - (3); Banamana JPT 1826; NMZB-UM 29386; Chifumbazi ZMB 27510 (2), 27632 (2); Mavue NMZB-UM 9068; Tete ZMB 2386; 100 km N of Tete BMNH 1933.4.3.8; Ungodje JPT 1202; Zinave National Park JPT 852, 868, 1196, 1233-4, 1246, 1265, 1578, NMZB 30681-4, 30688-90. ZIMBABWE. No locality AMG 512; Anglesea Farm NMZB 13140; Beatrice Mine TMP 16055; Birchenough Bridge NMZB-UM 2522; Biriwiri River NMZB-UM 31450-2; Borrowdale, Harare NMZB-QVM 581; Bulawayo NMZB 878; Chemutsi Dam, Urungwe NMZB 7624; Chikore C.L. NMZB-UM 16057; Chikwakwa C.L. NMZB-UM 28163; Chinhoyi NMZB 2942; Chipinge NMZB-UM 5842; Chipinda Pools NMZB-UM 2565; Chiredzi NMZB-UM 8520; Chirinda Forest BMNH 1915.4.22.15; NMZB 873; TMP 18608; Donnington Farm, Norton NMZB-QVM 30; Eldorado MMK -; Fern Valley, Mutare NMZB-UM 3544, 19803, 31923, 32196, 32620; Fishan, Gonarezhou National Park NMZB-UM 12040; Grand Reef NMZB-UM 32597; Gweru NMZB-UM 5374; Harare NMZB-QVM 76; Haroni River NMZB-UM 11524; Hippo Pools, Maranke C.L. NMZB-UM 10368; Humani Ranch NMZB-UM 23933; Hwange National Park: Balla Balla Pan NMZB 11309; Livingi NMZB 12601; Main Camp NMZB-UM 339, 29599, 29628; 8km NNW of Gwashla Pan NMZB 13577; Sedina Pan NMZB 11227, 11229; Shapi Pan NMZB-UM 29188; Inyokene NMZB 13754; Kadoma NMZB 875-6, 972; Kariba NMZB 3116; NMZB-UM 11285, 17922, 19302, 24154; Kariba Lake: Bumi Confluence NMZB 3602; Mwenda Confluence NMZB 3460; Sanyati Confluence NMZB 3236, 3242-3, 3600; Kazuma Pan NMZB 9361; Kemavanga Camp, Mavuradonha Mts NMZB 9825, 10172; Koodoosberg Farm, Mutare NMZB-UM 29558; Khami Dam NMZB 351; Makuni NMZB-UM 32121; Malimbasingi, Gokwe NMZB-UM 7342; Maranke C.L. NMZB-QVM 552; Marivalle Ranch, Kwekwe NMZB 16424; Mashumbi Pools NMZB-UM 26581; "Matabeleland" BMNH 1946.1.9.76 (type of *Dryiophis oatesii* Günther); Matetsi, Nat. Parks H.Q. NMZB-UM 33154; Matopo National Park: Maleme Dam NMZB-UM 26869, 30366, NMZB 880, 8738; Nswatugi Cave NMZB 31332; Mount Silorsi TMP 24393; Mount Selinda CM 6345-6, TMP 16229; Murewa NMZB 4914 & 50 km N, NMZB-UM 20130; Mutare NMZB 1735; NMZB-UM 2974, 5798, 6461, 11904, 18015, 18029, 18560-1, 20815, 20834, 21668, 23378, 23405, 23842, 29045, 32146, 32198, 32218, 32250, 32316, 32322, 32899, 33035, 33132, 33161, 33173, 33441; Mutoko NMZB-UM 32144; Mutorashanga CM 40514; NMZB 3828-9, 3954, 3975, 4058, 4066, 4094-5, 4213; NMZB-UM 32145, 33297-306; Nampini TMP 22608; Noro Dam, Darwin NMZB-UM 23441; Nyanyadzi NMZB-UM 23784; Odzi NMZB-UM 32479, 30024; Old Umtali NMZB-UM 30253; Plumtree MMK -; NMZB 12488; Pounsley NMZB-UM 18415; Punch Rock, Nyanga [colour print: R. B. Yeadon]; Raffingora NMZB-UM 32199; Ranelia Farm, Mutare NMZB-UM 29560; Razi, Chibi NMZB-UM

23576; Rowa, Mutare NMZB-UM 32191; Turk Mine NMZB-UM 88; NMZB 11182, Rukute Farm, Doma NMZB-UM 12555; 12053; Umvumvumvu River NMZB-UM Salatar Farm, Mhangura NMZB 15835; 11341; Upper Tingwa valley, Mavuradonha Sengwa Gorge NMZB-UM 12681; Shurugwe Mts NMZB 9820; Westwood Ranch NMZB NMZB 612-3; NMZB-UM 1061; Silverstreams 12851; Zambezi Camp, Hwange NMZB 9354; NMZB-UM 11026; Trelawney TMP 21666-9; Zimunya, Mutare NMZB-UM 30375, 32954.