

A REVIEW OF THE GENUS *LYCOPHIDION* (SERPENTES: COLUBRIDAE) IN NORTHEASTERN AFRICA

DONALD G. BROADLEY¹ AND BARRY HUGHES²

¹Natural History Museum, PO Box 240, Bulawayo, Zimbabwe

²57 Snaresbrook Road, Wanstead, London, E11 1PQ, UK

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ABSTRACT

Variation in *Lycophidion* populations of the southern Sudan, Somalia, Ethiopia, Uganda and Kenya is analysed. Five species occur in this area: *L. irroratum* and *L. ornatum* are restricted to forests, *L. depressirostre* and *L. taylori* sp. nov. inhabit dry savannas, *L. capense jacksoni* is found in the moister savannas of the highlands and plateau areas, while *L. capense loveridgei* occurs in both forest and savanna of the coastal strip. *L. irroratum* is readily distinguished by the paired apical pits on the dorsal scales. *L. depressirostre* and *L. taylori* both have lower ventral and subcaudal counts than the other taxa, but *L. depressirostre* can be distinguished from all other species by its more numerous maxillary teeth (8 to 9 + 19 to 24 compared with 7 to 8 + 11 to 18) and usually one colour pattern. *L. taylori* is very variable in colouration, but most specimens have a white blotch or collar on the nape and white dorsal stippling may be very extensive. The type series of *L. taylori* comes from the border between northern Somalia and Ethiopia, but there are isolated specimens from northern Kenya (Turkana District), Chad and Senegal.

INTRODUCTION

The last overall review of the African snake genus *Lycophidion* Duméril & Bibron was provided by Laurent (1968), but the material that he examined was mainly from East Africa. Unaware of Laurent's study, Hughes was working on the genus in West Africa and Zaire, while Broadley was investigating the genus in southern and eastern Africa. While working on the collections in the British Museum early in 1968, Broadley identified three new taxa of *Lycophidion*, but two of them were described by Laurent (1968, *L. depressirostre* and *L. capense pembanum*). The third was not named by Laurent, but Broadley held up description in the hope of obtaining additional material: the taxon is finally described in the present paper.

A small wolf snake from central Mozambique proved to represent a new genus and species - *Cryptolytus nanus* (Broadley, 1968), apparently derived from *Lycophidion semiannule*. Analysis of variation in Zimbabwean material of *L. capense* showed that it should be referred to the typical form rather than *L. c. multimaculatum* Boettger, 1888, as indicated by Laurent (1968): it also revealed the presence of a cryptic species - *L. variegatum* (Broadley, 1969).

Leston & Hughes (1968) revived *L. nigromaculatum* (Peters) as a full species and then Guibé & Roux-Estève (1972) reviewed the West African species and resurrected *albomaculatum* Steindachner as a western race of *L. semiannule*.

Branch (1976) reviewed the genus in Southern Africa, extending the range of *L. variegatum* south to Natal and describing the distinctive trilobate hemipenis of this species. In the revision of "FitzSimons' snakes of Southern Africa" (Broadley, 1983), the distributions of the southern African taxa were mapped and showed that *L. capense multimaculatum* reaches its southern limit in the extreme north of Namibia and the Caprivi. Further study of Namibian material revealed the presence of an undescribed species which had been confused with *L. hellmichi* Laurent (Broadley, 1991b); *L. multimaculatum* has also been identified as a valid species (Broadley, 1991a).

There remain some problems with regard to the genus *Lycophidion* in southeastern Africa: *L. semiannule* (Peters, 1854) may be composite and *L. capense vermiculatum* Laurent, 1968, is doubtfully distinct from the typical form. In the circumstances, it seemed desirable to collaborate and publish our findings for northeastern Africa. Broadley will subsequently review the southern African taxa and Hughes will finalise his investigation of the situation in West Africa and Zaire.

MATERIAL AND METHODS

This study is based on the examination of 348 specimens from southern Sudan, Somalia, Ethiopia, Uganda, and Kenya, with additional data for four specimens supplied by Malcolm Largen. Data for the Tanzanian specimens plotted on the distribution maps will be included in the forthcoming paper covering southern Africa.

Two meristic characters (counts of ventrals and subcaudals) have been utilised for statistical analysis and the mean, standard deviation and standard error calculated, the sexes being treated separately.

Ventrals were counted by the Dowling (1951) method. The subcaudal count begins with the first scute in contact with its fellow on the midline and excludes the terminal spine. Dorsal scales were counted one head length posterior to the nape, at midbody and one head length anterior to the vent.

Under "Localities" for each form, literature citations are listed alongside the museum catalogue numbers for the specimens examined. Some authors' names are abbreviated as follows: Blgr = G.A. Boulenger; Laur. = R.F. Laurent; Lov. = A. Loveridge; Park. = H.W. Parker; Scor. = G. Scortecci.

The specimens examined belong to the following institutions (identified by the acronyms throughout the text):

AAM = Addis Ababa Museum, Ethiopia.

AMNH = American Museum of Natural History, New

York, U.S.A.

ANSP = Academy of Natural Sciences, Philadelphia, U.S.A.

BH = Barry Hughes Collection, Wanstead, U.K.

BM = Natural History Museum, London, U.K.

CAS = California Academy of Sciences, San Francisco, U.S.A.

FMNH = Field Museum of Natural History, Chicago, U.S.A.

IRScNB = Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium.

LACM = Los Angeles County Museum, U.S.A.

MCZ = Museum of Comparative Zoology, Harvard, U.S.A.

MF = Museo Zoologico de "La Specola", Florence, Italy.

MNHN = Museum National d'Histoire Naturelle, Paris, France.

MSNG = Museo Civico di Storia Naturale "Giacomo Doria", Genoa, Italy.

MSNM = Museo Civico di Storia Naturale, Milan, Italy.

NMK = National Museum of Kenya, Nairobi, Kenya.

NMW = Naturhistorisches Museum, Vienna, Austria.

NMZB = Natural History Museum, Bulawayo, Zimbabwe.

SMW = Senckenbergische naturforschende Gesellschaft, Frankfurt-am-Main, Germany.

UMNZ = University of Michigan Museum of Zoology, Ann Arbor, U.S.A.

USNM = National Museum of Natural History, Washington, U.S.A.

ZFMK = Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, Germany.

ZMB = Zoologisches Museum der Universität, Berlin, Germany.

ZMUC = Zoological Museum, Copenhagen, Denmark.

CHARACTER ANALYSIS

1. Number of apical pits on dorsal scales. *L. irroratum* has two (rarely three) pits on each scale, all other local species have single pits.

2. Dorsal scale rows. *L. irroratum* and *L. ornatum* differ from the other three species in having no reduction from 17 rows to 15 posteriorly.

3. Ventral plates. The variation in number of ventrals is shown in Table 1. There is no sexual dimorphism in *L. irroratum* (Guibé & Roux-Estève, 1972): in most taxa female counts average 5-7 higher than those of males, but in *L. c. loveridgei* the difference exceeds ten. Counts for *L. taylori* fall in between the ranges of *L. depressirostre* and *L. c. jacksoni*.

4. Subcaudal plates. The variation in number of subcaudals is shown in Table 1. The sexual dimorphism in the first five forms is constant, males averaging six higher than females, but the difference increases to eleven in *L. c. loveridgei*. The latter taxon is readily distinguished from all others by its high subcaudal counts.

5. Head shields. *L. ornatum* consistently differs from *L. depressirostre*, *taylori* and *capense* in having the postnasal separated from the first labial. This character is variable in *L. irroratum*.

6. Colour pattern of head. *L. irroratum* and *L. ornatum* have the most distinct head markings, consisting of a well-defined pale band round the snout, extending through the eye to the temporal region and a stripe extending diagonally from the eye to the angular oris.

In *L. depressirostre* the pale snout band is ill-defined and breaks up behind the eye, there may be some pale speckling on top of the head. The markings are similar in *L. capense jacksoni*, except that the top of the head is usually immaculate.

In *L. capense loveridgei* there is no pale snout band, but all the dorsal head shields have light speckling or vermiculation.

L. taylori is very variable, there may be a reticulate pattern in white restricted to the snout and sides of the head, or all the dorsal head shields may be heavily stippled with white.

7. Colour pattern of dorsum. In *L. c. jacksoni* and *L. c. loveridgei* each dorsal scale is tipped with white. In *L. depressirostre* there is white stippling on the distal half of each scale, but not on the apex. In *L. irroratum* and *L. ornatum* fine white stippling covers almost the entire scale, although occasional scales show dark spots which are free of stipple. *L. taylori* is variable, there may be only a white mark on the upper distal edge of each scale, more often the entire scale is heavily stippled with white, increasing on the lower lateral rows so that the outer row or two may be uniform white. In 75% of specimens there is a broad white collar or a nuchal blotch, a feature not found in any other taxon.

8. Colour pattern of ventrum. In *L. irroratum* and *L. ornatum* the ventrum is apparently dark throughout life, apart from white stippling on the chin and throat and a narrow pale free edge to the ventrals and subcaudals. *L. depressirostre* is similar, except that the white stippling is very meagre. In *L. taylori* the ventrum appears to be dark throughout life apart from white stipple on the chin, sometimes the white collar extending across the ventrals, and usually the ends of the ventrals are white.

In *L. capense*, juveniles have the ventrum white, but dark stippling develops posteriorly and rapidly extends forwards until adults are uniformly dark except for a light patch on the throat and a pale free edge to each ventral.

9. Skull. Bourgeois (1968) described and illustrated the skulls of *L. capense jacksoni* and *L. ornatum* from the Kivu Province of Zaire and drew attention to various differences between them.

Skulls were prepared of the five species recorded from northeastern Africa and some striking differences were noted in the proportions of the skull bones and the development of parietal crests.

VENTRALS								
TAXON	MALES				FEMALES			
	N	RANGE	MEAN	S.D.	N	RANGE	MEAN	S.D.
<i>irroratum</i>	1	164	-	-				
<i>ornatum</i>	16	190-205	198.5	4.3	32	186-212	210.0	6.2
<i>taylori</i>	14	158-176	166.5	5.8	11	165-184	173.3	6.9
<i>depressirostre</i>	29	153-176	162.6	6.7	34	158-180	168.9	5.0
<i>c. jacksoni</i>								
"south "	72	173-198	183.4	5.6	93	177-209	190.1	6.5
"north"	10	176-210	194.0	10.7	22	188-216	203.5	8.6
<i>c. loveridgei</i>	3	196-201	198.0	2.6	3	204-212	208.3	4.0

SUBCAUDALS								
TAXON	MALES				FEMALES			
	N	RANGE	MEAN	S.D.	N	RANGE	MEAN	S.D.
<i>irroratum</i>	1	38	-	-				
<i>ornatum</i>	16	41-50	44.0	2.6	32	32-42	37.8	2.6
<i>taylori</i>	14	30-38	35.0	2.7	11	26-30	28.0	1.4
<i>depressirostre</i>	28	31-40	34.9	1.9	34	26-34	28.4	1.6
<i>c. jacksoni</i>								
"south"	71	33-48	39.0	2.6	94	27-37	33.2	2.0
"north"	10	33-51	39.4	5.0	21	30-37	33.2	2.0
<i>c. loveridgei</i>	3	51-57	54.0	3.0	3	42-45	43.3	1.5

TABLE 1. *Lycophidion* in northeastern Africa: variation in ventral and subcaudal counts. Note: *L. c. jacksoni* is split into two groups: "south" includes specimens from southern Sudan, Uganda and Kenya. "north" includes specimens from central Sudan, Ethiopia and Somalia.

The short and broad skull of *L. ornatum* (Fig. 1A) seems to represent the ancestral condition, unless this is due to neoteny. In this skull the ratio of parietal maximum length/breadth is 1.12 and there are no indications of parietal crests.

The western species *L. irroratum* (Fig. 1B) has a slightly more elongate skull (parietal L/B 1.26) and has moderately developed parietal crests which are well separated posteriorly.

L. taylori sp. nov. (Fig. 1C) has a moderately elongate skull (parietal L/B 1.39), but only a trace of well separated parietal crests posteriorly.

L. depressirostre (Fig. 1D) has a very elongate skull (parietal L/B 1.95) with strongly developed smoothly curved parietal crests which merge posteriorly.

L. capense jacksoni (Fig. 1E) also has a very elongate skull (parietal L/B 1.88) with strongly developed angular parietal crests which merge posteriorly.

10. *Dentition.* Hughes has counted the teeth of a series of 40 *L. irroratum* from West Africa and recorded postmaxillary 13-17; palatine 12-16; pterygoid 18-24 and postmandibular 16-20 (unpublished data).

Bourgeois (1968) illustrated the skull of *L. ornatum*, but unfortunately the posterior portions of the maxillae were broken: there are 7 anterior maxillary teeth, 14 palatine and 18-21 pterygoid.

Underwood (pers. comm.) has examined the dentition of a *L. depressirostre* from Aware Melka, Ethiopia (BM 1916.6.24.5)

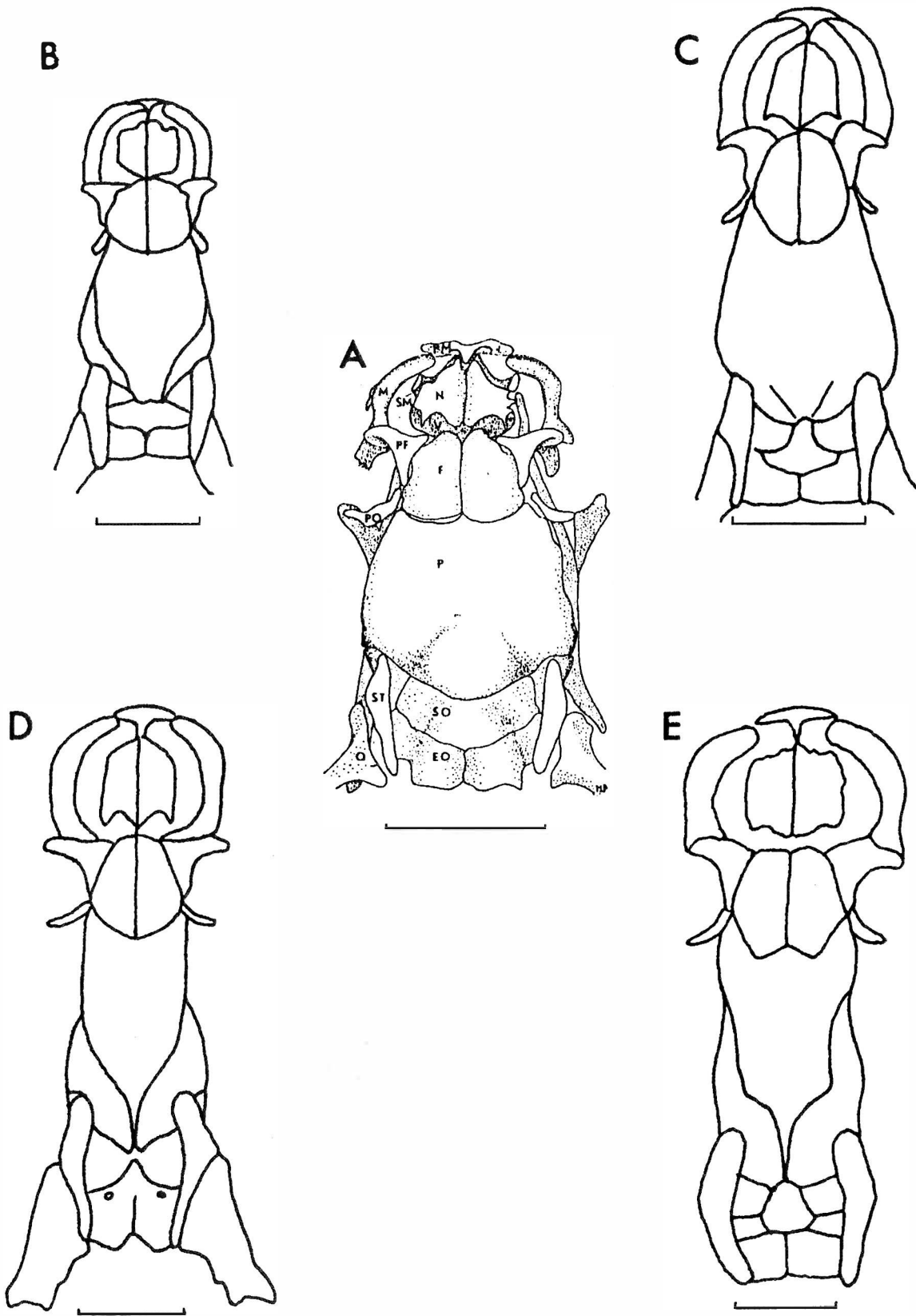


Fig. 1. Dorsal views of skulls of *Lycophidion*: A. *L. ornatum* (MRAC RG. 20950 Lwiro, Kivu, Zaire: after Bourgeois, 1968, Fig. 92); B. *L. irroratum* (NMZB 7918 New Tafo, Ghana); C. *L. taylori* (NMZB 10350 Haud, Somalia - paratype); D. *L. depressirostre* (NMZB 7920 Mareri, Somalia); E. *L. capense jacksoni* (NMZB 130 Kaianja, Uganda). Key to abbreviations for bones: EO = exoccipital; F = frontal; M = maxillary; N = nasal; P = parietal; PF = prefrontal; PM = premaxillary; PO = postorbital; Q = quadrate; SM = septomaxillary; SO = supraoccipital; ST = supratemporal. The line indicates 3 mm to scale.

and recorded 9+20 maxillary, 15 palatine, 24 pterygoid and 6+21 dentary teeth. The other specimen from this locality has 8+21 maxillary teeth, while Hughes has recorded 19-24 posterior maxillary teeth for BM1949.2.1.80-82 from Haud, Somalia.

Underwood (pers. comm.) has reported the dentition of a *L. taylori* paratype (BM 1949.1.2.83) as maxillary left 7+16, right 8+16; palatine 12; pterygoid 22; dentary 6+21. Two more paratypes (BM 1949.1.2.78-79) have maxillary dentition 8+12 and 7+11 respectively.

Bourgeois (1968) illustrated the skull of a *L. capense jacksoni* from Kivu, Zaire: it has 8+17 maxillary, 12-14 palatine; 20 pterygoid and 7+? dentary teeth. Broadley found 8+17 maxillary teeth in MF 2499 from Adi Ugri, Ethiopia. Underwood found 8+12, 8+14 and 8+16 maxillary teeth in BM 95.12.12. 9-11, and Hughes has recorded a range of 13-19 posterior maxillary teeth ($n=32$) in this taxon. Three specimens of the typical form from Zimbabwe have 7-8 + 14-17 maxillary, 13 palatine, 20 pterygoid and 7-9 + 19-22 dentary teeth. Hughes has found a range of 14-18 posterior maxillary teeth in *L. c. loveridgei* ($n=9$).

It does seem that *L. depressirostre* can be reliably distinguished from *L. taylori* and *L. capense* on the number of posterior maxillary teeth (19-24 versus 11-19).

II. Hemipenis. Branch (1976) has described and illustrated the hemipenis of *L. capense capense* from the Transvaal and has pointed out that the description of the retracted organ by Bogert (1940) was based on a Tanzanian specimen of *L. depressirostre*, which differs from *L. capense* in having two enlarged basal spines. Branch (pers. comm.) has examined the retracted hemipenis of an adult male *L. taylori* and finds it indistinguishable from that of *L. capense*.

SYSTEMATIC ACCOUNT

LYCOPHIDION IRRORATUM (Leach, 1819)

Coluber irroratus Leach, 1819, in Bowdich, T.E., Mission from Cape Coast Castle to Ashantee: 494 (Fantee, Ghana).

? *Lycophidion ornatum* (part, not Parker) Witte, 1966: 63.

Lycophidion depressirostre (part) Laurent, 1968: 472.

Lycophidion irroratum Hughes, 1983: 472.

The paratype of *L. depressirostre* from Yei, Sudan (FMNH 58321) differs from that species in having two apical pits on the dorsal scales, and is therefore assigned to *L. irroratum*. This specimen is a male with 17-17-17 dorsals, 164 ventrals and 38 subcaudals, the latter counts falling at the lower limits for *L. irroratum*. Hughes (1983) has previously recorded this species from Sudan and the Garamba National Park in north-eastern Zaire (MAC 20125 - Gangala na Bodio).

IRScNB 4768/2 from the Utukuru River in the Garamba National Park (close to the Sudanese border) was identified by Witte (1966) as a *L. ornatum*, but this 290 mm female snake has only 160 ventrals and 32 subcaudals and could be another *L. irroratum*.

LYCOPHIDION ORNATUM Parker 1936

Lycophidion ornatum Parker, 1936, Novit. Zool., 40: 122

(Congulu, Angola); Laurent, 1956: 116 and 1968: 470; Pitman, 1974: 83 (part); Spawls, 1978: 3.

Lycophidion capense capense (not A. Smith) Loveridge, 1936: 241 (part).

Lycophidion capense ornatum Loveridge, 1942: 266.

Diagnosis. Postnasal usually separated from first upper labial. Dorsal scales with single apical pits, in 17-17-17 (rarely 17-17-15) rows; ventral and subcaudal counts, see Table 1. Dark grey-brown stippled with white, except for two rows of dark dorsal spots; a well defined pale band round the snout forks behind the eye, the lower branch terminating at the angulus oris. Skull short, lacking parietal crests.

Size. Largest male (MCZ 40469 - Sipi, Mt. Elgon, Uganda.) 377+66 = 443 mm; largest female (NMK 1842 - Nyambeni Hills, Kenya) ca. 540+50 mm.

Localities. SUDAN. Gilo (Laur., 1968) FMNH 62307. UGANDA. Bugoye (Laur., 1968) MCZ 48191; Bukalasa-Mengo BM 1960.1.6.61; Butoha BM 1969. 2911; Bwamba Forest LACM 121606-7; Gulu (Laur., 1968) MCZ 47827; Inpenetrable (Kayonsa) Forest BM 1934.12.15.557; LACM 35085; Kianja BM 1960.1.6.60; Kigezi District (Laur., 1968) MCZ 39966; Mabira Forest BM 1960.1.6.59; Muko (Laur., 1968) MCZ 42686; Mushongero MCZ 48192; Nyakabande (Laur., 1968) MCZ 48303; Nyarusiza BM 1960.1.6.78; Rukaraba BM 1960. 1.3.47; Rutoma BM 1969.2910; Sango Bay Forest LACM 39223, 39225-6; Sipi, Mt. Elgon (Laur., 1968) MCZ 40468-70. KENYA. Chuka CAS 122286, 122314-5; NMK 1664, 1666, 1826; Kakamega Forest (Laur., 1968) BM 1962.819; MCZ 40471-3; Karura Forest NMK 1907; Nairobi NMK 1930; Nyambeni Hills NMK 1708, 1710-11, 1714, 1717, 1842-3, 1845.

LYCOPHIDION TAYLORI sp. nov.

Lycophidium capense capense (not A. Smith) Scortecchi, 1939: 272.

Lycophidium capense (not A. Smith) Parker, 1949: 54 (part); Lanza, 1972:177.

Lycophidium capense subsp. Laurent, 1968: 476.

Holotype. BM 1949.2.1.76, an adult male from Borama District (43°E:10°N) at ca. 1375 metres. Collected by Col. R.H.R. Taylor, 1932-33 (Fig. 2).

Paratypes. BM 1949.2.1.73, 74, 75, 77, 84 and BM 1955.1.11.39 from Borama District; BM 1949.2.1.72, 79, 83 and NMZB 10350 from Haud; from altitudes between 825 m and 1500 m.

Diagnosis. Postnasal in contact with first upper labial. Dorsal scales with single apical pits, in 17-17-15 rows (17-17-17 in one Belet Amin specimen); ventrals 158-179 in males, 165-184 in females; subcaudals 30-38 in males, 26-30 in females. Posterior maxillary teeth 11-16. Dorsal white markings may be restricted to a reticulate pattern on the snout and sides of the head, with a white upper edge to each dorsal scale, but usually the whole head and dorsum is heavily stippled with white and the lower

lateral scale rows are almost entirely white. Many specimens also have a white nuchal blotch or collar, which may completely encircle the neck. Skull moderate, without well defined parietal crests.

Etymology. The name *L. taylori* is a patronym in the genitive singular, honouring Colonel R.H.R. Taylor, whose collections made along the boundary between northern (formerly British) Somalia and Ethiopia in 1932/33 were a major contribution to our knowledge of the herpetofauna of this region.

Description. (Paratype variations in parentheses). Supralabials 8, the first in contact with the postnasal, the third, fourth and fifth entering the orbit; infralabials 8, the first 5 (4-5) in contact with the anterior sublinguals; preocular 1; postoculars 2; temporals 1+2. Dorsal scales with single apical pits, in 17-17-15 rows; ventrals 175 (161-175 in males; 169-184 in females); cloacal entire; subcaudals 34 (30-36 in males; 26-30 in females). Maxillary teeth 7+11 to 8+16.

Colouration. Dorsum dark brown, snout and sides of head with a reticulate pattern in white; an irregular white nuchal collar 5 to 9 scales wide dorsally, narrowing to 3 ventrals wide below; dorsal scales white-tipped, the outer two rows more than 50% white and ends of ventrals largely white, forming a pale ventrolateral band which extends to the tail tip. White collars present in two paratypes, large white nuchal blotches present in three, small white nuchal cross-bars present in two, no white nuchal markings in three. In most paratypes the head is stippled or mottled with white to a varying extent, the dorsals are often stippled with white and the ventrolateral scales are heavily infuscated with white. The ventrum is uniform brown apart from some white stipple on the chin and white lateral edges to the ventrals.



Fig. 2. *Lycopheidion taylori*: dorsolateral view of the holotype, scale in mm (BM 1949.2.1.76 from Borama District, Somalia). Photo: Natural History Museum, London.

Size. Holotype 210+27 mm; largest male (BM 1949.2.1.79) 280+34 = 314 mm; largest female (BM 1949.2.1.83) 450+46 mm, tail tip missing.

Additional material examined. SOMALIA. Afgoi (Scor., 1939) MSNG 46360; Balad (Scor., 1939) MSNG 46301 (2 males with V 169-170, SC 37); Belet Amin (Scor., 1939) MSNG 46350 (27 specimens, one male has V 158 and supralabials 7 (3,4) on one side); Harrar MSNG —. KENYA, 2 km southwest of Kakuma CAS 131002 (male with V 171, SC 31 and a broad white collar 9 scales wide encircling the neck). CHAD. Abéché MNHN 9893 (female with 192 ventrals, 27 subcaudals and a broad white collar). SENEGAL. 15 km N of Kaffrine, Sine-Saloum USNM 161990 (female with 179 ventrals, 24 subcaudals, but no white collar).

Lanza (1972) records two specimens from the Awash National Park, one with the distinctive white collar, but does not give scale counts: they are assumed to be *L. taylori*.

LYCOPHIDION DEPRESSIROSTRE Laurent

Lycopheidium jacksoni Boulenger (part), 1893: 340.

Lycopheidium acutirostre (not Günther) Sternfeld, 1912: 268.

Lycopheidion capense (not A. Smith) Loveridge, 1929: 20 (part); Scortecci, 1930: 16 (part) and 1931: 204 (part); Parker, 1949: 54 (part); Pitman, 1974: 82 (part).

Lycopheidion capense capense (not A. Smith) Loveridge 1933: 233 (part) and 1956: 43; Bogert, 1942: 2.

Lycopheidion capense > *acutirostre* Loveridge, 1936: 242.

Lycopheidion capense uzungwensis (not Loveridge) Bogert, 1940: 31.

Lycopheidion depressirostre Laurent, 1968: 472 (Torit, Sudan); Spawls, 1978: 4; Hoevers & Johnson, 1982: 185.

Lycopheidion capense subsp. Laurent, 1968: 476 (part).

Diagnosis. Postnasal in contact with first upper labial (rarely separated in Tanzanian material). Dorsal scales with single apical pits, in 17-17-15 rows; ventral and subcaudal counts, see Table 1. Posterior maxillary teeth 19-24. Brown, each dorsal scale with pale speckling distally; an ill-defined speckled pale band round the snout and often some pale speckling on top of the head; ventrum dark except for some pale stippling on chin and pale lateral edges to the ventrals. Skull elongate, with strongly developed curved parietal crests.

Size. Largest male (MCZ 53355 - Torit, Sudan) 315+49 = 364 mm; largest female (MCZ 53357 - Torit, Sudan) 440+42 = 482 mm.

Localities. SUDAN. 30 km N of Juba ZFMK 26028; Torit (Lov., 1956; Laur., 1968) FMNH 58414, 62338-9; MCZ 53347-8, 53350, 53352, 53354-7; ZMB 876. SOMALIA. No precise locality (Scor., 1930) MF 23785; Afgoi MF1106-8; Eggi MF 2297; Giohar MF 5377; Haud (Park., 1949; Laur., 1968) BM 1949.2.1.80-82; Mareri (Hoevers & Johnson, 1982) CAS 153329-30, MF 27062-3; Oddur MF 23753-5; Wagga, Goohi Mts (Park., 1949) BM 1905.11.7.44. ETHIOPIA. Aware Melka (Park., 1949; Laur. 1968 - as *L. capense*

subsp.) BM 1916.6.24.4-5; Bourkia MNHN 1905-191; Harar (Park., 1949) BM 1909.12.4.4. UGANDA. Kampala (Lov., 1933; Laur., 1968) MCZ 30115. KENYA. No precise locality ZMB 22455; Changamwe (Lov., 1936); Giriama NMK 89; Jadini-Diani Beach BM 1960.1.2.16-18; Kaimosi (Lov., 1929) USNM 49388; between Kaimosi and Kapsabet NMK 1547; Kibwezi (Lov., 1936) MCZ 40478; Kilibassi (Bogert, 1942) AMNH 61661; 7 km west of Laisamis CAS 129746; Lamu (Blgr, 1893) BM 87.11.3.15; Malindi (Lov., 1936) MCZ 40481; NMK 1340; Mombasa NMK 90; Mount Kulal LACM 66396; Mount Mbololo (Lov., 1936) MCZ 40480; Moyale BM 1958.1.1.92; Mtoto Andei (Lov., 1929) USNM 48590; Samburu NMK 102; Sankuri (Bogert, 1940) AMNH 50792; Shaffa Dika (Bogert, 1942) AMNH 61644; Sigor MCZ 96857; Sokoki Forest (Lov., 1936); Tana ZMB 15680; Voi BM 98.1.18.13; MCZ 96889-90; NMK 564; Wajir Bor CAS 140310.

LYCOPHIDION CAPENSE JACKSONI Boulenger

Lycophidium jacksoni Boulenger (part), 1893, Cat. Snakes Brit. Mus., 1: 340, pl. XXI, fig. 3 (Kilimanjaro).

Lycophidium abyssinicum Boulenger, 1893, Cat. Snakes Brit. Mus. 1:342, pl. XXII, fig. 1 (Southern Ethiopia). 1895: 536 and 1896a: 553; Sternfeld, 1908: 240.

Lycophidium horstockii (not Schlegel) Günther, 1894: 88.

Lycophidium capense (not A. Smith) Boulenger, 1896b: 216 and 1909: 303; Angel, 1922: 357; Loveridge, 1929: 20 (part); Scortecci, 1930: 16 (part); Parker, 1949: 54 (part).

Lycophidion capense capense (not A. Smith) Loveridge, 1933: 233 (part), 1936a: 23 (part), 1936b: 241 (part), 1942: 268 (part) and 1956: 43 (part).

Lycophidion capense jacksoni Laurent, 1956: 109 and 1968: 474; Spawls, 1978: 4.

Diagnosis. Postnasal in contact with first upper labial. Dorsal scales with single apical pits, in 17-17-15 rows; ventral and subcaudal counts, see Table 1. Posterior maxillary teeth 13-19, usually 15-17. Dark brown, each dorsal scale with a pale apical spot or border, an ill-defined pale band round the snout, but top of head usually immaculate; juveniles pale below, but ventrum darkens from the tail anteriorly, so that adults are dark below except for the throat and free edges of the ventrals. Skull elongate, with well defined angular parietal crests.

Size. Largest male (ANSP 4705 - west of Juba River, Ethiopia) 350+58 = 408 mm; largest females (NMK 315 - Nairobi. Kenya) 530+50 = 580 mm and (NMK 1706 - Nyambeni Hills. Kenya) 541+25 = 566 mm.

Localities. SUDAN. Disa BM 1909.10.15.47; 1967.1880: Gilo (Lov., 1956; Laur., 1968) MCZ 53342; Imurok (Lov., 1956; Laur., 1968) MCZ 53343; Juba (Laur., 1968) FMNH 58500; Katire (Laur., 1968) FMNH 62308; Latome (Lov., 1956; Laur., 1968) MCZ 53344; Li Rangu FMNH 58317; Nimule (Lov., 1956; Laur., 1968) MCZ 53345; Roseires BM 1909.10.15.48; Talodi BM 1930.11.12.8; Terangole (Lov., 1956; Laur., 1968) MCZ 53346; Torit (Lov., 1956; Laur., 1968) MCZ 53349, 53351; Yegiyegi (Lov., 1956) MCZ 53358; Yei (Laur., 1968) FMNH 58322. SOMALIA. Ouarka MNHN 1902-311. ETHIOPIA. No precise locality MNHN

4343 (2); MSNM 1771; "Southern Abyssinia" (Blgr, 1893) BM 73.4.25.15; Adi Ugri MF 167, 2498-9; Anseba "River" MSNG 30244; between Awash and Addis Ababa (Scor., 1930); Danol MSNM 1859 (2); Daroli NMW 19339; Dibessa River Bridge AAM H.389; Endessa MNHN 1905-189; "Eritrea" MF 676; Gambela AAM H.541, 882; Ghinda (Blgr, 1896a) MSNG 29031; Gondar MSNM 1983(2); Harar (Lov., 1936a) FMNH 4026; Hieka MNHN 1905-190; 15 km south-east of Kebre Mengist (R.O.S. Clarke coll.); Lake Asawa BM 1973. 3252; Lake Haramaia (Sternfeld, 1908) ZMB 27466; Sheikh Hussein (Blgr, 1895) ANSP 4706; Sidamo Province BM 1975. 2142; west of Juba River (Blgr, 1896b) ANSP 4705; "between Ethiopia and Kenya" (Laur., 1968) USNM 66928. UGANDA. Bisu NMZB 172; Budda Coast (Laur., 1968) AMNH 5259, 24284; Bukalasa NMZB 170; Bugala Island MSNG 30273; Bugoma Forest LACM 39046; Bussu MSNG 30289; 37611A; Butiaba (Laur., 1968) BM 1951.1.3.30, 1960.1.2.20; Bwanba Forest LACM 121604-5; "Eastern Province" BM 1933.9.8.20; Entebbe BM 1901.6.24.45-6; 1960.1.6.62; 1963.952-4; Fort Portal BM 1901.6.24.48, and 40 km north USNM 206992; Gulu BM 1960.1.2.19 (2); Hoima BM 1960.1.6.63; Jinja (Lov., 1933; Laur., 1968) BM 1954.1.11.93-4; MCZ 30116; Kianja BM 1951.1.4.89; NMK 92, 101; NMZB 130; Kampala BM 96.5.28.15-17; Kasiriyi NMZB 171; Katebo BM 1960.1.2.4; 1960.1.6.57; Katunguru BM 1951.1.4.91; Lower Semliki BM 1954.1.11.95-6; Lwampanga BM 1960.1.2.5; Masese NMK 528; Mjanji BM 1954.1.4.90; Mount Elgon NMK 655; Nakifulube NMZB 173; Nyenga (Laur., 1968) AMNH 63770-2; Sango Bay Forest LACM 39224; Sebei, Mt Elgon (Lov., 1936b; Laur., 1968) MCZ 40467; Semliki BM. 1954.1.12.32; Sesse Archipelago (Blgr, 1909) MSNG 27756(2), 40762(2); Serere BM 1960.1.6.58; Soroti NMK 100. KENYA. Baringo BM 1901.1.6.4.47; Chemelil CAS 141534, 148000-1, 148036, 150925, 152789, 154411; Chuka, Mt. Kenya NMK 1663, 1665; Kabartonjo CAS 111762; Kabluk CAS 111776-8; Kakamega Forest BH 8464, 8466, 8469; CAS 122741; Kariti (Günther, 1894) BM 93.11.21.47; Kiambu NMK 99; Kijabi (Laur., 1968) FMNH 2430; Kisumu BM 1978.991-3; Kitui District NMK 83; Kilimanjaro (Blgr, 1893) BM 87.11.3.82; Lake Sirgoit (Laur., 1968) SMW R. 3176; Lariagoia Game Refuge LACM 63148; Lemek Valley (Angel, 1922) MNHN 1922-34; Lumbwa MCZ 160073-4 and 7 km northwest MCZ 159772-3; Malindi (?) NMK 882-3; 12 km southwest of Maralal LACM 60078; Mombasa (?) MNHN 1901-450; Mount Kenya to Muranga USNM 41133; Mumias CAS 141788, 147942, 147944; Muranga (formerly Fort Hall) BM 1906.8.25.2; Mweiga LACM 50630; Mzima Springs FMNH 79146; Nairobi (Angel, 1922; Lov., 1936a; Laur., 1968) MF 6947; MNHN 1922-35, 1940-182 to 185; NMK 88. 94-7, 315, 532, 569, 1901; NMW 19335; USNM 40966-7; ZMUC R. 60507; 27 km southeast of Nakuru CAS 85729; Ndabibi NMK 1906; Nyambeni Hills NMK 1698, 1702-3, 1706-7, 1715, 1718, 1764-5, 1767-8, 1780-1; Parklands (Laur., 1968) MCZ 18190; UMMZ 61206; Ramuruti NMK 98; 5 km north of Sergoit LACM 63384; Sigor MCZ 96858; Thika NMK 2085; Wambuga (Laur., 1968) USNM 40885.

Remarks. There are three specimens of *L. c. jacksoni* from the Kenya coast (Malindi and Mombasa). If the locality data is correct and these specimens have not been accidentally translocated by man, then this form is at least parapatric with *L. c. loveridgei*. This suggests that the latter form may be a full species. On the other hand, the high ventral counts from

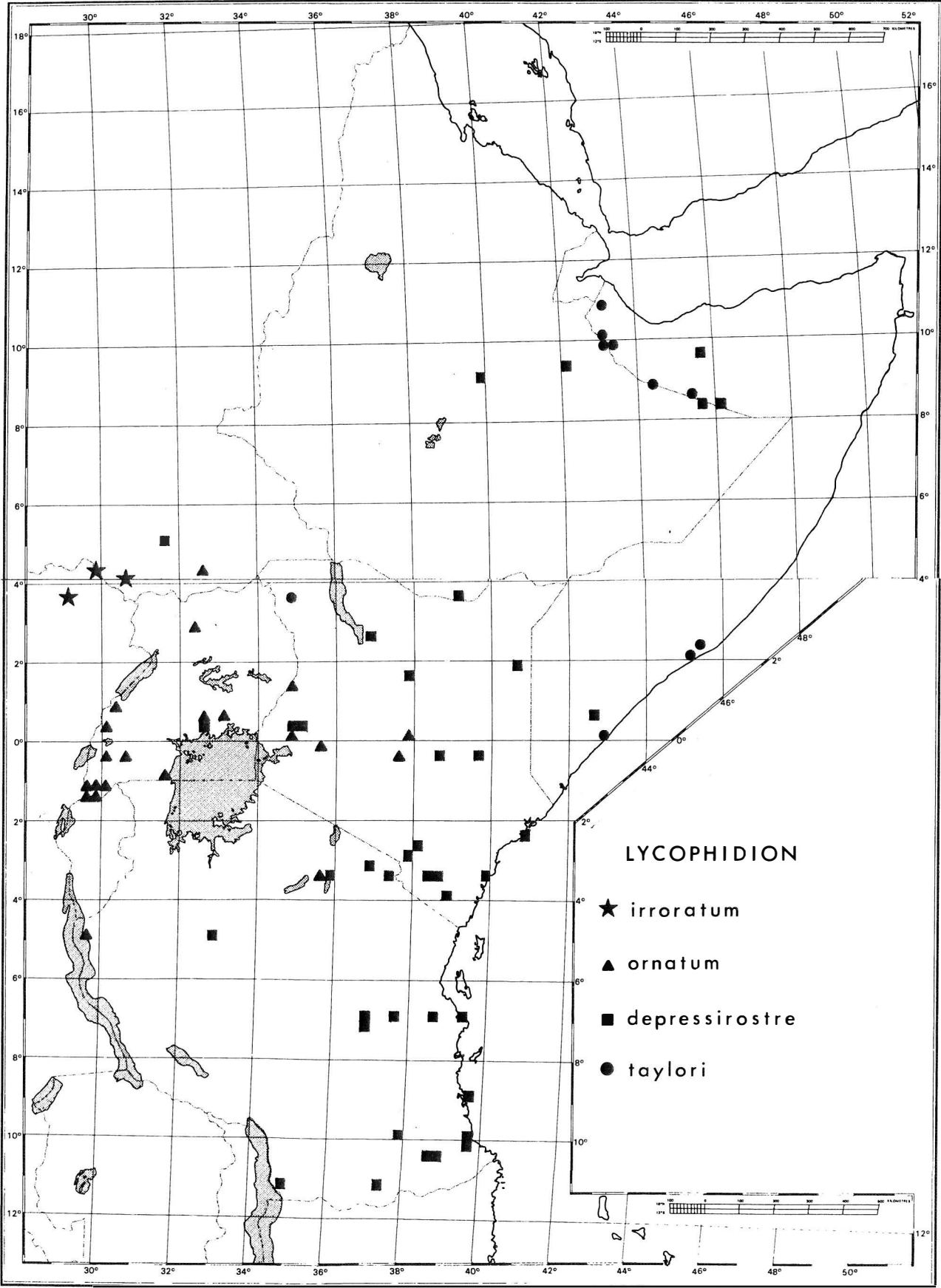


Fig. 3. Distribution of various *Lycophidion* species in northeastern Africa.

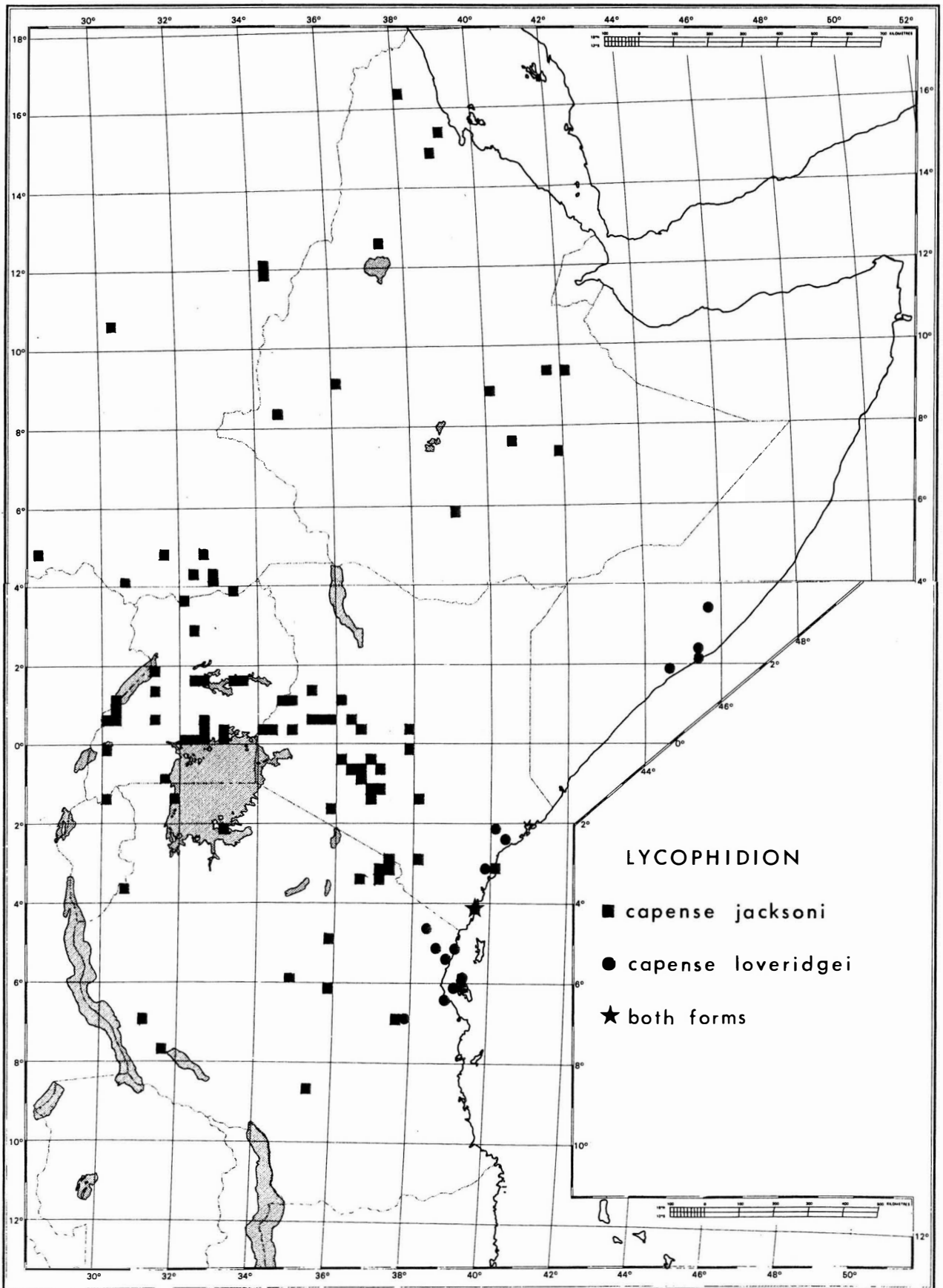


Fig. 4. Distribution of *Lycophidion capense* in northeastern Africa.

“north” populations of *L. c. jacksoni* (Table 1) suggest possible intergradation with *L. c. loveridgei*: however, the latter taxon is still readily distinguished by its high subcaudal counts.

LYCOPHIDION CAPENSE LOVERIDGEI Laurent

? *Lycophidium semicinctum* (not Duméril & Bibron) Scortecci, 1930: 16.

Lycophidium capense capense (not A. Smith) Loveridge, 1936b: 241 (part) and 1942: 268 (part).

Lycophidium capense loveridgei Laurent, 1968, Bull. Mus. comp. Zool. Harv. 136: 476 (Amani, Usambara Mts, Tanzania); Spawls, 1978: 4.

Diagnosis. Postnasal in contact with first upper labial. Dorsal scales with single apical pits in 17-17-15 rows; ventrals 195-209 in males, 195-221 in females; subcaudals 47-58 in males, 40-55 in females. Posterior maxillary teeth 14-18. Dark brown, each dorsal scale with a pale apical spot and sometimes white stipple also; head shields with pale stippling or vermiculation; ventrum white in juveniles, darkening from the tail, but with a pale throat and white stippling on ventrals. No skull has been examined.

Size. Largest male (MF 1105 - Genale, Somalia) 410+83 = 493 mm; largest female (MCZ 40475 - Ngatana, Kenya) 415+62 = 477 mm.

Habitat. Spawls (1978) records this form from both forest and savanna in the coastal strip.

Localities. SOMALIA. Balad (Scor., 1930); Eggi MF 2288; Genale MF 1105; Mogadiscio MF 901. KENYA. Jilore Forest (Spawls, 1974); Kilifi (Spawls, 1974); Likoni, on mainland opposite Kilindini (Lov., 1942; Laur., 1968) MCZ 48266; Mkonumbi (Lov., 1936b; Laur., 1968) MCZ 40474; Mom-basa (Spawls, 1974); Ngatana (Lov., 1936b; Laur., 1968) MCZ 40475.

KEY TO THE GENUS *LYCOPHIDION* IN
NORTHEASTERN AFRICA

- 1a. Apical pits on dorsal scales paired.....*irroratum*
- 1b. Apical pits on dorsal scales single2
- 2a. Dorsal scales in 17 rows up to the vent; first labial separated from postnasal.....*ornatum*
- 2b. Dorsal scale rows reduced to 15 before the vent; first labial in contact with postnasal.....3
- 3a. Dorsal scales dark with pale stippling, or with a white mark on the upper distal edge of each scale; ventrum dark throughout life except for white stipple on chin and throat, pale edges and sometimes ends to the ventrals; ventrals usually less than 175 in males and 180 in females.....4
- 3b. Dorsal scales dark with an apical white spot; ventrum white in juveniles, dark in adults except for a light patch on the throat and pale free edges to the ventrals; ventrals usually more than 175 in males and 180 in females.....5

- 4a. Dorsal scales with white stippling covering the entire scale or restricted to a white mark on the upper distal edge of each scale, white stippling usually heavier on lower flanks and ends of ventrals; often a white blotch or collar on neck.....*taylori*
- 4b. Dorsal scales with white stippling restricted to the apex, not much heavier on lower laterals; no white blotch or collar on neck.....*depressirostre*
- 5a. Subcaudals 34-48 in males, 27-37 in females; distribution in highlands.....*capense jacksoni*
- 5b. Subcaudals 51-57 in males, 42-45 in females; distribution in coastal lowlands.....*capense loveridgei*

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