

# A REVIEW OF THE NAMIBIAN SNAKES OF THE GENUS *LYCOPHIDION* (SERPENTES: COLUBRIDAE), WITH THE DESCRIPTION OF A NEW ENDEMIC SPECIES

DONALD G. BROADLEY  
Natural History Museum, Bulawayo, Zimbabwe

Broadley, D. G.. 1991. A review of the Namibian snakes of the genus *Lycophidion* (Serpentes: Colubridae), with the description of a new endemic species. *Annals of the Transvaal Museum* 35(14): 209–215.

Examination of recently collected Namibian material assigned to *Lycophidion hellmichi* Laurent revealed that it is composite. The northernmost specimen is the first recorded male of *L. hellmichi* and has a bilobed hemipenis like *L. capense*. Another male from the Skeleton Coast National Park also has everted hemipenes, but these are trilobed as in the eastern species *L. variegatum* Broadley. This snake and all other specimens from south of latitude 18° S which superficially resemble *L. hellmichi* are described as a new species, *Lycophidion namibianum*, which agrees with *L. variegatum* in having the first supralabial separated from the postnasal. When skulls of the different forms were compared, it was found that the skull of the new species resembles that of *L. variegatum* in having moderately developed parietal crests that are well separated posteriorly, whereas *L. capense capense* has strong parietal crests that merge posteriorly and true *L. hellmichi* has only weak convergent crests restricted to the back of the skull. The dwarfed western populations of *L. capense multimaculatum* exhibit paedogenesis, retaining throughout life a skull lacking parietal crests (as in subadult *L. c. capense*).

Keywords: Namibia, Systematics, Serpentes, Colubridae, *Lycophidion*, new species.

## INTRODUCTION

In his study of the reptiles and amphibians of Namibia, Mertens (1955) recorded only one form of *Lycophidion*, i.e., typical *L. capense* (A. Smith). However, he recorded data for a male snake in the Bachran Collection which had 197 ventrals and 40 subcaudals (= TM 32594). When Laurent (1964) described his new species *L. hellmichi* from south-western Angola, he suggested that this Okahandja snake mentioned by Mertens was another *L. hellmichi*. Laurent (1968) subsequently assigned five other specimens from Okahandja to *L. capense multimaculatum* Boettger. Haacke (1970) identified three Namibian snakes as *L. hellmichi* and Branch (1976) found that *L. capense* material from Namibia and Botswana was referable to the typical form. Broadley (1983) confirmed that most Namibian specimens of *L. capense* belonged to the typical form, but recorded *L. capense multimaculatum* from Rundu and the eastern Caprivi.

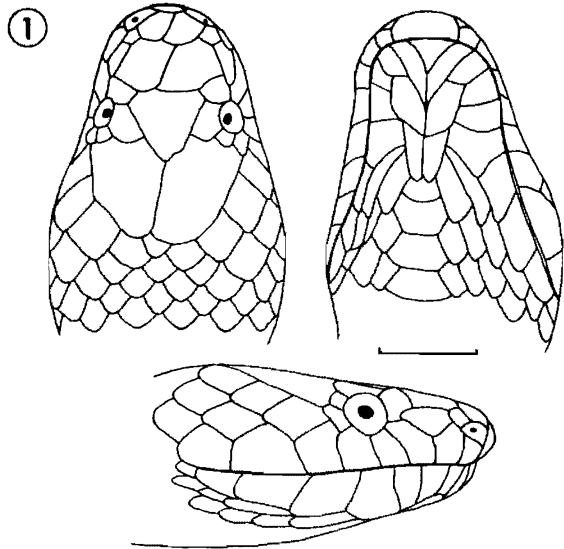
When I borrowed recently collected material from the State Museum and the Transvaal Museum, in the course of revising the genus *Lycophidion*, I discovered that most of the material assigned to *L. hellmichi* represents an undescribed form closely related to the eastern species *L. variegatum* Broadley (1969). While describing the new species it seems appropriate to review all the Namibian forms of *Lycophidion*.

## MATERIALS AND METHODS

This study is based on the examination of 97 Namibian specimens. Two meristic characters (counts of ventrals and subcaudals) have been utilized for statistical analysis and the mean and standard deviation calculated (Table 1), 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.

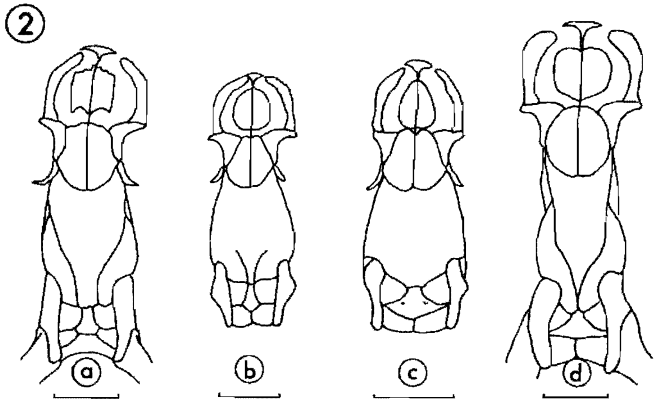
Under 'Material' for each form, literature citations are listed alongside the museum catalogue numbers for the specimens examined. Author's names are abbreviated as follows: Brdly = D. G. Broadley; Laur. = R. F. Laurent; Mert. = R. Mertens. The specimens examined belong to the following institutions (identified by the abbreviations throughout the text): BM = Natural History Museum, London, U.K.; FMNH = Field Museum of Natural History, Chicago, U.S.A.; MCZ = Museum of Comparative Zoology, Harvard, U.S.A.; NMZB-UM = Natural History Museum, Bulawayo, Zimbabwe; SAM = South African Museum, Cape Town, South Africa; SMF = Senckenberg Museum, Frankfurt am Main, Germany; SMWN = State Museum, Windhoek,



**Figs 1 & 2**

1. *Lycophidion namibianum* spec. nov. Dorsal, ventral and lateral views of the holotype. The line equals 5 mm to scale.

2. Dorsal views of skulls of *Lycophidion*: a *L. namibianum* (Paratype, NMZB-UM 5955 – Karibib). b *L. hellmichi* (TM 49008 – 6 km E of Etengua, Kaokoveld). c *L. capense multimaculatum* (NMZB-UM 22820 – 15 km WSW of Katima Mulilo). d *L. capense capense* (NMZB 7103 – Bulawayo, Zimbabwe). The line equals 3 mm to scale.



**COLOURATION.** Holotype red-brown above speckled with white, lower 3–4 lateral scale rows and ends of ventrals white, chin and throat white, ventrals dark brown mesially.

Allotype dark brown above, speckled with white except for symmetrical dark bars near distal edges of parietals and numerous scattered dark spots, each covering one or two scales, outer two lateral scale rows largely white; ventrum dark brown, posterior ventrals suffused with white laterally. In the other material the dorsal white speckling is variable and dark spots are present only in NMZB-UM 5955, SMWN R.345 and ZMB 5705; the outer three or four rows of lateral scales

and the ends of the ventrals are uniform white.

**SIZE.** Holotype female 430 + 45 = 475 mm; allotype (largest) male 315 + 42 = 357 mm. Largest female (SAM 46298) 530 + 56 = 586 mm.

**HABITAT.** The distribution of this species seems to be centred in the Bushy Karoo-Namib shrubland (White, 1983) east of the Namib Desert; most specimens come from rocky areas. However, the allotype was found in the Namib Desert trying to climb up a dune (Haacke, personal communication).

REMARKS. In its first labial/postnasal separation, trilobate hemipenis and elongate skull with moderately developed parietal crests, which are separated posteriorly, this species resembles *L. variegatum*. Its ventral counts, although averaging higher, overlap those for *L. variegatum* (Table 1). However, *L. namibianum* is a larger and more robust snake than *L. variegatum*; it also has a more robust skull and teeth. In addition, the two species are readily distinguished on colour pattern – *L. variegatum* is black with a variable white dorsal pattern, in the form of coarse white mottling rather than speckling. In *L. namibianum* the dorsum is brown with variable white speckling and there is usually a broad ventrolateral white band.

***Lycophidion hellmichi* Laurent, Figs 2b, 4.**

*Lycophidion hellmichi* Laurent, 1964: 95; Broadley, 1983: 95 (part)

DIAGNOSIS. First upper labial in contact with postnasal. Dorsal scales with single apical pits in 17-17-15 rows; ventrals 211 in the Namibian male, 199–214 in Angolan females; subcaudals 45 in male, 33–34 in females. Dark brown above, each scale usually bordered or tipped with white, sometimes with a paler vertebral band, outer 1–3 lateral scale rows and ends of ventrals orange/white, head shields with pale margins or a symmetrical pattern, ventrals dark brown with pale edges. Hemipenes bilobed. Skull elongate, weak parietal crests present posteriorly and convergent; postmaxillary teeth 17–18.

SIZE. Only male 345 + 57 = 402 mm; largest female (holotype) 427 + 44 = 471 mm.

MATERIAL. Six kilometres east of Etengua, Kaokoveld (1713 A3) (Brdly, 1983) TM 49008. Three extralimital females have been examined, two from Angola and an old specimen from 'Kongostaten'.

***Lycophidion capense capense* (A. Smith, 1831), Fig. 2d.**

*Lycodon capensis* A. Smith, 1831: 18.

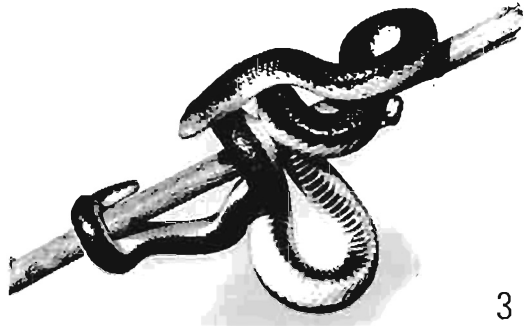
*Lycophidium capense* Sternfeld, 1910: 54

*Lycophidium irroratum* (not Leach) Werner, 1910: 356; 1915: 357.

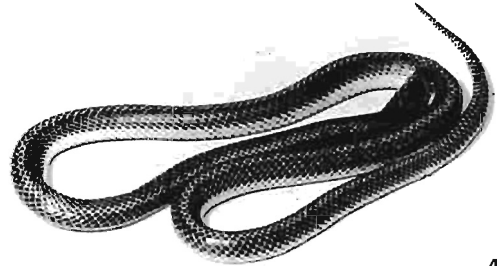
*Lycophidion capense capense* Mertens, 1955: 92 (part); Branch, 1976: 2; Broadley, 1983: 92.

*Lycophidion capense multimaculatum* (not Boettger) Laurent, 1968: 474 (part); Mertens, 1971: 85.

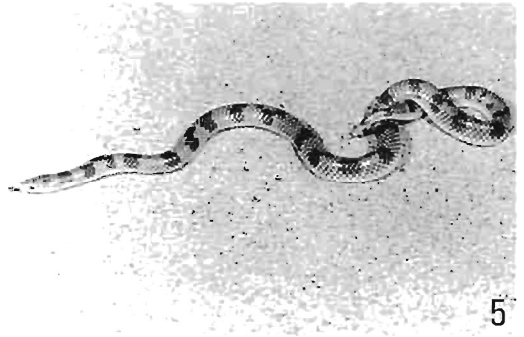
DIAGNOSIS. First upper labial in contact with



3



4



5

**Figs 3–5**

3. *Lycophidion namibianum* spec. nov. TM 52507, a female from Rössing Mine (Photo: W. D. Haacke).

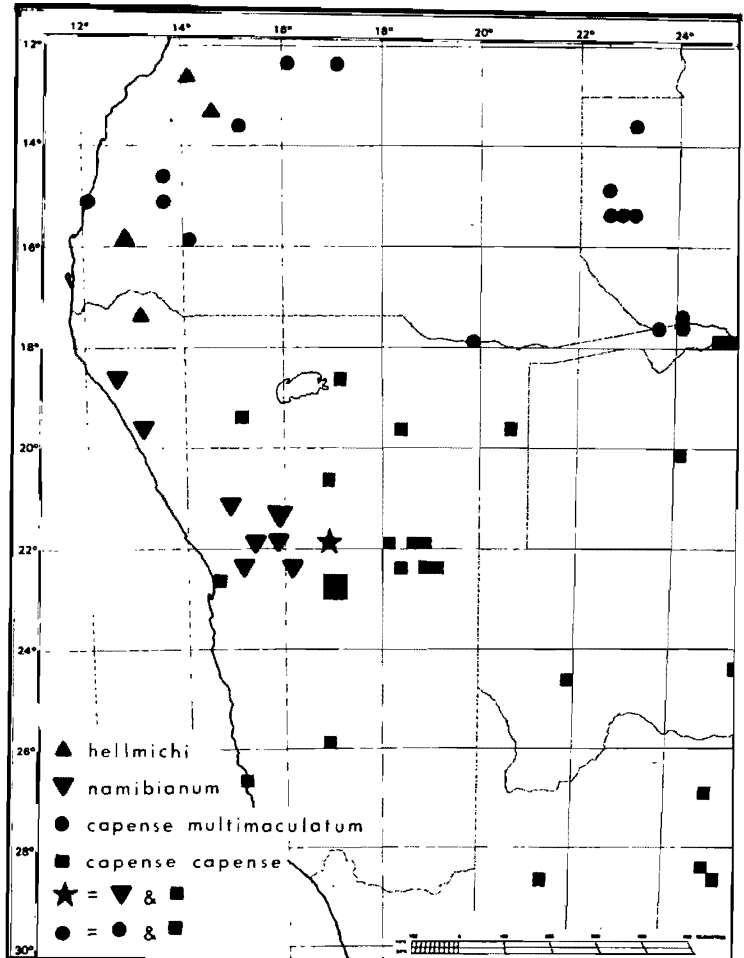
4. *Lycophidion hellmichi* Laurent. TM 49008, only known male from 6 km east of Etengua, Kaokoveld (Photo: W. D. Haacke).

5. *Lycophidion capense multimaculatum* Boettger. Female from Katima Mulilo, Caprivi Strip (Photo: J. D. Visser).

postnasal. Dorsal scales with single apical pits in 17-17-15 rows; ventrals 167–180 in males, 169–188 in females; subcaudals 33–38 in males, 24–33 in females. Black above, each dorsal scale with white stippling at the apex, head with white vermiculation. Ventrums uniform white (juveniles) or

Fig. 6

The distribution of *Lycophidion* in Namibia.



more or less blotched with black. Hemipenes bilobed. Skull elongate, with well-defined parietal crests which merge posteriorly.

SIZE. Largest male (SMWN R.335 – Windhoek) 365 + 60 = 425 mm; largest female (SMWN R.7010 – Windhoek) 460 + 43 = 503 mm.

MATERIAL. Damaraland SAM 1596; Doring Pan SMWN R.342; Finkenstein SMWN R.338, 481, 2338; Gobabis (Sternfeld, 1910; Branch, 1976) ZMB 20915(3), 21035, 21489(4), 21525(3), 21545(3), 21546, 21598, 21599(2); Gocheganas SMWN R.344; Grootfontein North (Werner, 1915; Mert., 1955) SMF 32468, ZMB 21616; Helmeringhausen (Mert., 1971); Kalidona (Mert.,

1971) SMF 540.69; 15 km WSW of Katima Mulilo NMZB-UM 21264; Keres SMWN 341; Lichtenstein SMWN R.339; Lüderitz Bay (Laur., 1968) MCZ 22050; Okahandja (Sternfeld, 1910; Werner, 1910, 1915; Mert., 1955; Laur., 1968; Mert., 1971; Branch, 1976) FMNH 57653, 62780, 64482, 65870, 81618, SAM 19804, 19816, 19822(2), SMF 46360-1, TM 39131; Onguma BM 1937.1.2.27; Otjiwarongo SMWN R.3175; Swakopmund SMWN R.4040; Tsumkwe SMWN R.2733; Wendelstein Farm TM 44727; Wilhemsröhe SMWN R.252(2), 346; Windhoek (Sternfeld, 1910; Mert., 1955) SMF 46673, SMWN R.330-7, 348-50, 1476, 2610, 7010, ZMB 21614; Witvlei SMWN R.340.

REMARKS. The specimens from Lüderitz Bay and

Swakopmund are probably waifs, accidentally introduced by man in freight.

***Lycophidion capense multimaculatum* Boettger, Figs 2c, 5.**

*Lycophidion capense* mut. *multimaculata* Boettger, 1888: 67.

*Lycophidion capense multimaculatum* Broadley, 1983: 94.

**DIAGNOSIS.** First labial in contact with postnasal. Dorsal scales with single apical pits, in 17-17-15 rows; ventrals 159-182 in males, 153-188 in females; subcaudals 28-38 in males, 22-32 in females. Dorsum red-brown to purple with white stippling, but unstippled areas often form paired series of sometimes confluent dark dorsal blotches or dark crossbands. Ventrals white or with a red-brown median stripe, band or series of blotches. Hemipenis bilobed. Skull elongate, lacking parietal crests due to neoteny.

**SIZE.** Largest male (NMZB-UM 22818 - 15 km WSW of Katima Mulilo) 270 + 41 = 311 mm; largest female (SMWN R.482 - Rundu, Okavango) 280 + 29 = 309 mm.

**MATERIAL.** Katima Mulilo (Brdly, 1983) NMZB-UM 24171-3; 15 km WSW of Katima Mulilo (Brdly, 1983) NMZB-UM 21265-6, 22817-21, 22846; 65 km WSW of Katima Mulilo (Brdly, 1983) NMZB-UM 21257; Rundu, Okavango (Brdly, 1983) SMWN R.482.

**REMARKS.** The Namibian and western Zambian populations of this form are stunted in size and the skull never develops parietal crests (Fig. 2c). Eastern populations from the Zambian Copperbelt to the Sumbawanga District of Tanzania attain normal size and develop the strong parietal crest typical of *L. capense* (Fig. 2d). These eastern populations have the dorsum uniformly stippled with white, lacking the dark blotches or crossbands typical of the western populations. Sympatry of *L. c. multimaculatum* with typical *L. capense* 15 km WSW of Katima Mulilo suggests that *L. c. multimaculatum* may be a full species. However, as the eastern populations of *L. c. multimaculatum* show signs of intergradation with *L. c. capense*, the situation requires further investigation.

**Key to the species and subspecies of *Lycophidion* in Namibia**

1. First labial separated from postnasal ..... *L. namibianum* spec. nov.
- First labial in contact with postnasal ..... 2
2. Ventrals more than 190; subcaudals more than 40 in males, more than 30 in females ..... *L. hellmichi* Laurent
- Ventrals fewer than 190; subcaudals fewer than 40 in males, 30 or fewer in females ..... 3
3. Dorsum red-brown stippled with white, usually with dark paired dorsal blotches or crossbands; subcaudals 28-33 in males, 22-27 in females ..... *L. capense multimaculatum* Boettger
- Dorsum black with white vermiculation on head and white stipple on the apex of each dorsal scale; subcaudals 33-38 in males, 24-33 in females ..... *L. capense capense* (A. Smith)

**ACKNOWLEDGEMENTS**

I am grateful to K. Klemmer (SMF) and Ms A. G. C. Grandison (BM) for facilities granted while working on *Lycophidion* material in their charge. I also thank the following colleagues for their ready assistance with material on loan: W. D. Haacke and Ms L. Brown (Transvaal Museum); M. J. Penrith and Ms I. von Holtz (State Museum, Windhoek); M. I. Cherry (South African Museum);

H. Marx (Field Museum of Natural History). I am grateful to Barry Hughes for providing the data for the specimens in Berlin and Wulf Haacke and John Visser for the photographs.

Ms Shiela Mazena has made a major contribution by preparing a series of skulls representing most species of *Lycophidion*; she also word-processed the MS.

## REFERENCES

- BOETTGER, O., 1888. Materialien zur Fauna des unteren Congo II. Reptilien und Batrachier. *Bericht über die Senckenbergische naturforschende Gesellschaft*: 3–108.
- BRANCH, W. R., 1976. The wolf snakes *Lycophidion capense* and *Lycophidion variegatum* (Reptilia, Serpentes, Colubridae) in South Africa. *Journal of Herpetology* **10** (1): 1–11.
- BROADLEY, D. G., 1969. A new species of *Lycophidion* from Rhodesia (Serpentes: Colubridae). *Arnoldia (Rhodesia)* **4**, No. 27: 1–8.
- BROADLEY, D. G., 1983. *FitzSimons' snakes of southern Africa*, revised edn. Delta Books, Johannesburg.
- DOWLING, H. G., 1951. A proposed standard system of counting ventral scales in snakes. *British Journal of Herpetology* **1**(5): 97–99.
- HAACKE, W. D., 1970. New herpetological records from South West Africa. *Annals of the Transvaal Museum* **26**(12): 277–283.
- LAURENT, R. F., 1964. Reptiles et Amphibiens de l'Angola (Troisième contribution). *Publicações culturais da Companhia de Diamantes de Angola* No. 67: 1–165.
- LAURENT, R. F., 1968. A re-examination of the snake genus *Lycophidion* Duméril & Bibron. *Bulletin of the Museum of Comparative Zoology (Harvard)* **136**(12): 461–482.
- MERTENS, R., 1955. Die Reptilien und Amphibien Südwestafrikas. *Abhandlungen der Senckenbergischen naturforschenden Gesellschaft* **490**: 1–172.
- MERTENS, R., 1971. Die Herpetofauna Südwest-Afrikas. *Abhandlungen der Senckenbergischen naturforschenden Gesellschaft* **529**: 1–110.
- PETERS, W. C. H., 1867. Über eine Sammlung von Fledertieren und Amphibien aus Otjimbingue in Südwestafrika. *Monatsbericht der Deutschen Akademie der Wissenschaften zu Berlin* **1867**: 234–237.
- SMITH, A., 1831. Contributions to the natural history of South Africa, No. 1. *South African Quarterly Journal* **1**(5): 9–24.
- STERNFELD, R., 1910. Zur Schlangenfauuna Deutsch-Südwestafrikas. *Mitteilungen aus dem Zoologischen Museum in Berlin* **5**: 53–60.
- WERNER, F., 1910. Reptilia und Amphibia. In: SCHULZE, L., Zoologische und Anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Südafrika ausgeführt in den Jahren 1903–1905, 4. *Denkschriften der Medizinisch-naturwissenschaftlichen Gesellschaft zu Jena* **16**: 279–370, pl. 6–11.
- WERNER, F., 1915. Reptilia und Amphibia. In: MICHAELSEN, W., *Beiträge zur Kenntnis der Land- und Süßwasserfauna Deutsch-Südwestafrikas* **3**: 323–376, pl. vii.
- WHITE, F., 1983. *The vegetation of Africa*. A descriptive memoir to accompany the UNESCO-AETFAT-UNSO Vegetation Map of Africa. UNESCO, Paris.

Postal address: D. G. Broadley  
 Department of Herpetology  
 Natural History Museum  
 P. O. Box 240  
 Bulawayo  
 Zimbabwe