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DESCRIPTION OF A NEW SPECIES OF *TYPHLOSAURUS*  
WIEGMANN, 1834 (REPTILIA: SCINCIDAE) FROM THE WEST  
COAST OF SOUTHERN AFRICA, WITH NEW RECORDS OF  
RELATED SPECIES

WULF D. HAACKE 1986  
*Transvaal Museum, Pretoria*

Haacke, W. D., 1986. Description of a new species of *Typhlosaurus* Wiegmann, 1834 (Reptilia: Scincidae) from the west coast of southern Africa, with new records of related species. *Annals of the Transvaal Museum* 34(9): 227-235.

A new species of acontine skink, *Typhlosaurus lomii*, is described from the west coast of the Cape Province, South Africa, and its phylogenetic relationships are discussed. Distribution records of other species of *Typhlosaurus* in southern Africa are brought up to date.

INTRODUCTION

The most recent revision of the acontine scincid genus *Typhlosaurus* Wiegmann, 1834, by Broadley (1968) listed eight species, which are all restricted to Africa south of latitude 14° S. The same number of species had been recognized by FitzSimons (1943) and De Witte and Laurent (1943), but Broadley's classification differs from those of these authors in that he synonymized *plowesi* FitzSimons, 1943, with *meyeri* Boettger, 1894, and recognized *braini* Haacke, 1964, which had been described more recently. Broadley's classification was accepted by Greer (1970) and Mertens (1971).

Two of the species, *cregoi* Boulenger, 1903, and *aurantiacus* (Peters, 1854), are restricted to the eastern parts of southern Africa, being known only from northern Transvaal, the eastern highlands of Zimbabwe and the coastal plains of southern Mozambique and northern Natal. Two other species, *lineatus* Boulenger, 1887, and *gariopensis* FitzSimons, 1941, are Kalahari-sand endemics. The remaining four species, *meyeri*, *vermis* Boulenger, 1887, *caecus* (Cuvier, 1817) and *braini* Haacke, 1964, are restricted to the west coast of South Africa and South West Africa, where the new species described below also occurs (Fig. 2).

Broadley (1968) divided the genus into three species groups. The *T. cregoi* group, which he considered to be closest to the probable ancestral form, consists of a single species with two subspecies and occurs mainly in the highlands of northern Transvaal and eastern Zimbabwe. The *T. aurantiacus* group consists of three species: *T. aurantiacus*, with two subspecies, which occurs in the southern coastal plain of

Mozambique and in eastern Transvaal, *T. lineatus*, with three subspecies, and the monotypic *T. gariepensis*, both of which occur in the Kalahari from the Orange River in the south to western Zambia in the north. Finally, the *T. caecus* group consists of the remaining four monotypic species listed above, which are distributed along the west coast from the Cape to the central Namib. The new species does not fit well into this scheme, since it occurs in the area of the *caecus* group but shows morphological affinities with both the *caecus* and the *aurantiacus* groups.

Broadley (1968) maintained that three evolutionary trends were well marked in *Typhlosaurus*: a reduction in the number of dorsal head shields, an increase in the number of ventrals, and a progressive attenuation of the body. On this basis he regarded *T. cregoi* as the most primitive species and *T. braini* as the most specialized. In contrast, Rieppel (1981, 1982) provided evidence from skull structure that *T. lineatus* is the most primitive species and also that different structures altered at different rates in different species ('mosaic evolution'), so that it is impossible to establish a plausible morphocline sequence showing phylogenetic relationships. The new species described below appears to be a further case in point, for it has a combination of shield and scale patterns as well as body dimensions that prevents it from being assigned a position in the phylogenetic scheme proposed by Broadley.

***Typhlosaurus lomii* spec. nov., Figs 1, 2**

MATERIAL. *Holotype*, TM 56116, collected by W. D. Haacke and H. L. Wessels, 10 October 1982. *Paratype*, TM 56117, same data as holotype.

TYPE LOCALITY. Farm Schulpfontein, 472 Namaqualand District, Cape Province, South Africa, 30°05' S, 17°14' E, altitude just below 100 m, about 5 km inland from the coast.

ETYMOLOGY. Named after Ms Lomi Wessels, Collection Manager of Lower Vertebrates and Invertebrates at the Transvaal Museum since 1976, in recognition of her contributions to this Department.

DIAGNOSIS. A small species with a slender body, an elongate depressed head and snout, a reduced number of head shields, with only three upper labials, three postmentals and two lower labials, only 12 midbody scale rows, much fewer than the minimum of 200 ventrals typical for the other west-coast species, and about 40 subcaudals. Relative to the ventrals, it has more subcaudals than any other species.

DESCRIPTION. HOLOTYPE. TM 56116, sex undetermined, size  $114 + 27 = 141$  mm, tail = 24% of snout-vent length and 19,1% of total length, snout-vent length/diameter ratio = 35,6. Snout elongate and slightly flattened (Fig. 1); rostral large and longer than other head shields, i.e., prefrontal and frontal together subequal in length to distance between eyes and laterally extending to below anterior border of eye. Only two azygous head shields present behind rostral, of which the anterior one or prefrontal is narrow and strip-like, laterally touching loreal and first supraocular. Frontal large and pentagonal, as long as wide and twice as long as prefrontal. Laterally, frontal touches first and second supraoculars and enlarged parietals, which form a short median diagonal suture behind frontal. Parietal eye clearly visible under the frontal shield, proving that it consists of a fusion of the frontal and inter-

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parietal. Left parietal and following nuchal slightly damaged. Eye visible as a dark spot under small ocular scale and top edge of first upper labial. Ocular abutting large loreal, two supraoculars, large postocular and first upper labial. Three upper labials, of which first two are large and similar in size, third much smaller. Mental large, with a nearly straight posterior edge and in contact with three chin shields only. Two lower labials on each side, on right side the second extends beyond gape and third upper labial, while a chin shield penetrates between lower labials and

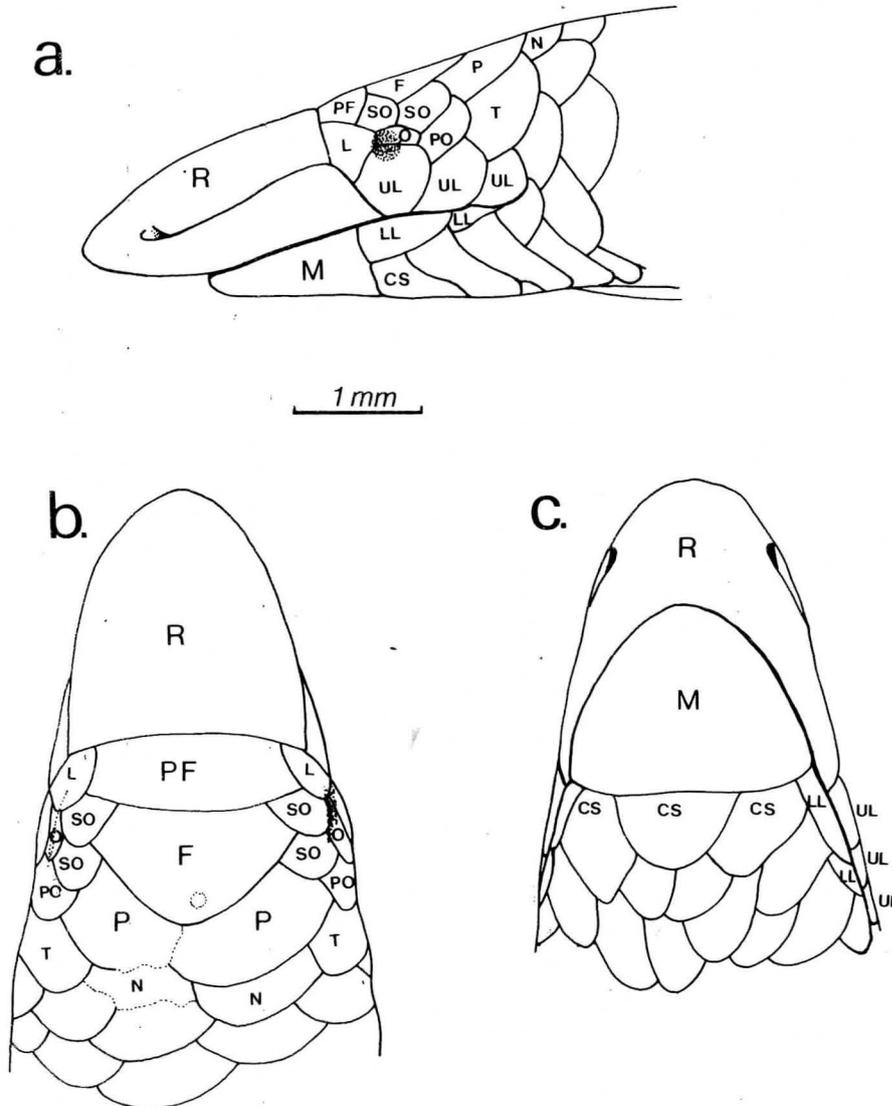


Fig. 1. Head scalation of *Typhlosaurus lomii* spec. nov. (TM 56116, holotype). a) left lateral, b) dorsal and c) ventral view. CS: chin shield. F: frontal. L: loreal. LL: lower labial. M: mental. N: nuchal. O: ocular. P: parietal. PF: prefrontal. PO: postocular. R: rostral. SO: supraocular. T: temporal. UL: upper labial.

nearly touches lip. Twelve rows of scales round middle of body, 167 ventrals between mental and undivided enlarged anal shield. Tail intact, relatively long, with 39 subcaudals, tapering gradually and ending in a sharp tip.

Preserved specimen is unpigmented, apart from very fine brownish vermiculations extending from nostril along nasal suture across ocular area on to temporal scale. Tip of tail with a small black spot. In life, from colour slide, body is bright pink, as it is unpigmented apart from first quarter of dorsum, which is golden orange. Posteriorly this colour becomes progressively confined to the two mid-dorsal scale rows, forming a vertebral line, while on the tail the colour breaks up into fine speckles and infusions.

PARATYPE. TM 56117, sex undetermined, size  $104 + 26 = 130$  mm, tail = 25% of snout-vent length or 20% of total length, snout-vent length/diameter ratio 33.5. General shape, appearance and scalation similar to holotype but differs as follows. On right side scale edges in ocular area not well defined, as if area had healed after slight damage. Although loreal and two supraocular scales are distinct, large first upper labial covers dark eye spot and appears to have fused or partly fused with a minute ocular and possibly the small postocular scale. Fusion or partial fusion with two supraoculars is possible but unclear. On left side a small ocular followed by a small postocular. No indication of parietal eye.

Body with 12 rows of scales round middle, 160 ventrals between mental and single enlarged anal shield. Tail intact, with 41 subcaudals, tapering very gradually and ending abruptly in a sharp point.

Colour similar to holotype.

The head-shield fusions for this species appear to be as follows (nomenclature in accordance with Broadley's (1968) analysis and letter code). The rostral, the two loreals and two parietals appear to be in their normal configuration.

Prefrontal = N (prefrontal + frontonasals)

Frontal = G (frontal + interparietal)

Anterior supraocular = AP (1st + 2nd supraocular + anterior supraciliary)

Posterior supraocular = Q (3rd supraocular + posterior supraciliary)

Ocular = T (preocular + ocular; in paratype = preocular + ocular + posterior subocular)

Postocular = possibly unfused

Temporal = (upper + lower temporal + 1st nuchal)

Nuchals = K (2nd + 3rd nuchals)

Upper labial 1 = S (1st + 2nd upper labials + anterior subocular)

Upper labial 2 = (3rd + 4th upper labials?)

Upper labial 3 = (5th upper labial).

#### DISCUSSION

*T. lomii* shows affinities with both the *caecus* and the *aurantiacus* groups as defined by Broadley (1968), yet certain combinations of characters exclude it from each of these groups.

As *T. lomii* occurs on the west coast, on zoogeographical grounds it may be assumed to be related to the *caecus* group. This assumption is supported by the pattern and degree of head-shield reduction (23 or 25), which matches the lowest in the gen-

us, as seen in *T. braini* ( $\bar{X} = 22$ ) and *T. vermisi* ( $\bar{X} = 25$ ), and by the 12 scale rows round the middle of the body, which places it within the range of variation of all the members of the *caecus* group, although in this respect it also agrees with *aurantiacus* and *garipeensis* of the *aurantiacus* group. The mean snout-vent length/diameter ratio of the body (34.5) is within the lower limit of the range of variation of the other attenuate *caecus* members (apart from that of the much elongated *braini*) and is slightly higher than that of all other taxa. The number of subcaudals is similar to that of the other west-coast species, apart from the higher count of *braini*, but is higher than the counts for all members of the *aurantiacus* group. However, the number of ventrals is one of the lowest in the genus, with only a few *aurantiacus* specimens known to have lower counts. As a consequence, the ratio of subcaudals to ventrals places it right outside both the comparative groups. The ratios of subcaudals to ventrals in all the known taxa of the genus, according to estimates based on the mean figures given by Broadley (1968: 6, Table III), range from 4.6 to 7.4, while that for the new species is 3.9. As a percentage, the numbers of subcaudals to ventrals for all other taxa range from 13.4% to 21.8%, while that for *T. lomii* is 24.5%.

Broadley (1968: 6) considered the melanistic and striped colour phases ancestral, as the loss of colour pattern is restricted to the advanced west-coast forms, in which some populations of *meyeri* retain a colour pattern with black stripes or rows of black spots. According to its colour pattern, *T. lomii* is clearly part of the *caecus* group, although it still retains an orange line, in contrast to the unpigmented, most advanced, *braini*.

Amongst other features of *T. lomii* that suggest an affinity with the *aurantiacus* group are i) the shape of the mental, which has an almost straight posterior edge, similar to that of *garipeensis* and *lineatus*, whereas the west-coast group has heart-shaped to deeply notched mentals; ii) the presence of only three postmental scales, as in *lineatus* and *garipeensis*; iii) the low ventral count, which falls either within or close to the range of variation of the *aurantiacus* group and well below that of the *caecus* group.

*T. lomii* is difficult to place in the phylogeny of *Typhlosaurus* outlined by Broadley (1968) because it conforms with two of the evolutionary trends he mentions (reduction in the number of dorsal head shields and attenuation of the body) but not with the third (increase in the number of ventrals). Its ventral counts are the lowest known in the genus, and it might therefore represent an evolutionary line separate from the rest of the west-coast taxa. But if Rieppel's (1981, 1982) hypothesis of mosaic evolution is correct, the position of *T. lomii* will be difficult to establish until detailed anatomical studies have been made.

#### DISTRIBUTION OF RELATED SPECIES

Since Broadley's (1968) review a considerable number of new distribution records have been accumulated for the lesser-known species from the west coast. Large parts of the ranges of these species lie within diamondiferous areas with restricted access, hence detailed documentation of individual ranges will take a long time. It is apparent, even with the extensions documented below, that these taxa have remarkably limited ranges. Records for *T. garipeensis* are included in Fig. 2 because of its restricted range in the Kalahari and its affinities with *T. lomii*.

The records are based on literature or on specimens in collections indicated by the following abbreviations (towns are in South Africa unless otherwise indicated): AM = Albany Museum, Grahamstown; CAS = California Academy of Science,

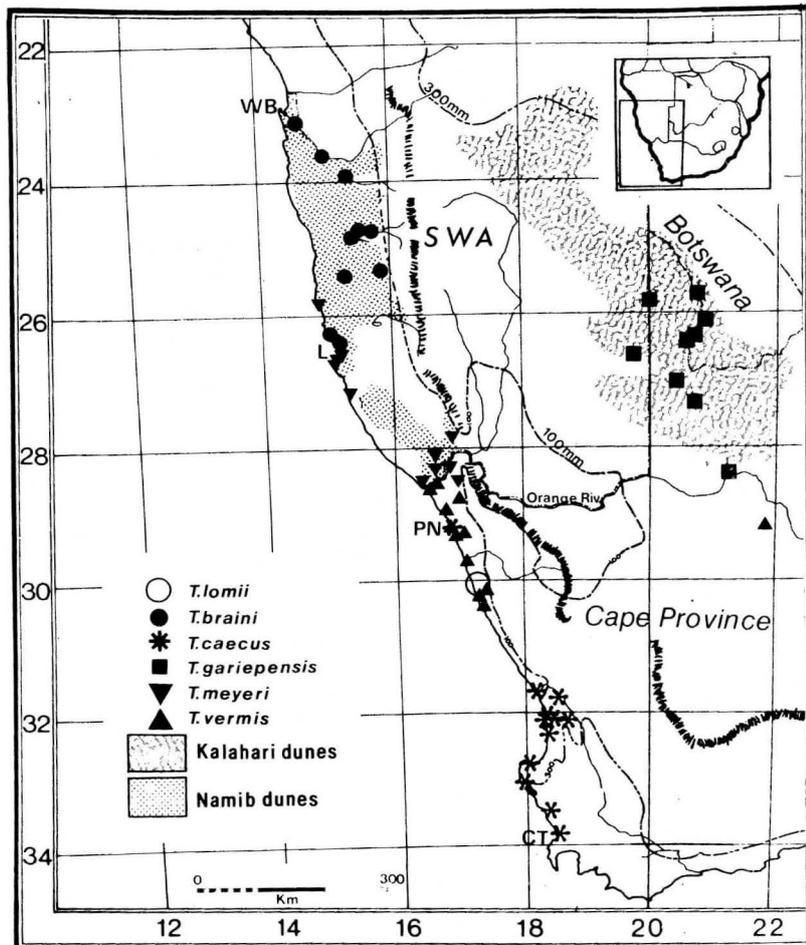


Fig. 2. Distribution of the *Typhlosaurus* species in the western parts of southern Africa. Records of *T. lineatus lineatus* from the southern Kalahari have been omitted. WB: Walvis Bay. L: Lüderitz. PN: Port Nolloth. CT: Cape Town.

San Francisco, U.S.A.; DERU = Desert Ecological Research Unit, Gobabeb, South West Africa; FMNH = Field Museum of Natural History, Chicago, U.S.A.; JV = J. D. Visser (1979); NM = Natal Museum, Pietermaritzburg; NMZ = National Museum of Zimbabwe, Bulawayo, Zimbabwe; PEM = Port Elizabeth Museum; SAM = South African Museum, Cape Town; SMW = State Museum, Windhoek, South West Africa; TM = Transvaal Museum, Pretoria; ZMUC = Zoological Museum, University of Copenhagen, Denmark.

#### *Typhlosaurus gariensis* FitzSimons

RANGE. Southern Kalahari dune belt from Upington northwards to the Kalahari Gemsbok National Park and adjacent area in South West Africa and Botswana.

**MATERIAL.** Farm Aarpan, Farm Bluesky, 10 miles (16 km) north of Dikbaardmanskolk, Farm Inkboschpan (TM); Kyky (AM); Leeudril, Twee Rivieren (TM); Upington (SAM).

*Typhlosaurus meyeri* Boettger

**RANGE.** Spencer Bay southwards to the Orange River and into the Richtersveld.

**MATERIAL.** Agate Beach, Bloeddrift (TM); Bogenfels (SAM, SMW, TM); Griffith's Bay, Grosse Bucht (TM); Jakkalsputs (SAM); Lüderitz, Lüderitz area, Nautilus Mountain, Obib Dunes, Oranjemund (TM); 48 km NW of Oranjemund (PEM); Pomona (TM); Rosh Pinah, Spencer Bay Water (TM).

*Typhlosaurus caecus* (Cuvier)

**RANGE.** From Port Nolloth to just N of Cape Town, inland to Graafwater.

**MATERIAL.** Compagnies Drift, Farm de Punt (TM); Edgemead (JV); Graafwater (TM); Lambert's Bay (SAM); Nortier's Experimental Farm, Port Nolloth (TM); Saldanha Bay (FMNH); St Helena Bay, Steenberg (SAM); Table View (TM); Ventersklip (SAM); Vredendal (FMNH, TM).

*Typhlosaurus vermis* Boulenger

**RANGE.** Orange River to the Spoeg River, with one unconfirmed record from Putsonderwater, near Prieska.

**MATERIAL.** Alexander Bay, Daberas on Holgat River, De Riet, Grootderm (TM); Hondeklipbaai (FMNH); Kleinsee (PEM, TM); Port Nolloth, (JV, NM, PEM, SAM, TM, NMZ); 8 km E of Port Nolloth, 35 km N of Port Nolloth, Putsonderwater (TM); near Spoeg River (SAM).

*Typhlosaurus braini* Haacke

**RANGE.** The main Namib Sand Sea from the Kuiseb to the Koichab River. The absence of coastal records is probably due to fewer collecting opportunities, although less favourable conditions may exist, causing avoidance of that zone.

**MATERIAL.** 13 km W of Farm Aandster, 2465S 1513E in Diamond Area 2 (TM); Gobabeb (CAS, DERU, FMNH, SMW, TM); S of Kuiseb River near Gobabeb (TM, ZMUC); near Great Anigab waterhole, Hauchab Mtn, 15 km N of Lüderitz, Rooibank, Sossus Vley, Tsauchab River, near Tsondab Vley (TM).

KEY TO THE SPECIES AND SUBSPECIES OF THE GENUS *TYPHLOSAURUS*  
(Adapted from Broadley, 1968)

1. Three azygous head shields posterior to rostral; usually 16–20 scale rows at midbody ..... 2
- One or two azygous head shields posterior to rostral; 10–14 scale rows at midbody ..... 3

2. Usually three supraoculars; frontal broader than prefrontal; subcaudals 31-37 ..... *T. cregoi bicolor*  
 — Two supraoculars; frontal subequal in width to prefrontal; subcaudals 35-43 ..... *T. cregoi cregoi*
3. Two azygous head shields posterior to rostral; scale rows posterior to head shields similar to rest of body scales; ventrals fewer than 250; subcaudals 22-50 ..... 4  
 — A single azygous head shield posterior to rostral; first 8-10 scale rows posterior to head shields strip-like; ventrals more than 250; subcaudals 51-57 ..... *T. braini*
4. Frontal pentagonal, much larger than prefrontal; ventrals fewer than 200 ..... 5  
 — Frontal a transverse band, smaller than prefrontal; ventrals more than 200 ..... 11
5. Rostral bordered by seven shields, the prefrontal separated from the loreals by frontonasals ..... 6  
 — Rostral bordered by five shields, the prefrontal in contact with the loreals ..... 7
6. Two supraoculars, two supraciliaries, a preocular, an ocular, a postocular and two temporals present ..... *T. aurantiacus aurantiacus*  
 — Anterior supraciliary fused with preocular; posterior supraciliary fused with ocular; posterior supraocular fused with postocular, and upper temporal fused with anterior nuchal ..... *T. aurantiacus fitzsimonsi*
7. Midbody scale rows 14; four upper labials; a subocular present ..... 8  
 — Midbody scale rows 12; three upper labials; no subocular ..... 10
8. Two broad dark dorsal stripes, which fade out on tail; subcaudals 22-27; snout-vent length of adult 160-188 mm ..... *T. lineatus jappi*  
 — At least four dark dorsal stripes or lines of spots, which are most strongly defined on tail; subcaudals 26-35; maximum snout-vent length 160 mm ..... 9
9. Four to eight dark dorsal stripes or lines of spots, ventrum uniform white (rarely uniform plumbeus above and below); ventrals 174-195 ..... *T. lineatus lineatus*  
 — Striped above and below (rarely uniform plumbeus); ventrals 167-173 ..... *T. lineatus subtaeniatus*
10. Twenty-nine head shields, dorsum with rows of dark streaks ..... *T. gariensis*  
 — Twenty-three or twenty-five head shields, no dark dorsal streaks present ..... *T. lomii*
11. Snout with sharp horizontal edge and flattened below; rostral about 1.5 times as long as other head shields together ..... *T. meyeri*  
 — Snout rounded; rostral more than twice as long as other head shields together ..... 12
12. Prefrontal much broader than frontal; loreal in contact with prefrontal; a small preocular between ocular and loreal ..... *T. caecus*  
 — Prefrontal and frontal subequal in breadth; anterior supraocular in contact with rostral, separating loreal from prefrontal; no preocular ..... *T. vermisi*

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## REFERENCES

- BROADLEY, D. G., 1968. A revision of the African genus *Typhlosaurus* Wiegmann (Sauria: Scincidae). *Arnoldia, (Rhodesia)* 3(36): 1-20.
- DE WITTE, G. F. and LAURENT, R., 1943. Contribution a la systématique des formes dégradées de la famille des Scincidae apparentées au genre *Scelotes* Fitzinger. *Mémoires du Musée royal d'Histoire naturelle de Belgique*, Brussels (2) 26: 1-44, 61 figs.

- FITZSIMONS, V. F. M., 1943. *The lizards of South Africa*. Transvaal Museum Memoir No. 1, Pretoria.
- GREER, A. E., 1970. A subfamilial classification of scincid lizards. *Bulletin of the Museum of Comparative Zoology*, Cambridge, Massachusetts **139**: 151-183.
- HAACKE, W. D., 1964. Description of two new species of lizards and notes on *Fitzsimonsia brevipes* (Fitz-Simons) from the central Namib Desert. *Scientific Papers of the Namib Desert Research Station* **25**: 1-15.
- MERTENS, R., 1971. Die Herpetofauna Südwest-Afrikas. *Abhandlungen der Senckenbergischen naturforschenden Gesellschaft*, Frankfurt a. M. **529**: 1-110.
- RIEPEL, O., 1981. The skull and the jaw adductor musculature in some burrowing scincophorm lizards of the genera *Acontias*, *Typhlosaurus* and *Feylinia*. *Journal of Zoology*, London **195**: 493-528.
- RIEPEL, O., 1982. The phylogenetic relationships of the genus *Acontophiops* Sternfeld (Sauria: Scincidae), with a note on mosaic evolution. *Annals of the Transvaal Museum* **33**(12): 241-257.
- VISSER, J. D., 1979. New and reconfirmed records for the Cape Province with notes on some "rare" species (Sauria: Serpentes and Anura). *Journal of the Herpetological Association of Africa* **21**: 40-50.

Postal address: W. D. Haacke  
Department of Lower Vertebrates  
Transvaal Museum  
P. O. Box 413  
Pretoria  
0001 South Africa