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8747 Haacke — Herpetology

ADDITIONAL NOTES ON THE HERPETOLOGY OF
SOUTH WEST AFRICA WITH DESCRIPTIONS OF TWO
NEW SUBSPECIES OF GECKOS.

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Transvaal Museum, Pretoria

- (With 5 text-figures and 7 plates.)

Two new subspecies of geckos are described and three species of reptiles, new for South West Africa, are recorded. Additional material of two poorly known geckos, another gecko and a cordylid, known from one specimen each, from this territory are discussed. A doubtful record of the marsh terrapin was checked and taxonomic problems in a skink and a lacertid are discussed.

INTRODUCTION.

This paper is meant to furnish additional data on the herpetology of South West Africa to that discussed by Mertens in 1955. In this respect the publications of the following authors should also be consulted:— FitzSimons (1957, 1959a, 1962a), Brain (1962), Steyn and Steyn et al (1963), Finkeldey (1964) and Haacke (1964). Although Mertens believed that only very few species would be added to the list of reptiles recorded from South West Africa up to that time, a number of species have since been added by above-mentioned authors and more are now placed on record. Because of the vastness of the territory Mertens expected that a number of species could still be split up into subspecies, and this is proved correct in two cases mentioned in this paper.

Most of the material, on which this paper is based, was collected by the author on four visits to the territory in recent years. The first was made in 1961, when accompanying the Harvard-Smithsonian-Transvaal Museum Kalahari Expedition to the Kungveld and Bechuanaland; the second was basically a visit to the north-western Cape Province in November-December, 1962, but with the generous support of the Consolidated Diamond Mines, at Oranjemund, it was possible to extend this trip into the southern Diamond Area No. 1, also known as "Sperrgebiet". At a later stage of the same trip the Fish River Canyon and the Karasburg-Warmbad areas were visited. The third trip, during April-May, 1963, was mainly a private undertaking, partly sponsored by the Transvaal Museum. As it was in the first place a vacation trip, serious collecting was only carried out in places of special interest. The Etósha Pans, Twyfelfontein, Walvis Bay, Gobabeb, the Fish River Canyon, Lüderitz and Possession Island were visited. The fourth was only a very short visit on the occasion of the inauguration of the Desert Research Station at Gobabeb. On the return journey Spitzkoppe and the Erongo mountains were visited.

F448

Additional material in the Transvaal Museum and the State Museum, Windhoek, contributed further to this paper. This material had been accumulated by various collectors, of whom Dr. C. Koch and Mr. H. Finkeldey should be specially mentioned.

In the list of synonyms only the original description and references to specimens from South West Africa are mentioned for each species.

Class: REPTILIA.

Order: CHELONIA.

Suborder: PLEURODIRA.

Family: PELOMEDUSIDAE.

PELOMEDUSA SUBRUF A SUBRUF A (Lacépède).

Common Marsh Terrapin.

Testudo subrufa Lacépède, 1789, Hist. nat. Quadrup. ovip. Serpens 2, Syn. meth.

Pelomedusa galeata Werner, 1910, Denkschr. med.-naturw. Ges. Jena 16: 305 (Possession Island?).

Pelomedusa subrufa subrufa Loveridge, 1941, Bull. Mus. comp. Zool. 88: 407. — Mertens, 1955, Abh. senckenb. naturforsch. Ges. 490: 38.

Werner, in his publication on the reptile collection made by Dr. Leonard Schulze in 1903 to 1905 in Southern Africa, discusses four specimens of the Common Marsh Terrapin from Possession Island. He marked the locality with a question-mark, thereby expressing his doubts concerning its authenticity. Since then Possession Island has been accepted as a locality record for this species. Unfortunately Schulze, in the account of his journey, makes no mention of the collecting of terrapins from that locality.

Although *P. s. subrufa* can aestivate for remarkably long periods, it is considered essential for it to have access to fresh water for at least part of the year. As Possession Island is described as a desert island, the occurrence of this terrapin as an endemic member of its fauna was doubted by the author.

During May, 1963 a short visit was paid to this island to check this record. Two specimens of the Angulate Tortoise *Chersine angulata* (Schweiger, 1812), brought from the Cape as pets, were the only two reptiles noticed during the two-day visit. No freshwater pools of any size were noticed and none were reported by the permanent resident supervisor, according to whom the only wild reptiles ever noticed were the odd skink or gecko found amongst timber or empty bags from Cape Town. All indications were such that it can be accepted as highly unlikely that Schulze-collected the specimens concerned at this locality.

Though, theoretically, the introduction of terrapins on rafts of driftwood is possible, considering the situation of the mouth of the Orange River and the fairly strong Benguella current, their survival on a desert island, such as this one, for any length of time is considered doubtful.

Even if these controversial specimens were actually collected on Possession Island, it cannot be regarded as a natural habitat and this species no longer occurs there.

Order: SQUAMATA.

Suborder: LACERTILIA.

Family: GEKKONIDAE.

AFROEDURA AFRICANA AFRICANA (Boulenger).

African Thick-tailed Rock Gecko.

Oedura africana Boulenger, 1888, Ann. Mag. nat. Hist. 2: 137 (Type locality: — Damaraland). — Sternfeld, 1911b, Fauna dtsh. Kol. 4: 12. — FitzSimons, 1943, Transv. Mus. Mem. 1: 38.

Afroedura africana Loveridge, 1947, Bull. Mus. comp. Zool. 98: 28. — Mertens, 1955, Abh. senckenb. naturforsch. Ges. 490: 42.

M A T E R I A L:

13 Specimens; 6 males, 6 females, 1 juvenile.

TM 29026 — 35 coll. by W. D. Haacke, Oct., 1963.

TM 29704 — 5 coll. by W. H. Haacke, May, 1964.

TM 29706 coll. by H. G. Stier, May, 1964.

All from Farm Ameib in the Erongo Mountains, Karibib district.

V A R I A T I O N S:

- Internasal granule: Absent.
- Upper labials: 9—12; 1 (9), 17 (10), 7 (11), 1 (12).
Usually 10 or 11.
- Lower labials: 9—10; 14 (9), 12 (10).
- No. scales per caud. vertic.: Dorsal 7—8; 7 (7), 3 (8).
Ventral 5.
- Preanal pores: 11—13; 3 (11), 1 (12), 2 (13).
- Enlarged chin shields: Present in all specimens.
- Gular scales (Below eyes): 38—44; 3 (38), 3 (40), 2 (41), 1 (42), 2 (43),
1 (44).
- Largest complete specimen: TM 29031 125 (60 + 65) mm.
- Max. snout/vent length: TM 29704 62.5 mm. (Tail regenerated).
- Colour: TM 29028 (From colour slide, taken when still alive). This specimen, in preserved state, has the lightest markings of the series. Basic dorsal colour of head, body and legs light yellow. Sides of neck and body, as well as tail, pale dirty yellow. Supraciliary ridges light lemon yellow; supraorbital bulges pale yellowish green. A wavy dark brown band across occipital region of head, starting behind the eyes; another band over neck and four over the rest of the body. The posterior edges of these cross-bands are more clearly marked than the anterior ones and more or less W-shaped. The unregenerated part of the tail shows four similar cross-bands, while the regenerated part is marked with brown spots and blotches. Underside of head and body of this specimen, in preserved state, is unmarked, while the tail is faintly mottled with brown.

The light colours have all faded in the preserved specimens and only the dark brown cross-bands and blotches are still discernible. These markings are similar to the ones described above but are in general darker and more pronounced. Un-regenerated tails show 7—8 cross-bands which, apart from the two or three terminal ones, do not encircle the tail.

DISCUSSION:

This species was originally described on two specimens recovered from the stomach of a snake (*Pythonodipsas carinata* Günther, 1868). Although Boulenger, in his original description, mentions Damaraland as *terra typica*, FitzSimons gives Walvis Bay as type locality, but points out that the flattened body of this gecko indicated rupicolous habits. For that reason he doubted the correctness of this locality, as Walvis Bay is surrounded by shifting sand dunes. This was proved correct in 1951 when Mertens found the first specimens since the types, in the Erongo and Brandberg mountains. An investigation of the first-mentioned locality proved that this species is relatively common there and ten specimens were collected in a fairly short time by lifting off flakes and slabs from granite boulders with the aid of a crowbar: This series, plus three more specimens from the same locality, donated at a later stage, comprise the longest series available at present and thus, combined with previously published data, renders a fair picture of the variations which can be expected in this species:

Nasorostrals:	In contact behind rostral (Divided by small interspace. Mertens 1955).
Upper labials:	9—12; usually 10.
Lower labials:	9—11 (Upper and lower labials 9—11, Mertens 1955).
No. of scales per caudal verticille:	Dorsal 7—8. Ventral 5.
Preanal pores:	Usually 11—13. (Paratype SAM 1055 has 14 pores in an angular row with an extra pore anteriorly to the bend, thus 15 pores in all).
Chin shields:	All specimens of the available series have enlarged chin shields which, in some cases, pass gradually into the smaller sized gulars, as reported by Mertens in one case. Boulenger noted no enlarged chin shields.
Largest specimen:	Type 129 (64 + 65) mm. Boulenger did not state whether the tail was regenerated or not. TM 29028 129 (60 + 69) mm. Tip of tail regenerated.

Boulenger's description of the colour is very vague, while Mertens mentions five, and in one case seven, bands across the back.

FIELD NOTES:

Found in narrow cracks under loose flakes of granite boulders, sometimes sharing the space with a number of other specimens of their own species or others such as *Pachydactylus bicolor* Hewitt, 1926 and *P. bibronii* A. Smith, 1846. During October, 1963 they seemed to prefer the cracks on the lower overhanging sides of the boulders, which remained in the shade during the hottest time of the day. Other rupicolous reptiles, such as *Rhoptropus barnardi* Hewitt, 1926 and *Agama planiceps* Peters, 1862, occur in the same habitat.

DISTRIBUTION:

South Western Damaraland.

Recorded localities: Damaraland, Walvis Bay? (S.A. Mus., British Mus.). Farm Ameib, Erongo Mts. (Senckenberg Mus., Transvaal Mus.). Brandberg Mts. (Senckenberg Mus.).

AFROEDURA AFRICANA TIRASENSIS subsp. nov.

MATERIAL:

9 Specimens.

Holotype: TM 28376. Allotype: TM 28379. Paratypes: TM 28374—5, 28377—8, 28380—1, 28421.

All from Farm Tiras (about 26° 12' S, 16° 35' E) Bethanie dist., S.W.A., collected by W. D. Haacke, 14.5.1963. The types are in the Transvaal Museum, Pretoria.

DIAGNOSIS:

An intermediate form between *A. africana* (Boulenger, 1888) and *A. namaquensis* (FitzSimons, 1938), but distinguishable on the following points: Mental pentagonal, elongate, much narrower than the adjacent lower labials. Mental plus first two pairs of lower labials more elongated than in the other two species under consideration. Gular scales bordering mental and lower labials, not enlarged (Fig. 1.). In other characteristics it shows relations to either one or other of the two species.

DESCRIPTION:

Holotype: TM 28376, adult male, H/B length 53.5 mm., tail partly regenerated. In general, very similar to *A. africana*. Head, body and tail much depressed. Nostril pierced between rostral, first upper labial and three nasal scales of which the anteriormost is the largest and separated from its fellow by a small granule behind the rostral. Upper labials 11, lower labials 9 and 10. Mental pentagonal, elongate, much narrower than adjacent lower labials. Mental and first two pairs of lower labials longer than in *africana* and *namaquensis*. Chin shields, adjacent to mental and lower labials, not enlarged. Rest of lepidosis, as well as structure

of limbs and feet, very similar to *africana*. An angular row of 10 preanal pores is present. Tail depressed and verticillate; regenerated from behind the third verticille. Each verticille covered by 7 rows of scales above and 4—5 below.

Allotype: TM 28379, adult female, H/B length 55 mm., tail regenerated. Similar to holotype but nasorostrals in contact behind rostral and 10 lower labials on both sides.

Paratypes: Similar to other types but with slight individual variations.

VARIATIONS:

- Internasal granule: Absent in 3.
1 present in 5.
2 present in 1.
- Upper labials: 11 present on 12 sides.
12 present on 6 sides.
- Lower labials: 9 present on 9 sides.
10 present on 9 sides.
- Rows of scales in caudal verticille: Above. 7 present in 7.
Below. 4—5 present in 7.
- Preanal pores: 9 present in 1.
10 present in 4.
- Chin shields: Not enlarged in 7.
Slightly enlarged in 1.
Enlarged in 1 juvenile.

Colour: In general of the same pattern as *africana* (Plate 1). Basic colour a very light brown. Supraciliary ridges light lemon, supraorbital region pale greenish grey and a hint of violet on the dorsal surface of the legs and the pectoral and lumbar region. A wavy dark-brown line over occipital region of head, starting behind eyes; one dark-brown line across neck and four across the body, with posterior edges more distinct and more or less W-shaped. The single juvenile in this series is the only specimen with an unregenerated tail bearing nine dark transverse bands, of which only the last four completely encircle the tail. The regenerated tails are speckled, some showing blurred, wavy, discontinuous cross-bands above and the same, but less distinct, below. The underside of head and body is unmarked.

DISCUSSION:

Afroedura is closely related to the Australian genus *Oedura*, but was split therefrom on account of the smaller number of digital scansors and the verticillate tail of most of the African species. The validity of this separation is at present under investigation by some Australian herpetologists. A number of species and

subspecies have been described from South Africa, many based on very few specimens and in some cases very variable characters. Unfortunately very little additional material has been collected since the publication of the works of Fitz-Simons (1943) and Loveridge (1947), which deal in parts with the geckos of South Africa, so that the status of some of these subspecies remains uncertain.

However, it is a pleasure to record the reasonable series of *Afroedura* recently collected in South West Africa, which supplied additional data on *A. africana* and made it possible to reinvestigate the status of *A. namaquensis*.

A. a. tirasensis shows a number of characteristics which indicate a relationship with either *africana* or *namaquensis*. It forms a link between these two "species" and stresses the relationship between the two to such an extent that *A. namaquensis* is now considered a subspecies of *A. africana* viz. *Afroedura africana namaquensis*.

Statistical data of the subspecies of *A. africana* based on specimens in the Transvaal Museum:

	<i>africana</i>	<i>tirasensis</i>	<i>namaquensis</i>
Number of specimens:	13	9	10
Internasal granules:	Absent	Absent in 3. 1 present in 5. 2 present in 1.	Absent in 1. 1 present in 9.
Upper labials:	9—12	11—12	10—12
Lower labials:	9—10	9—10	8—11
Gulars:	38—44	34—41	27—36
Rows of scales in caudal verticilles:	Dors. 7—8 Vent. 4—5	Dors. 7 Vent. 4—5	Dors. 5—7 Vent. 5—6
Preanal pores:	11—15	9—10	8—10
Maximum H/B length:	62.3 mm.	55 mm.	57 mm.

From this table a number of affinities can be noticed. In the absence or presence of the internasal granule and the number of gulars counted across the throat below the eyes, *tirasensis* is intermediate between the other two. The scalation of the chin region in *tirasensis* (Fig. 1a) is quite distinct and in this respect *africana* (Fig. 1c) and *namaquensis* (Fig. 1b) show a greater similarity. The number of preanal pores in the males of *tirasensis* indicates a closer relationship with *namaquensis*, while in colour and pattern it is much closer to *africana* (Plate 1).

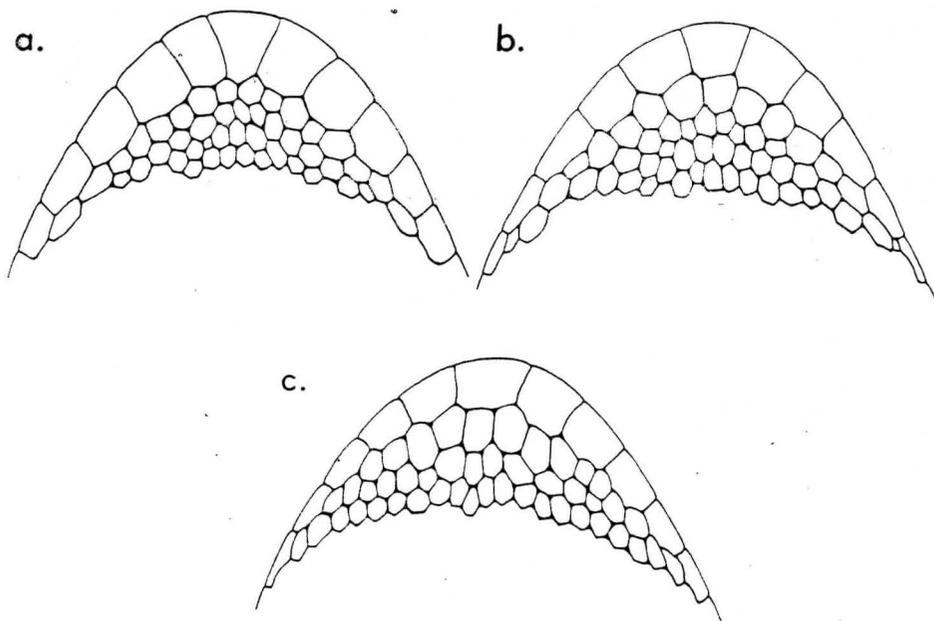


FIGURE 1: Showing arrangement of scales on chin of:—

- (a) *Afroedura africana tirasensis* subsp. nov.
TM 28381, Farm Tiras, Bethanie dist.
- (b) *A. a. namaquensis* (FitzSimons).
TM 18100, btwn. Springbok and Kamaggas, Little Namaqualand.
- (c) *A. a. africana* (Boulenger).
TM 29704, Farm Ameib, Karibib dist.

FIELD NOTES:

Found under flakes of boulders on the slope of a granite outcrop, in association with *Pachydactylus namaquensis* (Sclater, 1899) and *P. l. laevigatus* (Fischer, 1888). A single specimen of the Spotted House Snake *Boaedon guttatus* (A. Smith, 1843) was found under one of these flakes and it can be regarded as a possible predator of these geckos. The diurnal *Mabuya sulcata* (Peters, 1867) occupied the same shelters.

DISTRIBUTION:

At present known only from the type locality, Farm Tiras, Bethanie district, Great Namaqualand.

PACHYDACTYLUS FASCIATUS Boulenger.

Pachydactylus fasciatus Boulenger, 1888, Ann. Mag. nat. Hist. 6 (2): 138. (Type locality: Namaqualand). — Sternfeld, 1911, Mitt. zool. Ges. Berl. 8: 397 and 1911, Fauna dtsh. Kol. 4 (2): 15. — FitzSimons, 1943, Transv. Mus. Mem. 1: 87. — Loveridge, 1947, Bull. Mus. comp. Zool. 98: 395. — Mertens, 1955, Abh. senckenb. naturforsch. Ges. 490: 43.

Pachydactylus formosus Sternfeld (non Smith), 1911, Mitt. zool. Mus. Berl. 5: 397.

Pachydactylus weberi weneri Loveridge (non Hewitt), 1947, Bull. Mus. comp. Zool. 98: 394.

MATERIAL:

7 Specimens; 4 males, 1 female, 2 subadults.

TM 29667 Warmquelle, Kaokoveld, coll. by H. Finkeldey, 8.10.1963, and donated by the State Museum, Windhoek.

TM 29668—29673 Sesfontein, Kaokoveld, coll. by H. Finkeldey, 8.10.1963.

VARIATIONS:

Nostril:	Pierced between 1st upper labial and three nasals.
Nasorostrals:	Usually in moderate, sometimes only in very short contact behind rostral.
Upper labials:	8—9; 10 (8), 4 (9).
Lower labials:	7—8; 5 (7), 9 (8).
Scansors under fingers:	Usually 5 (in one specimen 6 under all fingers).
Scansors under toes:	1st 5—6; 7 (5), 7 (6). 2nd 6. 3rd 6—7; 10 (6), 4 (7). 4th 6—7; 11 (6), 2 (7); one injured.
Tubercles on back:	16 rows.
Scales on tail:	4—5 transversal rows per segment. 6 (4), 1 (5), 2 regenerated.
Enl. scales per caudal segment:	6—8 in a row.
Maximum size:	TM 29667 110.5 (49 + 61.5) mm. TM 29668 H/B 52 mm., tail incomplete.

Lepidosis and dimensions similar to description by FitzSimons (1943).

Colour: Although bleached to a certain extent, the colour pattern still conforms in general to the description. This applies especially to the two subadult specimens, on which the three dark-edged cross-bands are still well preserved (Plate 2). In the adult specimens, the dark edges of the cross-bands are still present,

but the originally lighter interspaces are now darker than the apparently faded dark bands. This is particularly clear on the band across the middle of the back, which appears as a dark saddle (Plate 2). As the specimens were not seen alive it is not clear whether this is the normal condition in adults or whether it is due to bleaching.

DISCUSSION:

Only a few specimens of this species have been collected since its original description by Boulenger in 1888. Although the present series consists of only seven specimens, it is at present the longest series available from one area. A close similarity exists in the scalation of *P. fasciatus* and *P. weberi* and the colour pattern of young *weberi* can easily be confused with that of *fasciatus*. For these reasons many references to *fasciatus* were based on misidentifications, as pointed out by Mertens (1955), and any records from south of central Great Namaqualand are regarded as extremely doubtful.

FIELD NOTES:

According to Mr. H. Finkeldey (personal communications), this gecko is very common at Sesfontein in the Kaokoveld, where he collected a considerable number under the loose stones of the ruins of the old German fort. Unfortunately most of them were fed to snakes, kept by this able collector, and some might have escaped from captivity in Windhoek.

DISTRIBUTION:

Western Damaraland and Kaokoveld, and possibly north-western Great Namaqualand.

Recorded localities: Karibib (South African Mus.). Kaokoveld (Senckenberg Mus.). Otjimbingwe (Zool. Mus. Berl.). ? Namaqualand (British Mus., South African Mus.). Sesfontein (Transvaal Mus.). Warmquelle (State Mus. Windhoek. Transvaal Mus.).

PHYLLODACTYLUS LINEATUS LINEATUS Gray.

Striped or Lineated Gecko.

Phyllodactylus lineatus Gray, 1838, in: Alexander, Exped. Int. Afr. 2: 268.

Phyllodactylus porphyreus (non Daudin) Werner, 1910, Jena. Denkschr. 16: 307.
— Sternfeld, Fauna dtsch. Kol. 4: 12.

Phyllodactylus porphyreus porphyreus (non Daudin, Warmbad only) FitzSimons, 1943, Transv. Mus. Mem. 1: 22.

Phyllodactylus porphyreus namaquensis Loveridge, 1947, Bull. Mus. comp. Zool. 98: 246.

Phyllodactylus lineatus lineatus Mertens, 1955, Abh. senckenb. naturforsch. Ges. 490: 50.

MATERIAL:

2 Specimens.

TM 27717 and 27718 13 mls. NE of Oranjemund, coll. by W. D. Haacke, 19.11.1962.

VARIATIONS:

	TM 27717 male.	TM 27718 female.
Upper labials:	7	7
Lower labials:	6	7
Preanal pores:	5	—
Snout/vent length:	22.7 mm.	24.6 mm.
Tail length:	19.5 mm. (regen.)	Incomplete.

No obvious differences from FitzSimons' (1943) description of *P. l. lineatus* were noticed either in structure or colour.

DISCUSSION:

According to Mertens (1955), it is possible that this species was the first reptile ever to be described from South West Africa. The locality of the specimen collected by Alexander on his journey through Great Namaqualand and the country of the Bushmen and the Bergdamara, is given as Namaqualand. The possibility exists that it actually came from Great Namaqualand, as he visited Warmbad, where the only other specimen known from north of the Orange River was collected. This specimen was taken in 1904 by L. Schulze and only now, nearly sixty years later, the occurrence of this species in Great Namaqualand was verified by the finding of two more specimens. As no obvious variation was noticed in these specimens they were placed in this species without hesitation.

FIELD NOTES:

These two tiny specimens were collected under stones near a rocky outcrop in a sandy area about one mile north of the Orange River. A specimen each of *Chondrodactylus angulifer* Peters, 1870, and *Cordylus polyzonus* A. Smith, 1838, were collected at the same locality.

DISTRIBUTION:

South-western Cape Province, Little and Great Namaqualand.

Recorded localities in S.W.A.: Warmbad (Zool. Mus. Berl.). 13 mls. NE of Oranjemund (Transvaal Mus.).

RHOPTROPUS BRADFIELDI DIPORUS subsp. nov.

Rhoptropus bradfieldi part. Mertens, 1955, Abh. senckenb. naturforsch. Ges. 490: 53. (SMF 45820 from Tsissab Gorge, Brandberg only).

MATERIAL:

16 Specimens.

Holotype: TM 28238 coll. by W. D. Haacke, 25.4.1963.

Allotype: TM 25819 coll. by V. F. FitzSimons, May, 1959.

Paratypes: TM 28235—28237 and 28239—28240 coll. by W. D. Haacke, 25.4.1963.

Type locality: Farm Twyfelfontein (about 20° 37' S, 14° 20' E), district Outjo, S.W.A. The types are in the Transvaal Museum, Pretoria.

Nine specimens from the Brandberg, in the collection of the State Museum, Windhoek, are as follows:

C 871 Tsissab Gorge, no further records; CR 2632 Tsissab Gorge coll. by H. v. Schalkwyk; CR 2662 nr Numas Rock coll. by B. Grobbelaar; CR 2667a + b Numas Gorge coll. by C. J. Cloete; CR 2859a—d, nr. airstrip, alt. 7000' coll. by S. M. Steyn, 3.4.1964.

Nineteen other specimens in the Transvaal Museum and nine in the State Museum, Windhoek of the typical form were also checked for comparison.

DIAGNOSIS:

A northern subspecies of the typical form, distinguishable by the presence of two enlarged preanal scales, bearing one pore each in males (Plate 3) but without pores in females (Plate 4). In females a dark spot may or may not be visible on these enlarged scales in the position where the pore exists in the males.

DESCRIPTION:

Holotype: TM 28238, adult male, total length 111.5 (57 + 54.5) mm., tail partly regenerated. In general very similar to the typical form as described by FitzSimons (1943). The nasal swellings very prominent and separated in front by 2 granules, which are followed by a row of 4 granules (Fig. 3a). The two anterior internasal granules are in contact with the rearward projection of the rostral and the anterior nasals, but not the posterior nasals. No shallow pits behind nostrils. Upper labials 12 on both sides, 8 and 9 lower labials. Mental slightly narrowed behind; 1st lower labial on either side distinctly narrowed behind, extending back to as far as mental, while 2nd lower labials extend back slightly further (Fig. 2a). Scales adjoining anterior lower labials vary in size, the largest being slightly larger than the scales on the middle of the throat into which they pass gradually. Lepidosis of head and body similar to that of the typical form. Ventrally there are two enlarged scales, bearing one pore each, situated about seven scale rows anterior to the vent and three scales apart. Pore on right hand side smaller than on left (Plate 3). Subdigital lamellae arranged as follows:

Hands with 7 under 1st and 2nd and 8 under 3rd to 5th fingers. Feet with 7 under 1st and 2nd, 8 under 3rd and 9 under 4th and 5th toes. Tail flattened and segmented, with 8—9 rows of scales to each segment above and below; from the 4th segment distally, there is a continuous row of transversally enlarged scales; tail regenerated from behind the 10th segment.

Allotype: TM 25819, adult female, total length 120 (58 + 62) mm., tail partly regenerated. In general, similar to holotype. Nasal swelling separated by a single granule in front, which is followed by a row of three granules. The single anterior internasal granule in short contact with the rearward projection of the rostral and the anterior nasals. Upper labials 11 and 12, lower 9. The second upper labials are broken up into numerous small granular scales. Ventrally two enlarged preanal scales are present, about nine scale rows from the vent and three scales apart; these scales are about 1½ times the size of the surrounding scales and bear an indistinct spot in the position where the preanal pores are situated in males (Plate 4).

Paratypes: Similar to the other types, but with slight individual variations.

VARIATIONS:

	Type series.	Brandberg.	<i>R. b. bradfieldi</i>
No. of specimens:	7	9	19
Internas. granules:			
Front row	1—2	1—3	1—3
Second row	3—4	2—4	2—5
Upper labials:	10—12;	10—12;	9—13;
	1 (10)	4 (10)	2 (9)
	6 (11)	10 (11)	16 (10)
	7 (12)	4 (12)	11 (11)
			8 (12)
			1 (13)
Lower labials:	8—9;	7—9;	7—9;
	5 (8)	2 (7)	13 (7)
	9 (9)	12 (8)	17 (8)
		4 (9)	8 (9)
Enl. scales u. 3rd finger:	9—11;	9—12;	10—12;
	3 (9)	1 (8)	17 (10)
	4 (10)	3 (9)	15 (11)
	7 (11)	2 (10)	6 (12)
		4 (11)	
		4 (12)	

	Type series.	Brandberg.	<i>R. b. bradfieldi</i>
Lamellae u. 3rd finger:	8—9; 6 (8) 8 (9)	7—9; 2 (7) 12 (8) 4 (9)	6—9; 1 (6) 11 (7) 23 (8) 2 (9)
Enl. scales u. 3rd toe:	11—13; 2 (11) 8 (12) 4 (13)	10—13; 1 (10) 1 (11) 3 (12) 10 (13)	10—15; 1 (10) 9 (11) 7 (12) 10 (13) 6 (14) 2 (15)
Lamellae u. 3rd toe:	8—9; 7 (8) 7 (9)	8—10; 3 (8) 9 (9) 3 (10)	7—9; 5 (7) 17 (8) 13 (9)
Largest specimen:	TM 25819 120 (58+62) mm.	C 871 99 (53-46) mm.	TM 17399 121.5 (60+61.5) mm.

Colour of type series: Three specimens, including the holotype, are black above and bluish-grey below. Tails darkly mottled above, uniform greyish below. The other four specimens are brownish-grey to grey with scattered lighter spots above, pale bluish-grey below. These colours are not related to the sex of the specimen. Of this series in question, three were collected at night, but were unfortunately mixed with the other specimens which were collected the following morning. It is therefore not clear whether there is any correlation between the colour and the time of the day that they were collected.

Original colours and patterns, if they existed, were lost through preservation.

DISCUSSION:

The genus *Rhoptropus* must be considered to be very uniform, and the different species are usually distinguished on a few small, often variable characters. For this reason it is, in general, undesirable to subdivide the different species into subspecies, unless some clearly distinguishing characters are present such as the presence of preanal pores, in a species usually without them.

Mertens (1955) mentioned that he, at a certain stage, suspected *R. bradfieldi* Hewitt, 1935 to be a subspecies of *R. boultoni* Schmidt, 1933, which was proved wrong when he found both species occurring in the Tsissab Gorge in the Brand-

berg. Now, with the finding of *bradfieldi* at Twyfelfontein, this overlap was extended still further and closer investigation now proves that the *bradfieldi* specimens from the overlapping area are subspecifically distinct.

At Twyfelfontein no specimens of *boultoni* were collected during the short visit by the author in April, 1963. As the presence of pores is the main distinguishing character between *boultoni* and *bradfieldi*, specimens with only two pores and similar general appearance would at first be regarded as a variety of *boultoni*, which was, however, disproved by comparison with specimens of both species. This can be confirmed by comparing the shape and scalation of the snout and chin region. *R. boultoni* is distinguished by a row of enlarged chinshields bordering the mental and anterior lower labials (Fig. 2b), which is absent in *bradfieldi* (Fig. 2a). Intermediate conditions may occur which will leave the investigator in doubt in the case of females, where preanal pores are absent in both species. In that case an inspection of the snout may help. In *boultoni* the rostral slopes back at an angle forming a sharp, angular projection which may extend slightly over the lower jaw (Fig. 4b), while in *bradfieldi* both upper and lower jaw are of equal length giving the snout a relatively blunt profile (Fig. 4a). *Boultoni's* swollen nasals are closer together and are usually separated by two elongated, subhexagonal internasal scales, which are situated one behind the other; of these the anterior is in contact with the rostral and anterior as well as posterior nasal scales (Fig. 3b). In *bradfieldi* however, where the nasal swellings are separated by 1 or 2 scales behind the rostral, followed by a series of 2 to 5 scales, the anterior scale or scales, which lie next to each other, are in contact with the rostral and the anterior nasals only, and not in contact with the posterior or second nasal scale (Fig. 3a).

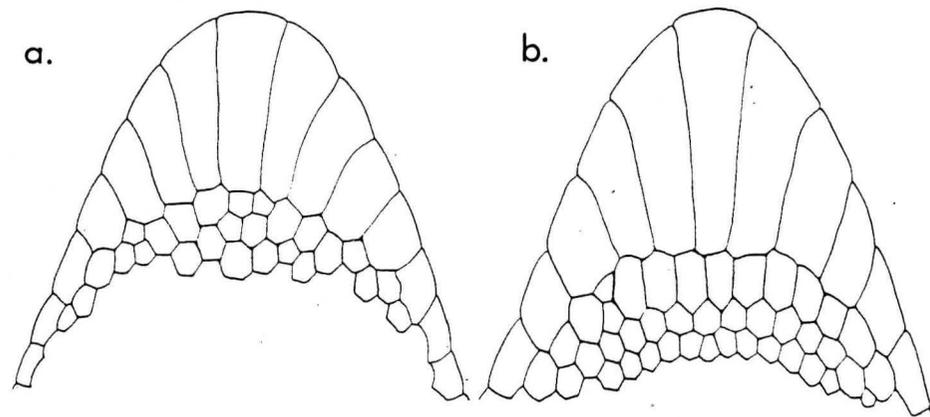


FIGURE 2: Showing arrangement of scales on chin of:—

- (a) *Rhoptropus bradfieldi diporus* subsp. nov.
TM 28238, Holotype, Farm Twyfelfontein.
(b) *R. boultoni* Schmidt.
CR 2537, Tsissab Gorge, Brandberg.

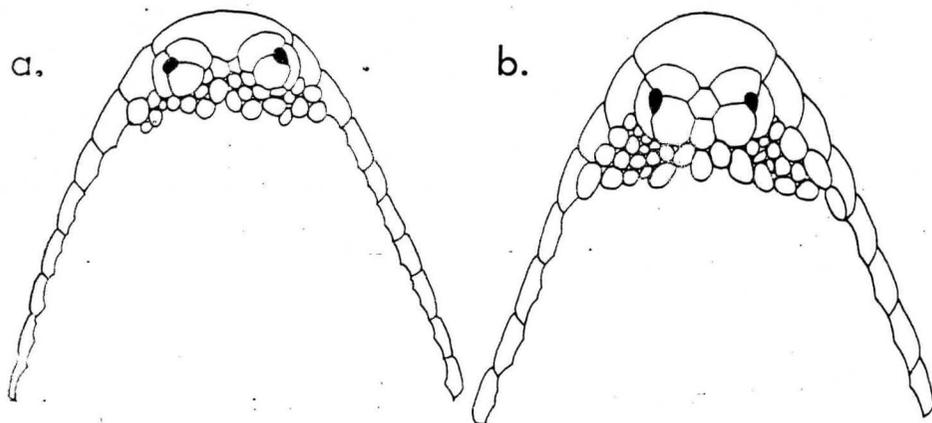


FIGURE 3: Showing arrangement of scales on snout of:—

- (a) *R. b. diporus* subsp. nov.
TM 28238, Holotype, Farm Twyfelfontein.
(b) *R. boultoni* Schmidt.
CR 2537, Tsissab Gorge, Brandberg.

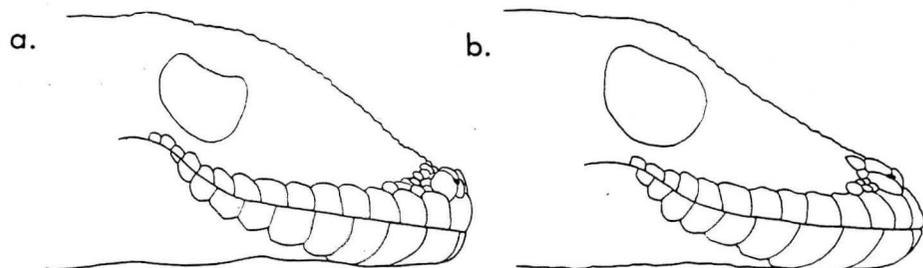


FIGURE 4: Lateral view of head of:—

- (a) *R. b. diporus* subsp. nov.
TM 28238, Holotype, Farm Twyfelfontein.
(b) *R. boultoni* Schmidt.
CR 2537, Tsissab Gorge, Brandberg.

R. biporosus FitzSimons, 1957, from the northern Kaokoveld, another species which might cause confusion, differs on the following points from *R. b. diporus*: Smaller size; snout and chin scutellation very similar to *boultoni*; scales bearing the preanal pores separated by a single scale only (instead of 3—4) and the pores relatively large and taking up most of the area of the scale.

The Brandberg must be regarded as a transitional area between the typical or southern form and the new northern subspecies. The type locality of the typical form is the Messum River (no definite locality given) which is formed by the run-off of the southern slopes of the Brandberg. The types, sex not mentioned, are without preanal pores and no specially enlarged scales were mentioned. Two specimens in the collection of the Transvaal Museum from the Messum mountains do not show these characters either. The Windhoek Museum specimens CR 2667a+b from the Numas Gorge, a valley on the western side of the Brandberg, have no scales which are clearly larger than the surrounding ones, but faint spots in the usual position of the preanal pores. A juvenile male (?) CR 2662 from the Numas Rock, has no enlarged scales, but clearly marked spots. Four specimens, CR 2859a—d from the landing strip south of the Tsissab Gorge, show some variation. The two males, CR 2859b+d, have enlarged preanal scales with clearly marked spots, but no pores. The other two specimens have no enlarged scales, but one specimen has two scales in the usual position with faint spots.

The two specimens from the Tsissab Gorge, which opens to the north-east of the Brandberg, i. e. more in the general direction of the type locality of *diporus*, both have the typical characters of this new subspecies. C 871, a male, is quite unmistakable, while CR 2632, a female (?) in very poor condition, has two spots on enlarged scales in the right position.

Because of the presence of intermediate specimens, even in short series from the Brandberg, I consider *diporus* only a subspecies of *bradfieldi*. If no such intermediate specimens had been found the description of a new species could have been considered.

Amongst the specimens of the typical or southern form, in the collection of the State Museum, Windhoek and the T.M., only two specimens were noticed which showed any characters similar to the northern form. TM 28243, an adult, and TM 28252, a juvenile, from 50 and 95 mls. E of Walvis Bay, respectively, along the Gamsberg road to Windhoek, were collected amongst normal specimens from the same localities. The adult has two enlarged scales in the position typical for *diporus*, while the juvenile has two clear spots on scales in the same position.

FIELD NOTES:

Of the type series, three were collected at night. It is not clear whether these specimens were sleeping in the open or whether they actually were active at night. The other specimens were collected in the morning, while basking on the same sandstone boulders and slabs, which made this locality famous for its magnificent rock engravings.

DISTRIBUTION:

A northern subspecies of typical *bradfieldi*, occurring from the Brandberg into the southern Kaokoveld.

Localities recorded: Landing strip, alt. 7000', Brandberg; Numas Gorge and Rock, Brandberg; (State Mus.). Tsissab Gorge; (Senckenberg Mus., State Mus.). Twyfelfontein; (Transvaal Mus.).

Family: SCINCIDAE.

RIOPA SUNDEVALLII (A. Smith).

Sundeval's Skink.

Eumices (Riopa) sunderallii (sic) A. Smith, 1849. Ill. Zool. S. Afr. Rept. App.: 11 (Type locality: "Country to the eastward of Cape Colony" = Natal?).

Lygosoma sundevallii Boulenger, 1910, Ann. S. Afr. Mus. 5: 486. — Hewitt, 1910, Ann. Transv. Mus. 2: 95 and 100. — Sternfeld, 1911, Fauna dtsh. Kol. 2: 41 and Mittl. zool. Mus. Berlin 5: 408. — Werner, 1915, in Michaelsen, Land u. Süßwasserfauna Deutsch-Südwestafrikas 1: 352.

Lygosoma (Riopa) sundevallii Lampe, 1911, Jb. nassau. Ver. Naturk. 64: 175. *Riopa sundevallii* Parker, 1936, Novit. Zool. 40: 139. — FitzSimons, 1938, Ann. Transv. Mus. 19: 204 and 1943, Transv. Mus. Mem. 1: 233. — Mertens, 1955, Abh. senckenb. naturforsch. Ges. 490: 82.

MATERIAL:

South West Africa. 9 Specimens.

TM 1872 Windhoek, coll. by Dr. Theiler, 13.8.1908; TM 10889 Okahandja, coll. by R. D. Bradfield, 30.11.1924; TM 17161 btwn Okaukuejo and Outjo, coll. by V. F. FitzSimons, 14.6.1937; TM 18431 and 18432 Ondongua, coll. by Dr. v. Niekerk, no date; TM 22519 Gautsha Pan and TM 22591 Samangeigei coll. by C. Koch, Aug. 1954; TM 29708 and 29709 Ondongua, coll. by J. P. v. S. Bruwer, 1962.

Bechuanaland. 7 Specimens.

TM 14583 and 14584 Machumi Pan nr Ghanzi, TM 14585 Lake Ngami, TM 14586 to 14588 Kabulabula on Chobe River, coll. by V. F. FitzSimons, May and July, 1930; TM 26937 Cuncna, about 20 mls. SW of Tsau, coll. by W. D. Haacke, 15.10.1961.

Angola. 1 Specimen.

TM 23911 10 mls. E of Caracul, coll. by C. Koch, May, 1954.

Also 10 specimens from localities in South West Africa in the collection of the State Museum, Windhoek as well as 92 specimens in the Transvaal Museum from various localities from East to South Africa were inspected.

VARIATIONS:

(Symbols used: O = Supranasal plus nasal scales joined.
 Ø = Supranasal plus nasal scales partly joined.
 X = Supranasal plus nasal scales separated).

S.W.A.		Left	Right
TM 1872	Windhoek	X	X
10889	Okahandja	X	X
17161	Okauk.-Outjo	Ø	X

		Left	Right
18431	Ondongua	X	O
18432	Ondongua	O	X
22519	Gautsha Pan	O	O
22591	Samangeigei	O	O
29708	Ondongua	X	Ø
29709	Ondongua	O	O
State Museum	Windhoek		
No number	Uriwanjae	Ø	O
CR 1392	Namutoni	O	O
CR 1392	Namutoni	O	O
CR 1392	Namutoni	O	O
CR 1392	Namutoni	Ø	Ø
C 598	Windhoek	X	X
C 722	Farm Jadennoch	X	X
No number	Outjo	X	X
CP 1037	Uhlenhorst	X	X
CR 2684a	Warmquelle	Ø	Ø
Angola.			
TM 23911	Nr Caracul	Ø	Ø
Bechuanaland.			
TM 14583	Machumi Pan	O	O
14584	Machumi Pan	O	O
14585	Lake Ngami	O	Ø
14586	Kabulabula	O	O
14587	Kabulabula	O	O
14588	Kabulabula	O	O
29637	Cuncna	O	O

Specimens from Kalakamati, Kaotwe and Gemsbok Pans in the Transvaal Museum collection appear to fall outside this area as they have no joined nasal scales and were therefore not listed.

DISCUSSION:

The main problem under investigation is a certain aspect in the lepidosis of the nasal area, which is normally used to distinguish between the species *R. sundevallii* and *R. modesta* (Günther, 1880) from East Africa. In typical *R. sundevallii* each nostril is supposed to be surrounded by three nasal scales, i.e. the supranasal, nasal and the postnasal, while *R. modesta* is distinguished by the fact that the supranasal and nasal scales are joined into a single scale.

An investigation of 109 specimens in the Transvaal Museum and 11 specimens in the State Museum, Windhoek revealed an interesting fact. Fourteen specimens in the T.M. and three in the S.M., Windh. have partially or completely joined nasal and supranasal scales. The extent to which these scales are joined varies a great deal, from being completely joined to being partly joined on one side only.

In longer series from one locality various conditions are possible as in the four specimens from Ondongua, from where one specimen has completely joined scales, two have joined scales on one side only, while the fourth has partly joined scales on one side only.

The importance of these observations lies in the fact that the distribution of the tendency of the nasal scales to join shows a definite pattern. It was only noticed in specimens from the Kaokoveld, northern Damaraland, the Kaukouveld, Ngami and northern Ghanziland and southern Angola. Broadley (1962) reports joined nasal scales in thirty specimens from the Wankie area in western Rhodesia. Monard (1937) identified five specimens from Mupanda, southern Angola as *R. modestum* because of similar findings. Hellmich (1957) places four specimens from central and northern Angola tentatively under *R. modesta* because of the joined nasals. In these specimens however, the rostral and frontonasal are in contact, a fact which is noncharacteristic for either of the species under discussion. FitzSimons (1935), while discussing the scientific results of the Vernay-Lang Kalahari Expedition 1930, mentions joined nasal scales in 19 out of 38 specimens but omits to say from which localities. Unfortunately only ten of the original series were kept in the T.M. and are discussed above, while the others were donated to various overseas museums.

The problem now, is to determine the exact distribution of joined nasal scales in order to establish its significance in the relationship between *R. sundevallii* and *R. modesta* from East Africa.

DISTRIBUTION:

From northern Natal, Transvaal, Kalahari and Damaraland in the south, extending northwards to tropical Central and East Africa.

Recorded localities in S.W.A.: Gautsha Pan; Okahandja; Okaukuejo-Outjo; Ondongua; Samangeigee; (Transvaal Mus.). Jadenoch Farm; Namutoni; Outjo; Uhlenhorst; Uriwanjae; Warmquelle; (State Mus., Windh.). Windhoek; (State Mus., Transvaal Mus.).

Literature records from S.W.A.: Gobabis; Grootfontein; Neu Barmen (Otjimbingwe); Omatjenne; Otjiwarongo; Rehoboth; Rietmond; Sandup; Warmbad and Kaoko Otavi, Kaokoveld.

TYPHILACONTIAS NGAMIENSIS FitzSimons.

Typhlacontias ngamiensis FitzSimons, 1932. Ann. Transv. Mus. 15: 37. (Type locality: Mothlatlogo on Lake Ngami, Ngamiland, Bechuanaland).

MATERIAL:

8 Specimens.

South West Africa: TM 22592 Samangeigee, Kungveld, coll. by C. Koch, Aug. 1951; TM 26880 14 mls W of Tsumkwe Pan, Kungveld, coll. by W. D. Haacke, 15.9.1961; CR 2516 Kanovlei, Kungveld, coll. by D. Fulkerson, 15.9.1962; CR 2813a—c Kanovlei, Kungveld, coll. by D. Fulkerson, 1963.

Bechuanaland: TM 14461 + 14462 (Type + paratype) Mothlatlogo on Lake Ngami, Ngamiland, coll. by V. F. FitzSimons, May 1930.

VARIATIONS:

Scales round middle of body:	18
Upper labials:	4
Lower labials:	4
Preocular:	Present in all specimens.
Postocular:	Usually 2 on both sides. One specimen with 1 on one and 2 on other side.
Largest specimen:	Type TM 14461 117.5 (75 + 42.5) mm. Apparently shrunk as original length was given as 125 (80 + 45) mm. TM 22592 106 (82 + 24) mm. Tail partly regenerated.
Tail:	Complete 3 specimens. Partly regenerated or broken 5 specimens.
Ratios:	Tail into total length 36.17—37.76%. Tail into snout/vent length 56.67—60.66%. Width of head into snout/vent length 19.06—23.89 times.

DISCUSSION:

This species is new for South West Africa.

Amongst these few specimens no significant differences from the types were noticed. Slight individual variations naturally do occur. The size of the preocular varies and in some cases it is so minute that it can only be recognized under a fairly strong magnification while in other cases it is partly covered by the loreal. In some specimens the fourth lower labial is a narrow striplike scale, as in the type, while in others it is either absent or has fused with the adjacent sublingual, as only a single large scale is present in the position of the fourth lower labial.

As in most of the legless skinks, few specimens have their original tail. This might be an indication of heavy, often unsuccessful predation, in spite of their very secluded habits.

FIELD NOTES:

As typical for most legless skinks, this species prefers a sandy habitat which is common in the Kungveld and Ngamiland.

TM 26880 was found under a log on a dune.

DISTRIBUTION:

Ngamiland, Kungveld and western Southern Rhodesia (Broadley, 1962: 805). Recorded localities in S.W.A.: Kanovlei (State Mus. Windhoek). Samangeigee and 14 mls W of Tsumkwe Pan, Kaukouveld (Transvaal Mus.).

TYPHLACONTIAS BOGERTI Laurent.

Typhlacontias bogerti Laurent, 1964, Publicações cult. Co. Diam. Angola 67: 82.
(Type locality: Desert of Moçamedes, Angola).

MATERIAL:

19 Specimens.

South West Africa: TM 24274 Nangolo Flats, Kaokoveld, coll. by C. Koch, 14.8.1956; TM 24304 Nangolo Flats, Kaokoveld, coll. by C. K. Brain, Aug. 1956; CR 2452 A - B Marienfluß, Kaokoveld, coll. by L. Blom, 3.11.1963.

Angola: TM 24460—24467 and TM 24469—24475 Moçamedes, coll. by C. Koch, Sept. 1956.

VARIATIONS:

Scales round middle of body:	18
Upper labials:	5
Lower labials:	2
Preocular:	Present on both sides 16 specimens. Present on one side only 1 specimen. Absent 2 specimens.
Postoculars:	2 on both sides 16 specimens. 3 on both sides 1 specimen. 1 on both sides 1 specimen. 1 on one side only 1 specimen.
Second upper labial:	Reaching eye 16 specimens. Not reaching eye 3 specimens.
Largest specimens:	CR 2452 A 116 (75 + 41) mm. TM 24304 114 (85 + 29) mm. Tail regenerated.
Tail:	Complete 6 specimens. Partly regenerated or broken 13 specimens.
Ratios:	Tail into total length (6 specs.) 34.55—37.25%. S.W.A. (2 specs.) 34.55—35.34%. Angola (4 specs.) 35.63—37.25%. Tail into snout/vent length (6 specs.) 52.66—59.38%. S.W.A. (2 specs.) 52.66—54.66%. Angola (4 specs.) 55.36—59.38%. Width of head into snout/vent length 17.36—22.31 times. S.W.A. (4 specs.) 17.86—20.73 times. Angola (15 specs.) 18.54—22.31 times.

Although bleached and displaying considerable individual variation, the colour patterns and the lepidosis fit well into the general description.

DISCUSSION:

This species is new for South West Africa.

Some variation in the scalation of the orbital area was noticed, as shown above. The occurrence of a preocular scale, which was not mentioned in the type description, is considered to be the most important. This scale varies in size and, in three of the specimens from the Kaokoveld, it is of such a size that it separates the second upper labial from the ocular scale, while in the fourth specimen from that area these two scales are only just in contact. Thus the description of the type, "Second and third upper labial in contact with ocular", does not apply in these three specimens.

The postocular area shows less variation, but TM 24274, also from the Kaokoveld, has three postocular scales on both sides, while one specimen from Angola has one on one side and another specimen has one on both sides, instead of the usual two.

The specimens from South West Africa have slightly lower body/tail and head-width body-length ratios than those from Angola. This might be due to the fact that the Angola specimens are mostly juveniles, with a few subadults, while the others are adults and subadults.

The incidence of damaged and regenerated tails is particularly high in this sample (13 out of 19).

FIELD NOTES:

The types were collected under a stone and under the leaf of a *Welwitschia* plant. The specimens from Moçamedes were collected in desert sand under shrubs in the vicinity of the village and at the base of trees planted in the village. No ecological records are available on the Kaokoveld specimens.

DISTRIBUTION:

Northern Namib desert in the north-western Kaokoveld and south-western Angola.

Recorded localities: Desert of Moçamedes (Types), Marienfluss (State Mus. Windhoek), Moçamedes; Nangolo Flats, Kaokoveld (Transvaal Mus.).

Family: LACERTIDAE.

MEROLES KNOXII (Milne Edwards).

Knox's Ocellated Sand Lizard.

Lacerta knoxii Milne Edwards, 1829, Ann. Sci. Nat. 14: 76 and 85, pl. VI, fig. 6.
(Type locality: "Cape of Good Hope").

Scapteira knoxii part. Werner, 1910, Jena Denkschr. 14: 335. — Sternfeld, 1911, Fauna dtsh. Kol. 4: 32.

Scaptira knoxii pequensis Hewitt, 1935, Rec. Albany Mus. 4: 324. (Type locality: Lüderitzbucht.) — FitzSimons, 1943, Transv. Mus. Mem. 1: 365 and 1950, Ann. Transv. Mus. 21: 256.

Scapteira knoxii pequensis Mertens, 1938, Veröff. dtsch. KolonMus. Bremen 2: 12.
Meroles knoxii knoxii Mertens, 1955, Abh. senckenb. naturforsch. Ges. 490: 71.
Meroles knoxii pequensis Mertens, 1955, Abh. senckenb. naturforsch. Ges. 490: 71.

MATERIAL:

30 Specimens.

TM 20906 to 20909, 20913, 20950 to 20953 Oranjemund, coll. by D. C. H. Plowes, July, 1942; TM 22090 and 22091 Bogenfels, coll. by G. v. Son and C. Koch, Dec. 1948; TM 27723 and 27725 26 mls NEE of Oranjemund, coll. by W. Fürst, Nov. 1962; TM 27788 to 27794 Mittag, 30 mls N of Oranjemund, coll. by H. D. Brown, W. Fürst and W. D. Haacke, Nov. 1962; TM 28312 to 28321 Lüderitz area, coll. by W. D. Haacke, May, 1963.

Also 78 specimens from various localities in the Cape Province.

VARIATIONS:

Localities + numbers	Lamellae 4th toe	Ventrals	Collar	Preanal pores	Dorsals	Subling. in cont.
Oranjemund.						
TM 20906	24—25	10	8	16 18	60	2
20907	27	11	10	18 19	63	(3)*
20908	25	12	11	18 18	69	2
20909	23—25	12	8	18 18	65	2
20910	25	12	8	19 19	68	2
20950	25	12	8	15 16	59	(3)
20951	24	12	8	14 16	62	(3)
20952	25	12	9	19 19	60	(2)
20953	22	12	6	15 15	66	2
26 mls NEE of Oranjemund.						
TM 27723	25	12	7	17 17	69	2
27725	25	12	5	17 17	68	2
Mittag.						
TM 27788	25	12	6	16 15	65	2
27789	24	12	7	19 19	66	2
27790	21	12	6	17 19	61	3
27791	26	10	8	18 19	63	3
27792	27	12	7	19 19	65	2
27793	25	12	4	17 17	59	3
27794	25	12	6	18 18	60	2

Localities + numbers	Lamellae 4th toe	Ventrals	Collar	Prenaenal pores	Dorsals	Subling. in cont.
Bogenfels.						
TM 22090	23	12	8	15 16	54	3
22091	23—24	10	10	18 —	57	2
Lüderitz.						
TM 28312	24	10	8	16 16	70-	2
28313	26	12	8	18 18	63	1
28314	24	10	7	16 16	69	2
28315	23	12	6	16 18	65	2
28316	23	12	7	17 18	68	2
28317	24	12	6	19 19	63	3
28318	25	10	5	16 17	60	3
28319	24	11	8	17 17	62	2
28320	23	10	9	16 16	64	3
28321	25	12	7	17 17	70	2
Variation for <i>M. k. knoxii</i> according to FitzSimons (1943).						
	21—26	12	6—11	13—22	42—62	us. 2
		rarely 10				
Variation for <i>M. k. pequensis</i> according to FitzSimons (1943).						
	25—30	10	2—6	17—20	63—78	us. 3
		rarely 12				
Variation in series from S.W.A.						
Oranjemund.						
	22—27	10—12	6—11	14—19	59—69	2—(3)
26 mls. NEE of Oranjemund.						
	25	12	5—7	17	68—69	2
Mittag.						
	21—27	10—12	4—8	15—19	59—66	2—3
Bogenfels.						
	23—24	10—12	8—10	15—18	54—57	2—3
Lüderitz area.						
	23—25	10—12	5—9	16—19	62—70	1—3

* Numbers in brackets indicate that last pair is only in short contact.

DISCUSSION:

The problem in connection with this species is whether the specimens from north of the Orange River can be regarded as belonging to a different subspecies or not. Hewitt based his description of *pequensis* on three specimens from the

neighbourhood of Lüderitz and found great conformity amongst these. Additional topotypical material, however, shows a much wider latitude of variation than either Hewitt or FitzSimons mentioned.

Meroles knoxii has a fairly wide distribution. Starting on the Cape flats in the south, it continues all along the west coast, in places as far as two hundred miles inland, across the Orange River as far north as Lüderitz. The Orange River does not interrupt the distribution. Werner (1910) reports this species from Kubub near Aus as well as Tsaobis and Salem near the Swakop River. Mertens (1955) mentions a letter from Loveridge, reporting this species from near the Waterberg in the Museum of Comparative Zoology. None of these localities has been confirmed by recent South African collectors.

The 78 specimens from various localities in the Cape Province in the collection of the Transvaal Museum show great similarity in colour pattern, shape and keeling of the dorsal scales. Only in those from the extreme north-west can a slight change be noticed, especially in comparison with material from Great Namaqualand. Specimens from the Holgat River already have weaker keeled scales than specimens from more southerly and easterly localities. The typical dorso-lateral bands of these specimens are broken up into rows of spots. Oranjemund specimens vary to quite an extent between the broken up pattern from Holgat and the ocellated form found near Lüderitz. The same is the case in the series from Mittag, about 30 miles north of Oranjemund (Plate 5). Both the specimens from 26 miles upstream from Oranjemund are of the dark phase with the broken-up dorsolateral stripes. The Bogenfels specimens are both very dark due to their state of preservation, so that the pattern is unrecognizable. All the specimens discussed above have more or less faintly keeled dorsal scales, intermediate conditions between the small, granular, practically smooth scales of the Lüderitz area and the typical form of the Cape Province. The head scales are also less rugose.

The variation in scalation, as indicated in the tables, makes it clear that few specimens from S.W.A. can be grouped into either of the subspecies according to the scale counts given by FitzSimons, as counts from different parts of the body may fall within the limits of different subspecies. The only variation in the lepidosis of these specimens which could be expressed in numbers is the generally smaller size of the dorsal scales which, consequently, accounts for a higher average scale count across the middle. Attention must be drawn to the fact that scale counts by different investigators will vary to some extent depending on their individual opinion as to which scales to include in a series, or at which exact part of the body the counts should be made.

In the thirty specimens available from S.W.A. only two from Mittag (TM 27790 and 27791) have a divided frontonasal, a feature found in specimens from ten different localities in the Cape Province as far south as the Cape Flats. Its occurrence shows no relation to distribution and is therefore considered to be of no diagnostic value as used by Hewitt.

The extent to which chin shields meet, another characteristic used by Hewitt to distinguish *pequensis*, is also so variable that it is of no great use. There certainly is a greater tendency for the third pair of sublinguals to be in contact in

specimens from Great Namaqualand, from where 8 out of 30 show this characteristic, which occurs in only two of the series from the Cape.

Because of the present evidence available, it appears that *M. k. pequensis* cannot be separated as a geographic race, as its distribution seems to be continuous and the characteristics of the topotypical material can be traced as gradual changes in the transitional areas. However, as the occurrence of this species has been reported from other areas and has been tentatively allotted to this subspecies, no final decision can be taken on the status of *pequensis* until specimens from these other areas have been examined.

The ecology of the southern Namib desert seems to affect the appearance of the nonpsammophilous lacertids to a great extent. Mertens (1955:66) described a new subspecies of *Eremias lineo-ocellata* n.l. *inocellata* from this area. This variety of the usually quite colourful species is of a dark greyish colour with four more or less distinct longitudinal stripes. It also seems to have a more slender body. The same applies to specimens of *Meroles suborbitalis* (Peters, 1869) from that area, which are smaller and have a colour pattern consisting of black speckles on a blue-grey background. These three forms show a remarkable resemblance and can be confused on superficial inspection.

FIELD NOTES:

At Mittag this species was very common, hiding under succulent shrubs and refuse left over from mining operations. In this sandy habitat the only other reptiles noticed or collected were *Psammophis notostictus* Peters, 1867, *Meroles ctenodactylus* (A. Smith, 1838) and *Agama hispida brachyura* Boulenger, 1885. In the Lüderitz area this lizard was collected in rocky or at least gritty areas which it shared with other lacertids such as *Meroles suborbitalis* and *Eremias lineo-ocellata inocellata*; *Psammophis notostictus*, *Cordylus polyzonus* A. Smith, 1838 and *Mabuya longiloba* Methuen & Hewitt, 1914, were also collected in the same habitat.

DISTRIBUTION:

Western Cape Province and south-western Great Namaqualand, and possibly extending into Damaraland.

Recorded localities in S.W.A.: Bogenfels; Mittag; Oranjemund; 26 mls NEE of Oranjemund; (Transvaal Mus.). Lüderitz; (Albany Mus., Senckenberg Mus., Transvaal Mus.). Literature records: Kubub; Salem; Tsaobis; (Werner 1910). Nr Otjosongombe, Waterberg area; (Mertens 1955, fide Loveridge, Mus. comp. Zool.).

Family: CORDYLIDAE.

PLATYSAURUS CAPENSIS A. Smith.

Cape Red-tailed Rock Lizard.

Platysaurus capensis A. Smith, 1844, Ill. Zool. S. Afr. Rept., pl. XL (Type locality: Great Namaqualand). — Sternfeld, 1911a, Mitt. zool. Mus. Berlin 5: 403 and 1911b, Fauna dtsh. Kol. 1: 23. — FitzSimons, 1943, Transv. Mus. Mem. 1: 471, figs. 375—377. — Loveridge, 1944, Bull. Mus. comp. Zool. 95: 96.

MATERIAL:

9 Specimens; 3 ad. males, 1 ad. female, 1 subad. female, 4 juveniles.

TM 27983 coll. by H. D. Brown, 4.12.1962. TM 27984—5 coll. by W. D. Haacke, 4.12.1962. TM 28270—5 coll. by W. D. Haacke, 3.5.1963.

All from the Fish River Canyon, about 40 mls. W of Klein Karas, Great Namaqualand.

VARIATION:

	Fish River series.	Acc. to Loveridge.
Minute occipital:	1 or 2 present.	Present or absent.
Supraocular:	4	4
Supraciliaries:	4 (3 in one spec.)	4
Upper labials:	4—6	5—6
Lower labials:	5—6	5—6
Collar scales:	8—10	8—11
Longd. rows ventrals:	18—22	20
Femoral pores:	14—18	15—19
Dorsal scales:	83—98	(Not given).

The scalation of this series conforms well to the general description given by FitzSimons (1943) and Loveridge (1944). All specimens have a small occipital which is also present in the single specimen from Churutabis (Sternfeld 1911a).

Colour: Male. Dorsally head, neck and shoulders, black, changing to azure blue on sides of neck and body and proximal half of the front legs; back and hindlegs orange- to greyish-brown; posterior third of sides of body and base of tail orange- to brick-red, while the tail is orange- to straw-yellow. Light turquoise dorsal and dorsolateral lines over the back of the head, breaking up into spots on the neck; sides of neck and body with small light-blue to turquoise specks, while the rest of the back is speckled pale yellowish-green; distal half of front limbs, greenish.

Ventrally the mental region is light blue changing to azure blue on the belly, where it surrounds a black central blotch. Posterior third of belly, the hind legs and tail orange- to brick-red. Fore limbs, hind feet and occasionally the tail, pale straw-yellow.

Female: Grey- to olive-brown above; tail straw-yellow; head with faint, light, dorsolateral lines, which break up into small spots and fade on the neck, while a dorsal line continues as far back as the front legs before fading. Body and legs faintly speckled. Ventrally pale bluish-grey with a black blotch on the throat.

Juveniles: Similar to females, but lacking yellowish tail and black gular spot (Plate 6).

DISCUSSION:

Until recently a single male from Churutabis, now in the Berlin Museum and in poor condition, was the only definite record from South West Africa. The sample under discussion is the first series of this species which has been collected north of the Orange River. As this river occasionally dries up in parts it does not form a permanent barrier, and, as *P. capensis* has been collected on the southern bank, it was only a question of time before the same happened on the northern side. The scalation of these specimens is very similar to that of specimens from Little Namaqualand and Bushmanland. In colouring, however, it shows marked differences from other populations, particularly in females and young. The colour patterns of males from different populations in the Cape Province are known to show marked differences. The females differ very little and according to descriptions they are marked as follows: "Back olive- to dark-brown with three well defined, longitudinal, dirty white stripes; the dorsal one fading over posterior half of back, while the dorsolaterals may continue onto the base of the tail". Loveridge states, "No light spots between these lines". In the series under discussion there are no lines but spots instead.

As only a short series, with one adult female, is available, no remarkable differences in scalation were noticed, and as colour differences between populations are known, it is not considered advisable to erect a new subspecies at this stage. It is also known, from collections made along the southern bank of the Orange River, that differences amongst populations tend to be in the form of clines. More material from southern Great Namaqualand is thus needed before anything conclusive can be said on the status of this population.

FIELD NOTES:

A shy, rupicolous lizard retiring into narrow cracks when disturbed.

Three juveniles were collected at the bottom of the Canyon, on a boulder at the edge of a pool of water. During the intense midday heat (December, 1962) they hunted for small insects near the water's edge on the shaded side of the boulder.

The rest of the series was collected during May, 1963, all along the upper edge of the Canyon. They preferred the loose and cracked rocks near the edge of the precipice, where there were occasional sheer drops of hundreds of feet, which makes collecting difficult and often dangerous. Because of the ideal terrain, individuals were spread out over a wide area and no concentrations were noticed. During May, 1963, no specimens were noticed below the top edge of the Canyon although a whole day was spent in search of this species lower down.

DISTRIBUTION:

Widely distributed over Little Namaqualand and Bushmanland. A. Smith's record from Great Namaqualand is doubtful, as he never visited this area. FitzSimons assumes that this statement was due to a confusion with Little Namaqualand. Recorded localities from Great Namaqualand: Churutabis (Zool. Mus. Berlin). Fish River Canyon, about 40 miles west of Klein Karas (Transv. Mus.).

Suborder: SERPENTES.

Family: COLUBRIDAE.

BOAEDON GUTTATUS (A. Smith).

Spotted House-Snake.

Lycodon guttatus A. Smith, 1843, Ill. Zool. S. Africa, Rept., pl. XXIII (Type locality: "Beyond Kurrichane").

Boedon guttatus Sternfeld, 1910, Fauna dtsch. Kol. 4 (1): 17.

Boaedon guttatus FitzSimons, 1962, Snakes S. Africa: 116.

MATERIAL:

1 Specimen.

TM 28776 Farm Tiras, Bethanie district, Great Namaqualand, coll. by W. D. Haacke, 14.5.1963.

VARIATIONS:

(Known range according to FitzSimons 1962 in brackets). Rows of scales around middle of body 23 (23 or 25); Ventrals 190 (186—230); Subcaudals 57 (46—72). As it is a male specimen, 57 subcaudal pairs (usually over 60 in males) is rather a low count. Total length 457 (389 + 68) mm.

Colour: Colouration in this species shows much individual variation, and markings of this particular specimen fit well into this pattern.

Each dorsal scale has a light reddish-brown colour with a narrow, nearly white margin, while the tail scales change to the opposite, having a light central blotch on a reddish-brown scale. On this background a dark brown pattern occurs, starting on the neck as a series of bold dark spots or blotches decreasing in size and fading towards the middle of the body from where the markings continue as speckles onto the tip of the tail (Plate 7). Underside of head and body uniformly yellowish-white.

DISCUSSION:

This is the first record from outside the borders of the Republic and at the same time from South West Africa. As the distribution in the west was known to extend north as far as Ookiep it was not surprising to find an extension across the Orange River, although there is a gap of about 250 miles between these two localities. In general this specimen fits well into the description of the species, but differs on certain points. The head is even more flattened than in the six specimens available for comparison and the supraorbital region is raised above the frontal area. The preoculars are in contact with the frontal (usually not in contact). The temporal area is covered with small scales equal in size to the scales on the back, so that FitzSimons' number for the temporals, 1 and 2, does not apply (Fig. 5). Nine lower labials (usually 8) present. Whether or not these small differences are significant can only be decided on when more material from this area becomes available.

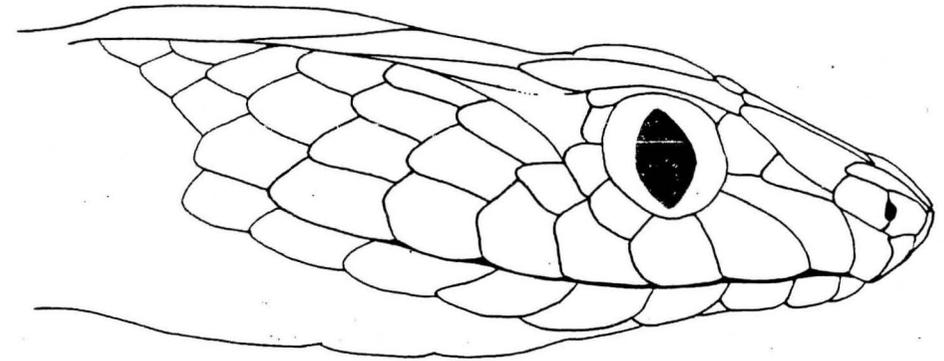


FIGURE 5: *Boaedon guttatus* (A. Smith).

Lateral view of head, showing small temporal scales and raised orbital area.

FIELD NOTES AND REMARKS:

Found under a flake of a boulder on the slope of a granite outcrop, a habitat to which it seems to be well adapted by having a very flattened head. In the same habitat *Pachydactylus namaquensis* (Sclater, 1899), *P. l. laevigatus* Fischer, 1888, *Afroedura africana tirasensis* subsp. nov. and *Mabuya sulcata* Peters, 1867, were plentiful and it would seem that it preys on these species. In captivity it proved to be shy and unaggressive and managed to escape shortly after arriving in Pretoria. Three weeks later it was recaptured in the same room and promptly swallowed a lizard after being placed in a cage. During the following night it again managed to squeeze out of a narrow slit in the lid of the cage to be recaptured three months later in an adjacent office, still in a good condition. It managed to stay free for so long only because it was able to squeeze into the narrow cracks between the floor boards and behind the skirting, where it probably hibernated.

It is essential to find more specimens in that area to establish whether the differences in scalation noticed in this specimen are constant in a population and thereby of taxonomic significance.

DISTRIBUTION:

Rare in general occurrence.

According to FitzSimons: The southern Cape Province, extending northwards in the west to the mouth of the Orange River and in the east to Natal and the eastern Transvaal. Now extending into Great Namaqualand.

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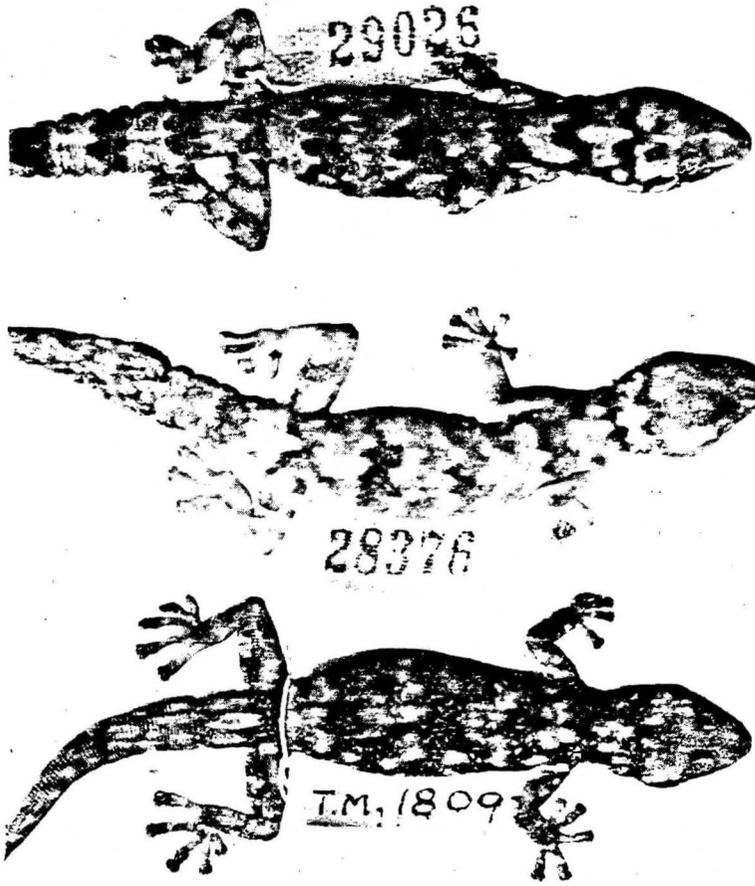


PLATE 1: TM 29026 *Afroedura africana africana* (Boulenger).
 TM 28376 *A. a. tirsasensis* subsp. nov. Holotype.
 TM 18097 *A. a. numaquensis* (FitzSimons) Paratype.

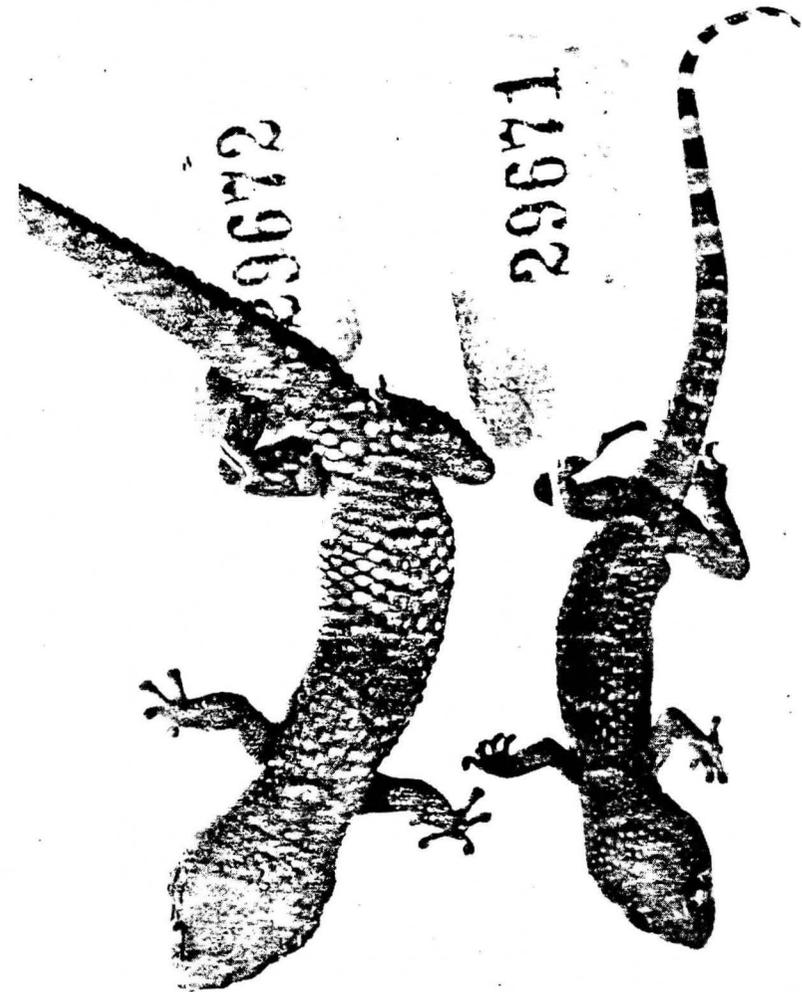


PLATE 2: *Pachydactylus fuscitatus* Boulenger.
 TM 29671 Subadult. Warmquelle, Kaokoveld.
 TM 29672 Adult male. Warmquelle, Kaokoveld.

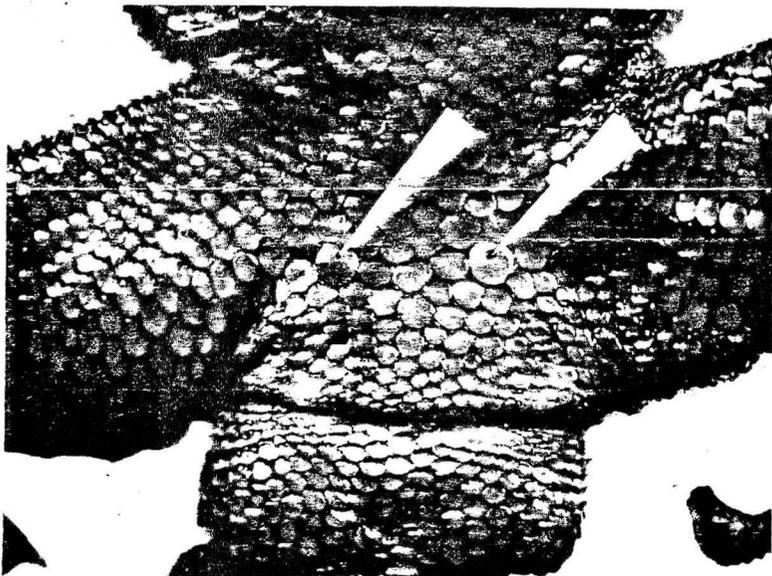


PLATE 3: *Rhotropus bradfieldi diporus* subsp. nov.
TM 28238, Holotype, adult male. Ventral view, showing position of enlarged preanal scales with pores.

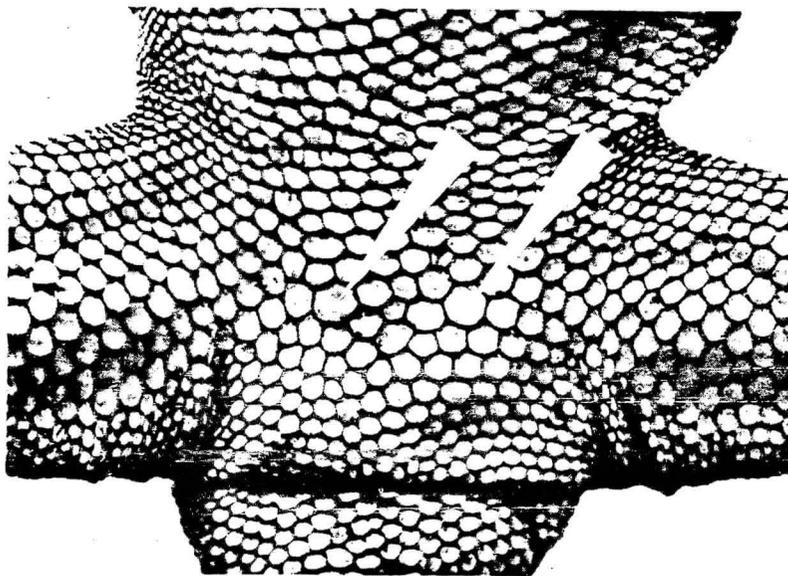


PLATE 4: *Rhotropus bradfieldi diporus* subsp. nov.
TM 25819, Allotype, adult female. Ventral view, showing position of enlarged preanal scales.

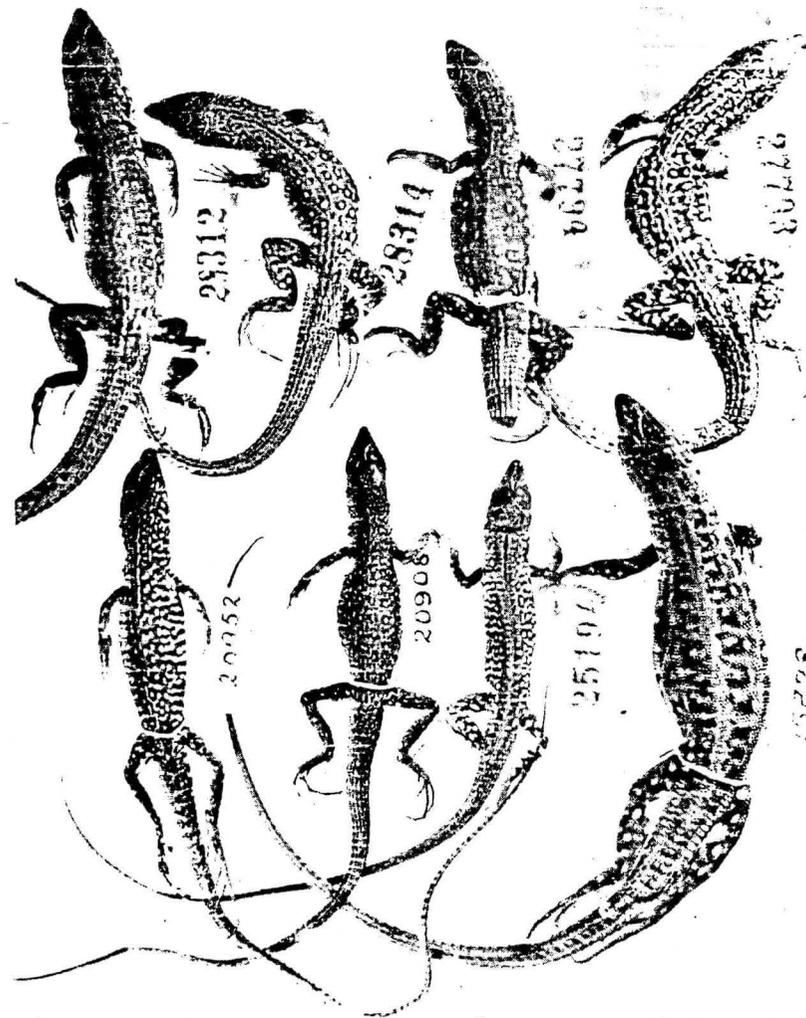


PLATE 5: *Meroles knoxii* subsp.
TM 28312 + 28314, Topotypes of *M. k. pequensis* (Hewitt), Lüderitz.
TM 27794 + 27793, Mittag, 30 mls. N of Oranjemund.
TM 20952 + 20908, Oranjemund.
TM 25191, Holgat, 30 mls. N of Port Nolloth, C.P.
TM 15823, Typical *M. k. knoxii* (Milne Edwards), Lekkersing, C.P.

