

TWO NEW GEKKOS

Pachydactylus serval sansteyni ssp. nov.

Pachydactylus oreophilus gaiasensis ssp. nov.

FROM SOUTH WEST AFRICA

by

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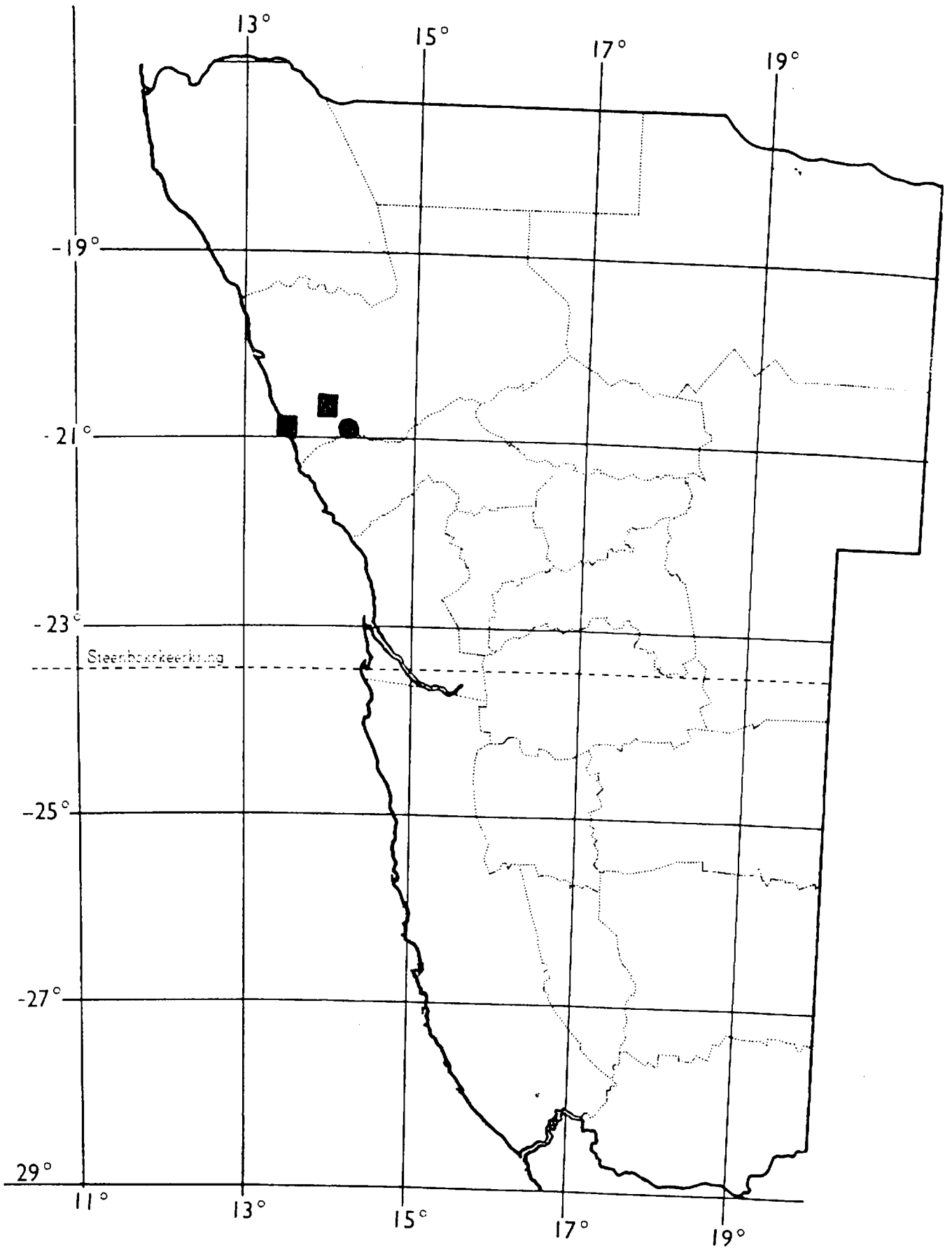


Figure 1: Map showing distribution of *Pachydactylus serral sansteyni* ssp. nov. (squares) and of *Pachydactylus oreophilus gausensis* ssp. nov. (circle).

I. INTRODUCTION

In March 1964 Mrs. S. M. Steyn and P. Motonane collected some small gekkos on the so-called Skeleton Coast, just north of the Huab river mouth. In June 1964 one of us (W. Steyn) collected a much larger gekko further inland in the same general area. These gekkos were provisionally classified as having *Pachydactylus serval* Werner affinities. For lack of sufficient material it was not possible to investigate them further until 1966, when enough material became available. This study results in the present description of two new subspecies of gekko. We have much pleasure in naming one of them after Mrs. Steyn, in acknowledgement of her collecting and voluntary curatorial activities on behalf of the State Museum.

II. *PACHYDACTYLUS SERVAL SANSTEYNI* ssp. nov.*Material*

Twelve specimens.

Holotype: An adult ♂ (CR 4478/4) from near Kuidas water-hole. Collected by C. Brits, 3. 4. 1966.

Allotype: An adult ♀ (CR 4478/3) from the same locality. Collected by P. Motonane, 3. 4. 1966.

Paratypes: Two adults ♂♂, one subadult ♂ (CR 4478/7, CR 4478/2, CR 4478/1), two juveniles (CR 4478/5—6) all from near Kuidas collected by W. Steyn, A. Visagie and P. Motonane, 3. 4. 1966; a juvenile (CR 3057) collected by F. Brown ten miles inland from the Huab river mouth, 28. 6. 1966; and a juvenile (CR 2838) collected by P. Motonane 5 miles north of the Huab river mouth, near the coast, 24. 4. 1966.

Other material: Two juveniles (CR 3871/1—2) collected by W. Steyn and P. Motonane respectively, 5 miles north of the Huab river mouth, near the coast, 29. 9. 1965; and a juvenile CR 2838/1 collected at the same locality by S. M. Steyn 24. 4. 1964. The last-mentioned specimen was the first to be collected, and was donated to the Transvaal Museum on 1. 5. 1964. All other material referred to is kept in the State Museum.

Type locality: The vicinity of Kuidas water-hole in the Southern Kaokoveld, (about 13° 45' E., 20° 38' S., altitude about 1200').

Diagnosis

A nocturnal form related to *Pachydactylus serval* Werner, but distinguishable therefrom by the presence of enlarged conical keeled tubercles on the hindlimbs, a higher labial count, the granular nature of the ventral lepidosis, a lower number of subdigital scansors, and by the arrangement of the tubercles at the base of the tail.

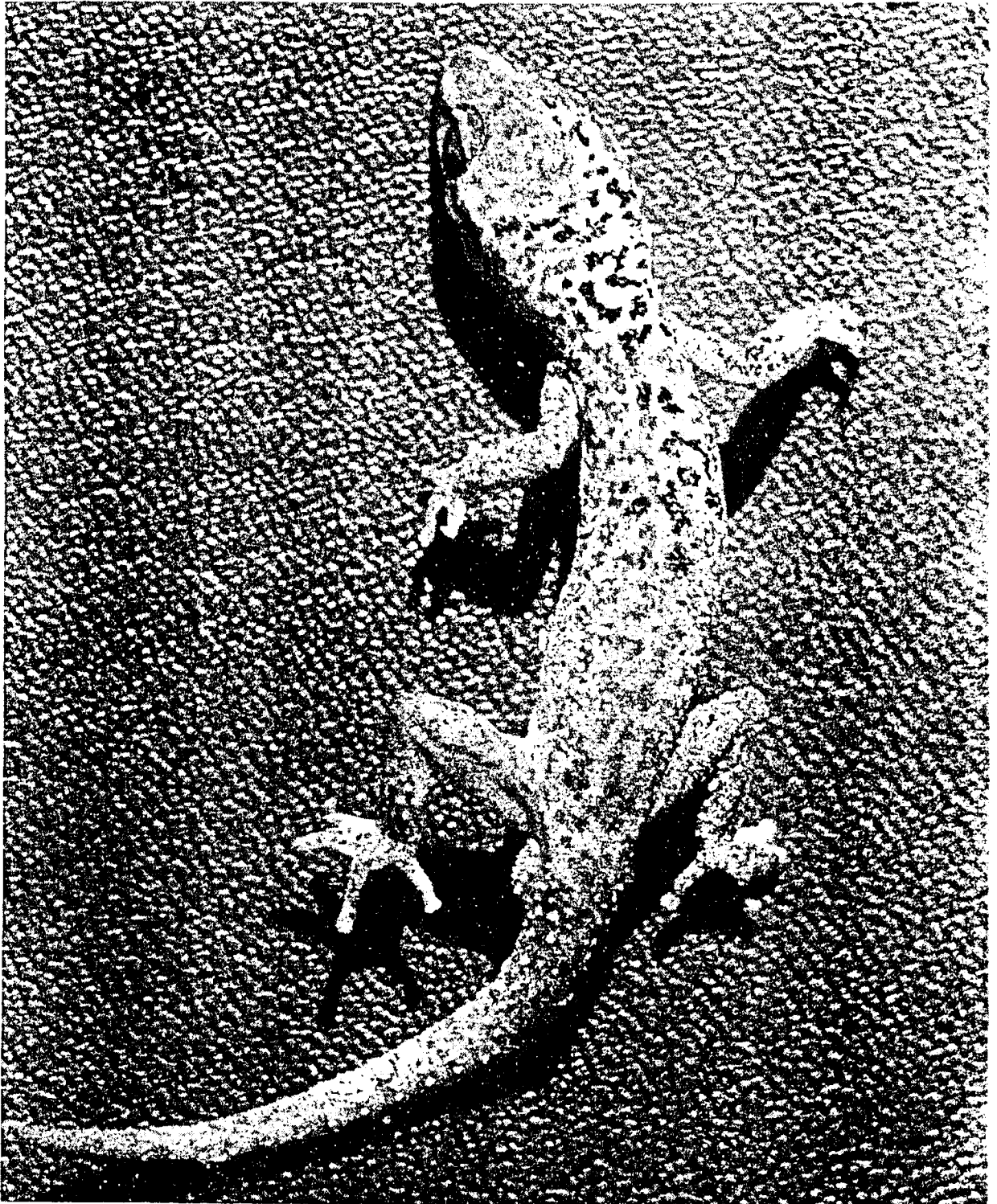


Figure 2: *Pachydactylus serval sansteyni* ssp. nov. ♂ (CR 4478/7) X 1.5.

*Description**Holotype* :

Body slender. Head elongately oval, distinct from neck and 1.19 times as long as broad. Snout slightly convex, obtusely pointed 1.54 times as long as the horizontal diameter of the eye, and 1.34 times as long as the distance from eye to ear opening, which is small (approximately $\frac{1}{3}$ diameter of the eye) and horizontally oval. Nostril opening outwards and forwards, pierced between the first upper labial, the rostral and 3 nasal scales, the anteriormost of which (the nasorostrals) are in narrow contact behind the rostral, which is 1.75 times as broad as deep. The nasorostrals are moderately swollen but the nasal "ring" is not raised. Upper labials 11 + 11; lower labials 10 + 11. Mental a little narrower than adjacent labials; not narrowed posteriorly. No enlarged chin shields. Gulars granular, juxtaposed, rounded and subconical becoming larger towards and at lateral labial margins. Over chest and belly, the granules become progressively larger, convex, juxtaposed to subimbricate except for a small triangular area midabdominally where the scales are larger and flattened; for the most part the belly scales are subequal to or slightly larger than the dorsal scales. No preanal nor femoral pores. Occipital granules slightly unequal, juxtaposed, rounded, subconical and much smaller than the enlarged convex scales on the snout. Inter-mixed with the occipital granules are a few widely scattered rounded conical tubercles, which are subequal in size to the scales on the snout and more numerous posteriorly. Dorsal scales granular, juxtaposed, convex to subconical, slightly unequal in size and subequal to or slightly larger than the occipital granules.

On the back are small, well separated, rounded, moderately keeled tubercles distinctly larger posterolaterally and arranged in a pattern of 6—7 irregular longitudinal rows on either side of a wide middorsal area free of tubercles. This middorsal area is ± 5 granules wide. The granules on the flanks are more strongly conical. Tail (distal $\frac{1}{3}$ reproduced) distinctly verticillate each segment terminating dorsally in a transverse series of 6 to 4 (6 approximately 4 distally) strongly keeled, large almost spinose tubercles; each row of tubercles being separated by 4—5 transverse rows of convex obtusely keeled, juxtaposed scales. Ventrally the tail is covered with unequal, juxtaposed subconical scales more or less subequal to or slightly larger than the scales on the dorsal surface. Limbs moderately slender. The adpressed hindlimb reaches the elbow of the backward pressed forelimb. Hindlimb with large strongly keeled tubercles; few on upper limb, but fairly numerous on dorsolateral surface of lower limb. Forelimb with convex, granular, juxtaposed scales but without tubercles. Digits moderate, a median series of transversely enlarged scales below. Digital expansions small.

Scansors under fingers:

<i>Right</i>	<i>Left</i>
I 4	4
II 4	4
III 5	5
IV 5	5
V 4	4

Scansors under toes:

<i>Right</i>	<i>Left</i>
I 5	5
II 4	5
III 4	5
IV 4	4
V 5	5

Postanal sacs present above which, on either side of the base of the tail are a serie of white tubercles, arranged in the order 4 superior and 3 inferior. The upper 4 are tooth-like and much larger than the lower 3.

Colour (in spirits): Head and body mauvish brown above with irregular darker vermicular spots or blotches from the head to the base of the tail. Limbs and tail more or less uniform brown with faint vermiculations. Caudal tubercles a little lighter in colour, giving the tail an indistinctly barred appearance. On either side of the head a streak of darker brown arises at the snout, passes through the eye and terminates above and behind the ear opening.

The extra-brillar fringes at the anterior edge of the eyes are white. The underparts are uniformly white to greyish white.

Dimensions (in mm.):—

Total length 86.3 (48.2 + 38.5) the tail being equivalent to 79% of the head and body measurement.

Head length 12.70

Head breadth 10.67

Allotype:

Head 1.18 times as long as broad, snout 1.70 times as long as the horizontal diameter of the eye and 1.18 times as long as the distances from eye to ear opening which is small to moderate, (one side being nearly $\frac{1}{2}$ the diameter of the eye). Rostral twice as broad as deep. Upper labials 10 + 10; lower labials 10 + 9. Middorsal area free of tubercles 4—6 granules wide. The tail is not the original one, the upper surface with slightly unequal juxtaposed, obtusely keeled scales below as described for the holotype.

Scansors under fingers:

<i>Right</i>	<i>Left</i>
I 4	4
II 4	4
III 5	4
IV 4	4
V 4	4

Scansors under toes:

<i>Right</i>	<i>Left</i>
I 5	5
II damaged	5
III 5	5
IV 5	5
V 4	4

A minute needle-like claw is present on the toes between the first scansor (the most distal one) and the nail-like scale above. There are no postanal sacs and the tubercles laterally at the base of the tail are small the lower series being indistinct. The basic colour is a little lighter and the vermicular spots are much smaller than in the holotype.

Dimensions:—

Total length 78.5 (45.7 + 42.8) the tail being equivalent to 72% of snout to vent measurement.

Head length 11.20

Head breadth 9.51

Paratypes :

The variation observed in the paratypes is as follows. (The mean is given for the whole type series.) Head 1.19—1.50 (mean 1.30) times as long as broad. Snout 1.31—1.70 (mean 1.49) times as long as the diameter of the eye, and 1.13—1.48 (mean 1.33) times as long as the distance from eye to ear opening, which is small to moderate, horizontally oval or rounded. The ear opening appears to have the ability to close almost completely to a horizontal slit; and in the juveniles the eye is larger in proportion to the other measurements. Nostril opening outwards, or outwards and forwards pierced between three nasal scales, the first upper labial and the rostral on one side in each of two paratypes the first upper labial is narrowly excluded by a thin forward prolongation of the posterior nasal scale. Generally the labial borders the nostril more extensively than does the rostral, which is 1.75—2.00 (mean 1.93) times as broad as deep. Nasorostrals usually in short to moderate contact, or separated by a single granule in 4 paratypes.

Upper labials 10—12 (usually 10—11) lower labials, 8—12 (usually 10—11) for only one side in a single paratype is the lowest figure recorded and similarly the higher figure of twelve occurs only once in the series. Middorsal area free of tubercles usually 5—7 granules wide. In two paratypes this area is very large being 10—20 granules wide. A few of the median scales ventrally in the tail of one paratype are enlarged. There are never more than 5, or less than 4 scancers per digit. Claw observed only in the allotype. Tubercles at the base of the tail arranged in all specimens, with 4 above. In the juveniles the lower series are difficult to distinguish from the adjacent conical granules. The size of the brown spots dorsally in the series is very variable. In the juveniles these spots are broken up into densely aggregate minute flecks, giving the body a more or less uniform colour. Every stage of gradation occurs from this condition to that described for the holotype. To a large extent this variability can be correlated with age as is the case with the state of development of the keeled tubercles on the hindlimbs. In juveniles these tubercles may be very inconspicuous.

Dimensions:—

The tail is equivalent to between 73 and 92% (mean 81%) of the snout to vent measurement, regenerated tails apparently not growing to the length of the originals.

Sexual dimorphism:—

In the ♀ and juveniles the postanal sacs are absent and the tubercles at the base of the tail are much less developed.

Field notes

Specimens found during the daytime were collected either from crevices in boulders, or in sand under the boulders. These specimens were small, and occurred near the coast. The larger specimens were found near Kuidas water-hole during night collecting. They emerged from under sandstone blocks, and were sometimes found on the sandstone, but mostly they were walking on the sandy plain.

III. PACHYDACTYLUS OREOPHILUS GAIASENSIS ssp. nov.

Material

Twelve specimens.

Holotype: An adult ♂ (CR 4450/7) from the vicinity of Gaias on a sandstone outcrop in the Southern Kaokoveld approximately 40 miles north-west of the Brandberg, collected by C. Brits 29. 3. 1966.

Allotype: An adult ♀ (CR 4450/6) from the same locality. Collected by W. Steyn 29. 3. 1966.

Paratypes: An adult ♀ (CR 4456/2); 2 adults ♂♂ (CR 4456/3, CR 4456/1) 2 subadults ♂♂ (CR 4450/1—2) 3 juveniles (CR 4450/3—5), collected by W. Steyn, C. Brits, P. Motonane and A. Visagie at the same locality on 29th and 30th March 1966, and an adult ♂ (CR 2994) and juvenile (CR 2992) collected at the same site on 27th June 1964 by W. Steyn and F. Brown respectively.

All the types are preserved in the collection of the Windhoek State Museum.

Diagnosis

Related to *Pachydactylus oreophilus* McLachlan and Spence, from which it is subspecifically differentiated by the nature of the dorsal scaling, the subcaudal scaling, the presence of tubercles on the forelimbs, a slightly higher scansor count, a bigger size and the colour pattern.

Description

Holotype:

Head prominently distinct from neck, depressed, ovoidly elongate and 1.26 times as long as broad. Snout very depressed and acuminate twice as long as the horizontal diameter of the eye and 1.41 times as long as the distance from eye to ear opening which is moderate (approximately $\frac{1}{2}$ the eye diameter) and almost vertically oval. The nostril opens outwards and upwards, and is pierced between 3 nasal scales, the first upper labial and rostral which is 1.96 times as broad as deep. The anteriormost nasal scales (nasorostrals) are separated by a single large flat granule, and the nasal "ring" is moderately raised. Upper labials 12 + 12; lower labials 10 + 11. Mental a little narrower than adjacent labials elongately rectangular, not narrowed posteriorly. Gulars minute, flattened, smooth, juxtaposed or slightly imbricate, much larger laterally along labial margins where a few are shield-like. Over the chest and belly the scales become larger, and more imbricate for the most part subequal in size to the dorsal granules; except for an area across the midabdominal region and along the anterior ventral surface of the thighs where the scales are much larger. No preanal nor femoral pores. Occipital granules unequal, rounded, convex, juxtaposed and much smaller than the enlarged slightly convex scales on the snout. Occipital tubercles rounded, subconical and sparsely distributed, denser posteriorly and a little smaller than the nasal scales.

Dorsal scales granular, unequal, juxtaposed, convex (a few flattened or obtusely keeled) distinctly larger than occipital granules, but smaller than the scales on the snout. Dorsal tubercles moderate, strongly keeled, more or less oval and in 14 regular longitudinal rows; those posterolaterally being subequal to the tubercles nearer the midline. In the vertebral line is a narrow strip 3—4 granules wide, free of tubercles. The granules on the flanks are more distinctly convex, or subconical. Tail prominently verticillate, each segment bearing dorsally 3—4 transverse rows of juxtaposed obtusely keeled scales, and terminating in a transverse row of 8—4 (8 proximally, 4 distally) large strongly keeled tubercles. Ventrally the tail is covered with slightly larger scales than above. The ventral caudal scales are smooth, flattened and slightly imbricate with a few in the midline enlarged. Limbs slender, moderate, the adpressed hindlimb reaching the elbow of the backward pressed forelimb. Hindlimb with strongly keeled tubercles, more densely aggregate on the lower than on the upper limb. Lower forelimbs with bluntly keeled tubercles among flat subimbricate scales. A median series of transversely enlarged scales beneath the digits which are moderately slender. Digital terminal expansions moderately large.

Scansors under fingers:

<i>Right</i>	<i>Left</i>
I 8	7
II 8	8
III 8	8
IV 8	8
V 6	7

Scansors under toes:

<i>Right</i>	<i>Left</i>
I 6	7
II 7	8
III 8	8
IV 8	8
V 8	8

Postanal sacs present above which on either side of the base of the tail are superior and inferior series of enlarged white, tooth-like tubercles, arranged in the order 3 + 2 (left) and 2 + 1 (right). The upper rows (3 and 2) are much larger than those below.

Colour (in spirits): Basic colour light grey. On the back from the nape to a point slightly forward of the groin the body is covered with irregular moderate sized spots of grey to mauvish brown. On either side of the midline the spots are larger and tend to coalesce longitudinally enclosing a well defined light grey to whitish vertebral stripe. Over the sacral region the spots tend to coalesce laterally thus interrupting the vertebral stripe. The head above is vermiculated with the same darker colour. An ill defined streak passes from its origin behind and below the nostril through the eye well above the ear opening to a point on the occiput where it becomes discontinuous in the vermiculations. On the nape is an irregular ill defined area of light grey with a darker centre.

On the cheeks the spots are more dispersed and much smaller. The labials and the granules forming the extra-brillar fringes are dark edged with light grey. The limbs and tail are finely vermicular and the tubercles (or at least the keels on the dorsum) are greyish white. Ventrally the body is uniformly greyish white tinged laterally with mauvish brown.

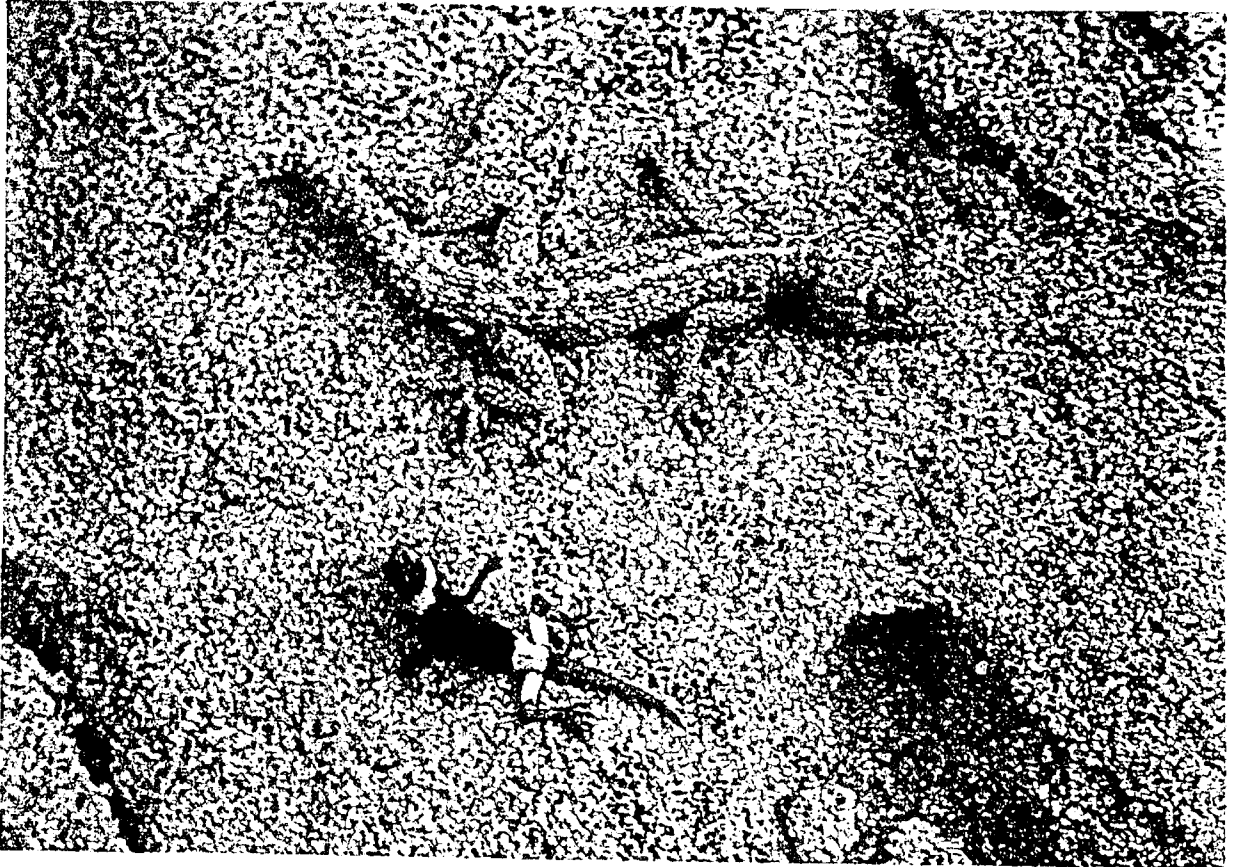


Figure 3: *Pachydictylus orcophilus guilaeensis* ssp. nov. Young adult ♂ above, and juvenile below.

Dimensions (in mm.):—

Total length 125.5 (68.0 + 57.5) the tail being equivalent to 85% of the snout to vent measurement.

Head length 19.17

Head breadth 15.16

Allotype:

As described for the holotype with the following variations. Head 1.29 times as long as broad. Snout 1.87 times as long the diameter of the eye and 1.30 times as long as the distance from eye to ear opening which is subrotund. Rostral 1.71 times as broad as deep. Upper labials 11 + 13; lower labials; 11 + 11. Tail, which is a regenerated one, not verticillate, covered above with keeled, juxtaposed scales below as in the holotype.

Scansors under fingers:

<i>Right</i>	<i>Left</i>
I 7	7
II 7	8
III 8	8
IV 8	8
V 8	8

Scansors under toes:

<i>Right</i>	<i>Left</i>
I 7	8
II 8	8
III 8	8
IV 8	8
V 9	7

A minute needle-like claw present between the distalmost scansor and the nail-like scale above. No postanal sacs, and tubercles at the base of the tail small, in a rather irregular order of 2 + 3 and 3 + 2.

Colour: Basically as in the holotype except that the large spots enclosing the vertebral stripe are not coalesced to any great extent and a few are slightly occellate. These spots are arranged more or less symmetrically in 6—7 pairs between the nape and the rump.

Dimensions: Total length 103.0 (65.0 + 38.0) the tail being equal to 59% of the snout to vent measurement.

Head length 19.80

Head breadth 15.33

Paratype variation:

(The mean values are given for the entire series.) Head 1.26—1.39 (mean 1.31) times as long as broad. Snout 1.60—2.05 (mean 1.83) times as long as the distance from eye to ear opening which is small to moderate almost vertically oval, obliquely oval or subrotund. Nostril opening upwards and outwards or more or less directly outwards, pierced between three nasal scales, the first upper labial and the rostral. In one paratype (CR 4450/1) the rostral is narrowly excluded on one side. Nasal "ring" moderately to well raised, or only slightly raised (in juveniles). Rostral 1.67—2.00 (mean 1.85) times as broad as deep. Upper labials 10—12 (usually 11—12) only the allotype has the high number of 13 on one side, and only one paratype has the low number of 10. Lower labials 9—10 (usually 9).



Figure 4: Upper Karoo system sandstone outcrop in background is type site of *Pachydictylus orcophilus graecensis* ssp. nov.

Mental is not, or only slightly narrowed posteriorly. In two paratypes immediately behind, though not adjoining the mental, are from 1—4 irregularly arranged flat enlarged scales, or chin shields. The gulars are flat and imbricate or convex and juxtaposed. The middorsal strip free of tubercles is from 2—4 (usually 3—4) granules wide. First toe with 6—8 (usually 7) subdigital scansors; fourth toe with 8—9 (usually 8).

There are never less than 6 scansors per digit and never more than 9. Minute digital claw observed only on the feet of females (including the allotype). Tubercles at the base of the tail arranged in the order 3 + 2, 2 - 2, or 2 + 1 (usually 3 + 2).

Colour (in spirits): The colour in the adults is fairly constant and with minor variations agrees with the holotype. In the juveniles, however, the colour is quite different as follows: Head uniform brown with a white, well defined band arising below the eye, passing above the ear opening and encircling the head behind the occiput. Immediately behind this white band the body and forelimbs are uniformly blackish brown, this very dark dorsal colour terminates abruptly a little forward of the groin where it gives way to a white lumbar region which extends onto the upper hindlimbs, terminating sharply just above the knees. The tail and lower hindlimbs are uniformly greyish brown. The underparts are brownish white except for the lower abdominal region which is lighter.

It seems that the black dorsal colour soon becomes lighter with faint indications of the spots of the adult and whitish tubercles, while the white lumbar region darkens gradually and becomes vermiculated. The belly appears to lighten very early.

Dimensions: The tail is equivalent to 72—89% (mean 80%) of the snout to vent dimension. Regenerated tails apparently do not attain the length of originals.

Sexual dimorphism:

Postanal sacs are present only in the males, while in the females and juveniles the tubercles at the base of the tail are relatively small. The minute claw was only observed on the feet in the females.

Field notes

The first specimens of *P. oreophilus gaiasensis*, an adult ♂ and a juvenile ♂, were collected in the winter of 1964 under flakes on a sandstone outcrop near Gaias water-hole. More recent night collecting produced an adequate number of specimens for the present study. *P. oreophilus gaiasensis* emerge at night on the sand mostly from under the big sandstone blocks at this locality. They rarely are found on the sandstone but mostly they walk clumsily on the sand with the body raised well off the ground. They are not fast movers. On the same rocks, mostly in clefts, *Pachydactylus bibronii turneri* was found. *Pachydactylus oreophilus gaiasensis* is so far known only from the type site although similar rocky outcrops abound in the area.