MARTEN VAN DEN BERG, Purmerenderweg 141, 1461DH Zuidoostbeemster, The Netherlands. E-mail: martenvdberg@tiscali.nl

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An annotated bibliographic history of *Ichnotropis* Peters, 1854 (Reptilia, Lacertidae) with remarks on the validity of some of the including species

**MARTEN VAN DEN BERG, May 2017**

**Abstract:** Today *Ichnotropis* is still a poorly understood genus. This is an attempt to initialize some change herein, by providing an extensive bibliographic history of the genus, together with some remarks on the described taxa. Necessary future research is suggested.

**Zusammenfassung:** *Ichnotropis* ist auch heute noch eine Gattung, über die wir nur sehr wenig wissen. Mit der vorliegenden Arbeit wird versucht, dieses zu ändern, indem eine ausführliche Bibliografie der Gattung inklusive Bemerkungen zu den beschriebenen Taxa bereitgestellt wird. Notwendige zukünftige Untersuchungen werden angeregt.

**Keywords:** *Ichnotropis*, taxonomy.
Introduction

The idea of this article was born during revision of some poorly substantiated distribution maps on www.lacerta.de, while revising the genus Ichnotropis. Since the publication of the “Kommentierte Lacertiden-Liste für Europa, Afrika, den Nahen Osten inklusive der Arabischen Halbinsel und Asien” (MAYER 2013), it was evident that some adjustments regarding Ichnotropis were essential. In a prior revision of Ichnotropis (2012, see figure 1) we already discarded all the subspecies that were maintained until that moment; Ichnotropis capensis nigrescens LAURENT, 1952 and Ichnotropis bivittata pallida LAURENT, 1964. These subspecies are still listed today in “The Reptile Database” (UETZ 2017). Although we already listed Ichnotropis tanganicana BOULENGER, 1917 in 2012 as “doubtful species”, WERNER MAYER took a step beyond, and intentionally did not include this species at all, because the description was only based on a single juvenile specimen and since then (for 100 years!) has never been confirmed again. (MAYER 2013). Furthermore he doubted the validity of Ichnotropis microlepidota MARX, 1956, where the type and paratypes were removed from the crop of a shot chanting goshawk (Melierax metabates) (MAYER 2013).

We must admit; there goes the terra typica, because the collector, GERD HEINRICH, did forget to ask the hawk, where he had caught his booty, before he shot him down back in 1954. That means that the described type location, “from the foot of Mount Moco, Benguela Province, Angola” (MARX 1956), just as well could have been the top of Mount Moco, or whatever other location within the bird’s range.

Ichnotropis in VAN DEN BERG (2017)
In short, there was enough reason, while reading the bibliographic records for *Ichnotropis*, not only to look for the distribution data, but to go a little deeper into the material. This resulting in the following annotated bibliographic compilation, with a following discussion on the validity of some of the including species.

I want to dedicate this effort in the memory of Werner Mayer, who played, as highly valued member of our advisory board, a very important role in the establishment of our present day www.lacerta.de website, not to mention his comprehensive contribution to herpetology in general.

The lizards

*Ichnotropis* is a small lacertid lizard (snout-vent length up to 75 mm), with a very short lifespan. It is generally considered to be an annual lizard, with some specimens surviving into their second year (Broadley 1967c), although it is uncertain that this will apply to all species (Broadley 1979). Coloration is in general cryptic, and well adjusted to the sandy substrate on which they can be found. On the other hand, sexually mature males display, at least in *Ichnotropis capensis*, a very striking coloration of yellow on the ventral- and lateral parts of the anterior body, and a contrasting orange-red lateral band on a white background, starting behind the forelegs (see figure 4).

Monard (1930) gives the following description of coloration, based on many living specimens: In males the flanks are adorned with a broad black longitudinal band, beginning at the tip of the nasal plate, passing through the eye, and vanishing towards the third or half of the tail. This band is lined with two light stripes, one superior, the other lower, the first beginning at the supra ocular plates, the second beginning at the rostral plate, crossing the tympanum and accompanying the black band along its length. It is bordered by a second black line, also beginning at the rostrum, continuing into the forelegs. On the flanks, this line changes into bright brown, and then becomes black again near the hind-legs. The major black band is often marbled with white spots. On the back, small black accents form two longitudinal lines. Females are much less varied in coloration. From the general gray-brown tint, lighter on the belly, only one dark band emerging from the rostrum, passing through the eye, spreading on the flanks and eventually disappearing on the tail (Monard 1930).

On the major part of its distribution range *Ichnotropis* is confined to hot and dry upland savanna (Loveridge 1937), although in some parts of its range more moist conditions are to be expected, but not in such extend as Parker (1936) stated; true rain forest lizards.
The first description of *Ichnotropis capensis* was made by ANDREW SMITH M.D., surgeon to the (British) Forces in the Cape Colony (SMITH 1838a), although these 130 words lack the most basic parts of a proper species description. The notes on coloration, size, and rough and furrowed head scales, make it certain that we are dealing with what we nowadays consider as *Ichnotropis*. Unfortunately, it remains unclear how many specimens he studied and if he actually designated a voucher specimen. However, GAY (1845) listed this “*Algira capensis*” specimen in the catalog of the British Museum.

The indicated type location of Latakoo can be found in the vicinity of Kuruman, in the Northern Cape province of South Africa, and at that time being a mission station of the London Missionary Society, founded by ROBERT MOFFAT in 1821. More details on ANDREW SMITH’s wanderings through Southern Africa are reported in SMITH (1838b): Report of the Expedition for Exploring Central Africa from the Cape of Good Hope, June 23, 1834.

**Fig. 7.** ANDREW SMITH (1797-1872). [Image](image)

**Fig. 8.** *Ichnotropis capensis* in SMITH (1838a).

**Fig. 9.** Landscape around Kuruman in the Kalahari region.

**Fig. 10.** “*Ichnotropis capensis*” in DUMÉRIL & BIBRON (1839).

**Fig. 11.** *Tropidosaura capensis* in DUMÉRIL & BIBRON (1839).

**Fig. 12.** *Tropidosaura capensis* in SMITH (1838a).

The bibliographical records

**Algyra capensis** SMITH, 1838a


The second bibliographic record of *Ichnotropis capensis* was recorded in Erpétologie Générale ou Histoire Naturelle Complète des Reptiles by DUMÉRIL & BIBRON (1839).


The second bibliographic record of *Ichnotropis capensis* was recorded in Erpétologie Générale ou Histoire Naturelle Complète des Reptiles by DUMÉRIL & BIBRON (1839).

UETZ (2017) lists this record of *Tropidosaura capensis* DUMÉRIL & BIBRON, 1839 as one of the synonyms of *Ichnotropis capensis*. However, the major problem with this record is the collection location. Cape of Good Hope, situated near Cape Town, is to our present knowledge not a location where *Ichnotropis capensis* could have been collected. It is very likely that DUMÉRIL & BIBRON (1839) made a wrong determination. This was suggested by BEDRIAGA (1886), who placed this record in the synonymy of *Tropidosaura montana*. Of this latter species a single specimen was described by DUMÉRIL & BIBRON (1839), originating all the way from Java (Indonesia). This specimen can only represent a *Takydromus*.
Annotated bibliographic history of Ichnotropis

**Tropidosaurus dumerelii in SMITH (1849)**
*Tropidosaurus dumerelii* - Illustrations of the zoology of South Africa, III. Appendix: 7.

**Thermophilus capensis in FITZINGER (1843)**

FITZINGER (1843) was able to include *Thermophilus capensis* in a tribe together with, amongst others, the Asian *Takydromus*, and even the South-American and non-lacertid Ocellated Tegu, *Cercosaura ocellata*. Admitted, there are some resemblances, at least it is a small lizard too.

**Algira capensis in GRAY (1845)**

**BOULENGER (1887)** assigns this specimen of *Tropidosaurus dumerelii* SMITH, 1849 as the voucher specimen of *Ichnotropis capensis* in the British Museum of Natural History (with the correct spelling).

So it seems that SMITH (1849) is now following the genus designation *Tropidosaurus* of DUMÉRIL & BIBRON (1839), and even changed *capensis* into *dumerelii*. A little bit confusing, and a lot of credits given, not often seen as common practice. Moreover, this proved to be a bad choice, which will be further addressed in the notes at BEDRIAGA (1886).
Annotated bibliographic history of *Ichnotropis*

Fig. 19. *Ichnotropis macrolepidota* in Peters (1855).

Second and last record of *Ichnotropis macrolepidota*: 2 specimens from Tete (Mozambique).

Although not mentioned in the text, the collection location should have been Inhambane, because it was listed in Boulennger (1887) as the only location without prior publication, and at least it is located in Mozambique, which is probably required for publication in Specima Zoologica Mosambicana.

*Ichnonrops macrolepidota* Peters, 1854


Peters (1854) provided us the present accepted genus name *Ichnotropis*, and adds Lourenzo Marques as third location of what will become later *Ichnotropis capensis*. Lourenço Marques was the colonial name of present-day Maputo. The species name was originally printed as *macrolepidot* (Peters 1854), and later corrected to *macrolepidota* (Peters 1855).

*Ichnotropis bivittatus* Bocage, 1866


Several specimens from Duque de Bragança collected by Senhor Bayão. Some specimens were shipped to London where Günther compared them to the *Tropidosaurus dumerilii* (Smith 1849) voucher specimen. Günther considered them identical (see also Ceríaco et al. 2014). The type location Duque de Bragança was a military post in 1866, what became later Calandula (Angola).

Fig. 22. José Vicente Barbosa do Bocage (1823-1907).

*Ichnotropis macrolepidota* in Peters (1855)


Fig. 20. *Ichnotropis macrolepidota* in Peters (1855).

*Ichnotropis macrolepidota* in Lichtenstein (1856)


Second and last record of *Ichnotropis macrolepidota*: 2 specimens from Tete (Mozambique).

Fig. 21. *Ichnotropis macrolepidota* in Lichtenstein (1856).

*Ichnotropis capensis* in Bianconi (1850)


Although not mentioned in the text, the collection location should have been Inhambane, because it was listed in Boulennger (1887) as the only location without prior publication, and at least it is located in Mozambique, which is probably required for publication in Specima Zoologica Mosambicana.

*Ichnotropis capensis* in Bianconi (1850).

For...
We are confronted with the same problem as in DUMÉRIL & BIBRON (1839); Cape of Good Hope as collection location. Although the collector ZELEBOR made some inland expeditions, he never travelled much further than Worcester, which is still far away from the closest present location of *Ichnotropis capensis*.

**Ichnotropis Duméril and Ichnotropis bivittatus** in BEDIAGA (1886)


BEDRIAGA (1886) incorrectly states that *Tropidosaura capensis* DUMÉRIL & BIBRON, 1839 correctly is placed in the synonymy of *Ichnotropis macrolepidota* PETERS, 1854. This should only have been applied to the genus name. On the other hand he correctly states that *Tropidosaura capensis* STEINDAHCNER, 1867 should be placed into the synonymy of *Tropidosaura montana*. The same is applicable to *Tropidosaura capensis* DUMÉRIL & BIBRON, 1839, and derived from the latter, *Thermophilus capensis* FITZINGER, 1843.

BEDRIAGA (1886) also confirms the voucher specimen of *Ichnotropis capensis*, although it was labelled “Algira Duménil”. Without explanation he distinguished between *Ichnotropis capensis* and *Ichnotropis bivittata*, despite of GÜNTHER considered them identical (BOCAGE 1866). Maybe BEDRIAGA did study both species while visiting London, but this will remain unclear.
In the catalogue of the lizards in the British Museum (BOULENGER 1887), we become more knowledgeable about the characteristics of *Ichnotropis capensis*, although BOULENGER seems not yet to distinguish between *Ichnotropis capensis* and *Ichnotropis bivittata*.

**Ichnotropis capensis** in **BOULENGER (1887)**

New records for Lobango, Caconda, Quindumbo, Cahata and Galanga (= Cangala). More interesting is the presentation of these records: BOCAGE bids farewell to his own *bivittata*, which originally still was *bivittatus*.

**Ichnotropis capensis** in **BOULENGER (1895)**

First record in the Democratic Republic of the Congo, along the Kuango river.

**Ichnotropis capensis** in **BOULENGER (1897)**
A list of reptiles and batrachians from the Congo Free State, with the description of two new snakes. - The Annals and magazine of natural history, (6) 19: 276-281.
**Ichnotropis capensis** in **SCLATER (1898)**

**Ichnotropis longipes** BOULENGER, 1902

BOULENGER (1902) describes this new species based upon 3 male specimens from Zimbabwe, with a shorter body and longer limbs as the discriminating character.

The fauna of Rhodesia is still so imperfectly worked out that all zoologists will feel grateful to Mr. Darling for the trouble he has taken in forming collections in the part of the country in which he has been residing for the past few years, viz. the district about Salisbury. The series of Fishes, Batrachians, and Reptiles, the names of which follow, was collected at Mazoe and between Umtali and Mandellias, and presented by him to the British Museum. Two Fishes, a Frog, a Tortoise, and a Lizard are new to science.

9. *Ichnotropis longipes*, sp. n. (Plate III. fig. 2.)
Closely allied to *I. capensis* Smith, with which it entirely agrees in the scaling, but body shorter and limbs longer; the hind limb, if pressed against the body, reaching on the car and the eye. Foot much longer than the head. 36 to 40 scales round the middle of the body, 9 or 10 femoral pores on each side. Pale grey-brown above, tinged with orange on the sides of the back, which is unsotted; a black streak along each side, from the tip of the snout, through the eye, to the anterior fourth of the tail; a second black streak along the upper lip, extending to the shoulder and separated from the upper one by a white streak; some large black spots on the hind limbs; lower parts white.

Total length ...... 100 millim. | From end of snout to vent............. 49 millim.
Head ............... 13 " | Fore limb ............. 19 "
Width of head ...... 8 " | Hind limb ............. 33 "
From end of snout to fore limb...... 21 " | Tail ................. 111 "

This new Lizard is represented by three male specimens.

**New record: Duque (Angola).**

**Ichnotropis capensis** in **BETTCOURT-FERREIRA (1903)**

**Fig. 35.** *I. capensis* in BETTCOURT-FERREIRA (1903).

**Fig. 34.** Duque de Bragança Falls in Angola.

**Fig. 36.** All records listed up to 1903 with their original species designation.

**Fig. 33.** *Ichnotropis longipes* in BOULENGER (1902).

**Fig. 32.** *Ichnotropis capensis* in SCLATER (1898).
Ichnotropis capensis in Bouleneger (1905)
A List of the Batrachians and Reptiles collected by Dr. W.J. Ansorge in Angola, with descriptions of new species. - The Annals and magazine of natural history, (7) 16: 105-115.

More records of Ichnotropis capensis in Angola.

The collection made in 1903–1905 by Dr. Ansorge has considerably added to our knowledge of the Batrachians and Reptiles of Angola, the study of which has been pursued for so many years by Professor Barboza da Bocage. Travelling under somewhat unfavourable conditions for the preservation of specimens in spirit, Dr. Ansorge has been so fortunate as to discover as many as four new species. As a contribution to the knowledge of the exact distribution, a full list of the species represented in the collection is here given.

Dr. Ansorge has supplied me with the following notes on some of the localities visited by him:

- Bango Ngola.—The Portuguese were erecting a fort here when I visited it (end of 1903). It is named, as usual with African natives, after the important chief who lives here. In maps the whole of this north-eastern part of the Loanda province is called the “Jinga country.”
- Bibé.—A district in the north-east of the occupied portion of the Benguela province; roughly only the eastern half of the Benguela province is only nominally Portuguese. End of 1904.
- Duque de Bragança.—Some hundreds of years ago this was an important Portuguese fort, now it is an insignificant military station with a dozen shops. It lies on the south side of the Luacela River. End of 1903.

7. Ichnotropis capensis, A. Smith.
Duque de Bragança, Bango Ngola, between Benguela and Bibé.

Fig. 37. Ichnotropis capensis in Bouleneger (1905).

New records:

**Ichnotropis capensis**
- Delagoa (Mozambique)
- Pietersburg (South Africa)
- Matoppo Hills (Zimbabwe)

**Ichnotropis longipes**
- Livingstone (Zambia).

Two new records for Transvaal (South Africa).

Fig. 38. *I. capensis* and *I. longipes* in Bouleneger (1906).

In this first revision, Bouleneger (1906) seems to be unaware of the *Ichnotropis macrolepidota* records, and he still is ignoring *Ichnotropis bivittata*.

Ichnotropis capensis and *I. longipes* in Bouleneger (1906)

In this first revision, Bouleneger (1906) seems to be unaware of the *Ichnotropis macrolepidota* records, and he

New record:

**Ichnotropis capensis**
Mseleni (South Africa).

Fig. 40. *Ichnotropis capensis* in Bouleneger (1908).

Ichnotropis capensis in Odhner (1908)

New record:

**Ichnotropis capensis**
Somkele (South Africa).

Fig. 41. *Ichnotropis capensis* in Odhner (1908).
**Ichnotropis capensis** in Werner (1910)


New record for the Kalahari (Botswana).

**Ichnotropis tanganicana** Bouleguer, 1917


Bouleguer (1917) describes this new species based upon one sub-adult male specimen from either Burundi or Tanzania. Type location: East coast of Lake Tanganyika, which means a terra typica of 625 km; extraordinary precise! The mere facts of the absence of the actual type location, and the description upon a single sub-adult specimen, should have been enough reason not to describe this specimen as new species, more than 20 years after collection. To speak with the collector’s name: Nut(t)s!

New record for Mariannhill (South Africa).

**Fig. 42. Ichnotropis capensis** in Werner (1910).

**Fig. 43. Ichnotropis capensis** in Hewitt & Camb (1916).

**Fig. 44. Ichnotropis capensis** in Hewitt & Camb (1916).

**Fig. 45. Ichnotropis tanganicana** in Bouleguer (1917).

**Fig. 46. All records listed up to 1917 with their original species designation.**
**Ichnotropis chapini Schmidt, 1919**


Another new species based upon a single specimen, this time a female from the Democratic Republic of the Congo, and not, but close to, the Sudan.

It is unclear why Schmidt (1919) is using especially capensis, macrolepidota and chapini as species of Ichnotropis. Also his expectation that I. macrolepidota is replacing I. capensis in northern Zimbabwe (= I. longipes) is without explanation. Besides the records from Zimbabwe, Schmidt (1919) also includes the I. capensis record from Inhambane in Mozambique into I. macrolepidota.
**Ichnotropis capensis** in **LOVERIDGE (1920)**  

Certainly not (GRAY), notwithstanding GRAY was mentioned in BOULENGER’s (1987) catalog. Another record for Delagoa (Mozambique).

**Ichnotropis** in **BOULENGER (1921)**  

As is true for many other Lacertidae, 1921 is also for *Ichnotropis* one of the genus milestones, because of the publication of the Monograph on the Lacertidae by BOULENGER (1921). It is the first attempt of systematic description of the species within *Ichnotropis*, which result is in general still considered valid today (UETZ 2017), with the exception for *Ichnotropis longipes*. The latter was placed in the synonymy of *Ichnotropis capensis* by LOVERIDGE (1953). In this revision BOULENGER placed *I. macrolepidota* in the synonymy of *Ichnotropis capensis* (BOULENGER 1921).

Looking at the keys given to the species, I am glad that I was not obliged to decide in 1921 what was what. At first glance, and considering the small datasets, the differences between the species looks somewhat far-fetched. Remarkably, the only feature which could have been a useful evolutionary adaptation, the relative length of hind legs, did not uphold (LOVERIDGE 1953).

What are the differences between the two major species, *I. capensis* (incl. *I. longipes*) and *I. bivittata*? They both have strongly striated head shields. Prefrontal not reaching the anterior of the two large supraocular plates in *I. capensis* and prefrontal usually in contact with the anterior of the two large supraocular plates in *I. bivittata*. This is different, but not absolute. Both have a series of small scales between supraocular plates and supraciliary plates. Is this all there is? No, if we compare the snout-vent length from both species in BOULENGER (1921), it seems that *I. bivittata* is a little longer than *I. capensis* (incl. *I. longipes*): 66.6 mm (n=21) versus 51.3 mm (n=15). However, this character should be used with caution (see BROADLEY 1967c; BROADLEY 1979).

New records:

**Ichnotropis bivittata**  
- Caconda (Angola).  
- Chiyaka (Angola).  
- French Congo (Gabon or Republic of the Congo), (PÔBEGUIN/Paris Museum).

According INECH & LE GARFF (2015) this last record is most probably from the Batéké Plateau in southeastern Gabon.

**Ichnotropis capensis**  
- Okwa (Botswana).  
- Umfulosi (South Africa).  
- Vunda (Democratic Republic of the Congo).
Head-shields normal, but occipital sometimes absent. Nasal pierced between an upper and a lower nasal and a postnasal. Lower eyelid scaly. Collar absent; a short fold in front of the arm. Back covered with large rhombic or lanceolate, strongly keeled and imbricate scales; ventral plates smooth, imbricate. Digits feebly compressed, with sharply keeled lamelle inferiorly. Femoral pores. Tail long, cylindrical.

Tropical and South Africa.

The parietal foramen and pterygoid teeth are present.

This genus may be regarded as derived from *Tropidophis*, differing only in the keeled subdigital lamellae combined with the presence of a subnasal separating the nasal from the first upper labial; but it must be borne in mind that the latter difference is of no greater than between species united in the same genus under *Cebutis* and *Opidius*.

**Synopsis of the Species.**

I. Frontoanal single; subocular usually bordering the mouth; occipital usually present; 36 to 40 scales and plates round middle of body, 8 to 12 (rarely 13) femoral pores on each side.

A. A single anterior loreal.

Upper head-shields rather feebly striated; prefrontal in contact with the anterior of the two large supraoculars, which are in contact with the four lateral scales; hind limb reaching a little beyond the shoulder in males.

*Ichnotropis boulengeri* Boulenger, p. 182.

Upper head-shields strongly striated; prefrontal not reaching the anterior of the two large supraoculars, which is as long as or a little shorter than its distance from the second loreal; a series of small scales between supraocular and supramaxillary; hind limb reaching between shoulder and ear in males.

*Ichnotropis expansa*, Smith, p. 186.

Upper head-shields strongly striated; prefrontal not reaching the anterior of the two large supraoculars, which is longer than its distance from the second loreal; a series of small scales between supraoculars and supramaxillaries; hind limb reaching ear or between ear and eye in males.

**Fig. 50b.** *Ichnotropis in Boulenger (1921).*

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**MONOGRAPH OF THE LACERTIDAE**

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Annotated bibliographic history of Ichnotropis

Fig. 50c. Ichnotropis in BOULENGER (1921).

Fig. 51b. All records listed up to 1921 with their original species designation.
**Lacertidae.**

Gular scales imbricate, passing gradually into the ventral plates, 18 to 26 in a straight medium line.

Dorsal scales rhombic-bisculate, strongly keeled, scutately pointed or shortly truncate, as large as or a little larger than the upper canals; lateral scales as large or a little larger than the upper canals; ventral plates rounded-hexagonal, not or but little broader than long, in 8 or 10 longitudinal and 27 to 39 transverse series; 34 to 40 scales and plates round the middle of the body. Premaxillary region covered with irregular scales.

Scales on arm nearly as large as dorsals, smooth, or finely unci- or tricarinate, on tibia smaller and strongly keeled. 9 to 13 femoral pores on each side, rarely 8 or 15. Subdigital lamellae phallicate, anapodous, 18 to 24 under the fourth toe.

Caudal scales strongly keeled, upper similar to dorsals, 24 to 28 in the fourth or fifth whorl behind the postanal granules.

Browny brown or coppery red above, back uniform or with two series of large black spots or ocelli, rarely with a rather irregular ventral series of small black spots. Frequently three black streaks on each side of the head and neck, the upper from the posterior corner of the eye, through the eye and the upper part of the tympanum, the lower from the first upper labial through the lower part of the tympanum; white streaks between them; these black and white streaks continued up the side of the body, or broken up into spots. A male is remarkable for the presence of a broad pale dull brown vertical stripe. Some females and young with the markings very indistinct or reduced to a more or less distinct darker brown lateral band. A young brown without markings, except a round whitish spot above the shoulder. Lower parts white.

Measurements (in millimeters):

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<th>2</th>
<th>3</th>
<th>4</th>
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<td>66</td>
<td>78</td>
<td>69</td>
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<td>Fore limb</td>
<td>27</td>
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<td>24</td>
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<td>Length of head</td>
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<td>Width of head</td>
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<td>Tail</td>
<td>90</td>
<td>167</td>
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* From Caconda.
+ From between Benguela and Bibi.

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**Ichnotropis.**

**Particulars of Species Examined.**

- Duque de Bragança (type).
- Bouleger.

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**Fig. 50d. Ichnotropis in Bouleger (1921).**
Annotated bibliographic history of *Ichnotropis*

**Fig. 50e.** *Ichnotropis* in Boulenger (1921).

**Fig. 51c.** All records listed up to 1921 with their original species designation.
Fig. 50f. *Ichnotropis* in Boulenger (1921).

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**MONOGRAPH OF THE**

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Fig. 50g. *Ichnotropis* in Boulenger (1921).

Fig. 51d. All records listed up to 1921 with their original species designation.
Ichnotropis capensis in MONARD (1930)

Big collection of around 70 specimens from Angola: Caluquembé, Santo-Amaro, Rio Mbalé, Caquindo and Chimporo. The posterior limbs appear longer in this collection compared to BOULENGER (1921). An extensive color description in males and females is given.

**Fig. 52.** ALBERT MONARD (1886-1952).

Ichnotropis bivittata in LOVERIDGE (1933)

First record of *I. bivittata* in Tanzania from Ipemi in the Udzungwa Mountains. Another observation was made at Tandala in the Ukinga mountains.

LOVERIDGE (1933) considers the Tanzania *Ichnotropis* equal to the Angola lizards, and different from the quite distinct *Ichnotropis tanganicana* specimen, which he personally examined in London. It is not mentioned what differences he observed between *I. bivittata* and *I. tanganicana*.

**Fig. 55.** ARTHUR LOVERIDGE (1891-1980).

Ichnotropis bivittata in SCHMIDT (1933)

Records for Gauca and Chitau (Angola).

**Fig. 54.** Ichnotropis bivittata in SCHMIDT (1933).
Ichnotropis in De Witte (1933)

Reptiles récoltés au Congo belge par le Dr. H. Schouteden et par M. G.-F. De Witte. - Annales du Musée Royal du Congo Belge, Sciences Zoologiques, Tervuren, (1) 3: 53-100.

New records:

**Ichnotropis bivittata**
- Kansenia (Democratic Republic of the Congo).

**Ichnotropis chapini**
- Adra (Democratic Republic of the Congo).

**Ichnotropis longipes**
- Dilolo (Democratic Republic of the Congo).

Measurements of *Ichnotropis longipes* and the coordinates for Adra are given:

<table>
<thead>
<tr>
<th>Coordinates</th>
<th>Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aba</td>
<td>3° 50' N, 30° 10' E</td>
</tr>
<tr>
<td>Abimva</td>
<td>3° 05' N, 29° 30' E</td>
</tr>
<tr>
<td>Adra</td>
<td>3° 30' N, 30° 30' E</td>
</tr>
</tbody>
</table>

Records: Between Kaotwe and Damara Pan (Botswana), Kabulabula (Namibia) and N’kate (Botswana).

**Ichnotropis capensis** in FitzSimons (1935)


**Ichnotropis capensis (A. Smith)**


Four specimens were collected as follows: V.L.K.E. No. 427 (April 1930), between Kaotwe and Damara Pan; No. 428 (July), Kabulabula; Nos. 429 and 470 (August), N’kate.

**Distribution.** From the lower Congo, Angola, Rhodesia and Portuguese East Africa, southwards to South-West Africa, Bechuanaland, the Transvaal and Natal.

**Remarks.** The above series comprises three half-grown specimens (2 ½ and 1 ½) and a juvenile. Postocular in contact with preorbital; interparietal in contact with occipital in three cases; four to six labials anterior to subocular; scales round body 36-40; ventral scales in 10 longitudinal and 26-28 transverse rows; 22-23 femoral under fourth toe; foot distantly longer than head (up to 1½ times), and in the two male specimens adpressed hind limb reaches the ear or beyond.

**Colour.** Above tawny brown, with two interrupted series of black spots on back, sometimes indistinct and ill-defined; usually a black-edged whitish streak along sides from just below eye, through ear to groin. Below dirty white.

**Field Notes.** Very shy and elusive, and difficult to detect owing to their dull colour, which matches well with the Kalahari scrub.

**Discussion.** An examination of a long series of specimens from South Africa, including Southern Rhodesia and South-West Africa, discloses great variation in length of foot and hand limb, the foot in many cases being as much as 1½ times length of head and adpressed hind limb reaching ear or beyond. It is mainly by these two characters that Boulenger has separated his *I. longipes*, which we may now consider along with *I. macrolophus* as a synonym of *capensis*.

**Dimensions.** The measurements of the two largest specimens are as follows:

<table>
<thead>
<tr>
<th>Species</th>
<th>3 (No. 479)</th>
<th>4 (No. 469)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length</td>
<td>157.5 mm</td>
<td>164.5 mm</td>
</tr>
<tr>
<td>Snout to vent</td>
<td>43.0 mm</td>
<td>43.0 mm</td>
</tr>
<tr>
<td>Tail</td>
<td>109.0 mm</td>
<td>109.0 mm</td>
</tr>
<tr>
<td>Snout to forelimb</td>
<td>18.0 mm</td>
<td>17.7 mm</td>
</tr>
<tr>
<td>Head length</td>
<td>110.0 mm</td>
<td>117.7 mm</td>
</tr>
<tr>
<td>Head width</td>
<td>9.7 mm</td>
<td>7.1 mm</td>
</tr>
<tr>
<td>Head depth</td>
<td>7.5 mm</td>
<td>7.0 mm</td>
</tr>
<tr>
<td>Arm</td>
<td>17.0 mm</td>
<td>16.0 mm</td>
</tr>
<tr>
<td>Leg</td>
<td>39.0 mm</td>
<td>39.0 mm</td>
</tr>
<tr>
<td>Foet</td>
<td>19.0 mm</td>
<td>15.7 mm</td>
</tr>
<tr>
<td>Femoral pores</td>
<td>10-11</td>
<td>11</td>
</tr>
</tbody>
</table>

**Fig. 57. Vivian Frederick Maynard FitzSimons (1901-1975).**

**Fig. 58. Coordinates of Adra in De Witte (1933).**

**Fig. 59. Ichnotropis in De Witte (1933).**

**Fig. 60. Ichnotropis capensis in FitzSimons (1935).**

**Fig. 61. All records listed up to 1935 with their original species designation.**
**Ichnotropis bivittata** in Parker (1936)

Dr. Karl Jordan’s Expedition to South-West Africa and Angola: Herpetological Collections. - Novitates Zoologicae, 40: 115-146.

This actually might be a first record (Mount Mocó, Angola) of what later was described as *I. microlepidota* by Marx (1956).

**Ichnotropis capensis** in FitzSimons (1937)

Notes on the reptiles and amphibians collected and described from South Africa by Andrew Smith. - Annals of the Transvaal Museum, 17 (4): 259-274.

Consequently Monard (1937) changed some of the previous (Monard 1930) described records;

- **Ichnotropis capensis** from Santo Amaro and Caluquembé into Ichnotropis bivittata.

- **Ichnotropis capensis** from Rio Mbalé and Chimporo into Ichnotropis longipes.

**Ichnotropis bivittata** and *I. longipes* in Monard (1937)


In his Contribution à l’Herpétologie d’Angola, Monard (1937) is using the same key to the species as proposed by Boulenger (1921).

**Fig. 62.** Mount Mocó, with 2,620 m the highest mountain of Angola.

**Fig. 63.** *Ichnotropis bivittata* in Parker (1936).

**Fig. 64.** *Ichnotropis capensis* in FitzSimons (1937).

**Fig. 65.** *Ichnotropis bivittata* in Loveridge (1937).

**Fig. 66.** *Ichnotropis* in Monard (1937).

**Fig. 67.** Distribution of Ichnotropis in Monard (1937).
**Ichnotropis bivittata** in Monard (1937)

New records: d’Ebanga, Bimbi, Kasinga, Kuluï, Sangevè and Kuvangu (Angola).


Surrounded by Ebanga (Angola).

Fig. 72. All records listed up to 1937 with their original species designation.

**Ichnotropis longipes** in Monard (1937)

New records: Dala and Mupanda (Angola).


Fig. 71. Surroundings of Ebanga (Angola).
Ichnotropis in DE WITTE & LAURENT (1942)

Ichnotropis chapini in DE WITTE & LAURENT (1942)

8. - Ichnotropis chapini SCHMIDT.
LISTE DES EXEMPLAIRES.
Collection du Musée du Congo (2 exemplaires).
R. G. 5656-57, Adra (Ituri), IV-1925 (SCHOUTEEN).
LOCALITÉS DÉJÀ CITÉES DU CONGO BELGE.
SCHMIDT (n° 1, 1919, p. 598).
Abra (Ituri) (AMERICAN CONGO EXPEDITION).
Witte (n° 2, 1935, p. 54).
Adra (SCHOUTEEN).

Fig. 75. Ichnotropis chapini in DE WITTE & LAURENT (1942).

Ichnotropis bivittata in DE WITTE & LAURENT (1942)
New records: Bas-Congo and Kandolo (Democratic Republic of the Congo).

9. - Ichnotropis bivittata BOUCAU.
LISTE DES EXEMPLAIRES.
Collection du Musée du Congo belge (3 exemplaires).
R. G. 7674, Kambena (Kasai), 1931 (G. F. DE WITTE).
R. G. 2367, Kandolo (Sankuru), XI-1921 (GHEUQUEIRE).
LOCALITÉS DÉJÀ CITÉES DU CONGO BELGE.
Witte (n° 2, 1935, p. 74).
Kambena (G. F. DE WITTE).

Fig. 76. Ichnotropis bivittata in DE WITTE & LAURENT (1942).

Ichnotropis overlaeti DE WITTE & LAURENT, 1942
New records: Kapanga, Lofoi, Luluabourg and Mukishi (Democratic Republic of the Congo).

DE WITTE & LAURENT (1942) describe another new species, Ichnotropis overlaeti, with a female paratype (R.G. 40) from Kwango, which was earlier determined as Ichnotropis capensis by BOULENGER (1897).

This species is told to be most closely related to Ichnotropis bivittata and Ichnotropis capensis. It differs from I. bivittata by the position of the large anterior supraocular plate, separated from the prefrontal by one or more small supraocular plates, and from I. capensis by the dimension of the large anterior supraocular plate, longer than the distance that separates it from the posterior frenal (DE WITTE & LAURENT 1942).
jusqu'à la naissance des membres antérieurs; à partir de cet endroit elle est parfois remplacée par une série de petites taches bleues plus ou moins bordées de noir, s'étendant jusqu'à la naissance des membres postérieurs; des taches bleues sont également présentes à la bande supérieure, entre les membres antérieurs et postérieurs. Une bande blanche commençant au-dessus du tympan, s'étendant plus ou moins distinctement jusqu'à la naissance de la queue et séparant la série supéro-latérale de petites taches noires de la bande noire supérieure, une 2e bande blanche commençant à l'extrémité du museau, passant à travers le tympan, s'étendant plus ou moins distinctement jusqu'à la naissance de la queue, et séparant la bande noire supérieure de la bande noire inférieure, et de la série de petites taches bleues. Ces dernières sont absentes chez la femelle.

**Mesurements en millimètres.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>De l'extrémité du museau jusqu'à l'anus</td>
<td>56</td>
<td>52</td>
<td>57</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>De l'extrémité du museau jusqu'au membre antérieur</td>
<td>22,5</td>
<td>28</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Longeur de la tête</td>
<td>14,5</td>
<td>13,5</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Largeur de la tête</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Hauteur de la tête</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6,5</td>
</tr>
<tr>
<td></td>
<td>Membre antérieur</td>
<td>20</td>
<td>18</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Membre postérieur</td>
<td>30</td>
<td>30</td>
<td>35</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Pied</td>
<td>14,5</td>
<td>13,5</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Queue</td>
<td>97</td>
<td>100 mutilée</td>
<td>88 mutilée</td>
<td></td>
</tr>
</tbody>
</table>

Cette espèce se rapproche surtout d'Ichnotropis bivittata Bocage et d'I. capensis A. Smith; elle se distingue du premier par la position de la grande sus-oculaire antérieure, séparée de la préfrontale par une ou plusieurs petites sus-oculaires et du deuxième par la dimension de la grande sus-oculaire antérieure, plus longue que la distance qui la sépare de la frénale postérieure.

**Fig. 77b. Ichnotropis overlaeti in DE WITTE & LAURENT (1942).**

**Ichnotropis longipes in DE WITTE & LAURENT (1942)**

**11. - Ichnotropis longipes Bouleguer.**


**Liste des exemplaires.**

*Collection du Musée du Congo (41 ‘exemplaires).*


**Localité déjà citée du Congo belge.**

*Witte (n° 2, 1935, p. 74).*

*Dilolo (G. F. DE WITTE).*

**Fig. 79. Ichnotropis longipes in DE WITTE & LAURENT (1942).**

**Fig. 80. All records listed up to 1942 with their original species designation.**
Ichnotropis in FITZSIMONS (1943)


Fig. 81. Ichnotropis in FITZSIMONS (1943).

Ichnotropis capensis capensis in FITZSIMONS (1943)


Fig. 82a. Ichnotropis capensis capensis in FITZSIMONS (1943).

Fig. 82b. Ichnotropis capensis capensis in FITZSIMONS (1943).

Fig. 83. Train at Plumtree on Zimbabwe’s border with Botswana.

Fig. 83. Train at Plumtree on Zimbabwe’s border with Botswana.
**Ichnotropis capensis longipes** in **FITZSIMONS (1943)**


FitzSimons (1943) is the first to use subspecies in order to distinguish between forms. This will become fashionable for a while, and was especially applied by Laurent (1950; 1952; 1964).

**Ichnotropis capensis overlaeti** in **LAURENT (1950)**


New records for Angola: Dundo and Muita.
Ichnotropis in LAURENT (1952)

Batraciens et reptiles récemment acquis par la Musée du Congo Belge. - Revue de Zoologie et de Botanique Africaines, Bruxelles, 45 (3-4): 198-203.

LAURENT (1952) decided to follow FITZSIMONS (1943) in rearranging everything into several subspecies of Ichnotropis capensis (explanation in the discussion section). He was also able to describe another new subspecies for Central Congo: Ichnotropis capensis nigrescens.

Ichnotropis capensis bivittata in LAURENT (1952)

New record for Lemfu (Bus-Congo).

Fig. 87. Ichnotropis bivittata in LAURENT (1952).

Records for Bolobo and Luluabourg, the latter previously described as I. overlaeti (DE WITTE & LAURENT 1942).

Ichnotropis capensis nigrescens in LAURENT, 1952

Records for Bolobo and Luluabourg, the latter previously described as I. overlaeti (DE WITTE & LAURENT 1942).

ICHNOTROPIS CAPENSIS IN DE WITTE (1953)


DE WITTE (1953) did not follow the subspecies arrangement of LAURENT (1952). He did offer an extensive and detailed list of new samples of Ichnotropis bivittata and Ichnotropis longipes from the Parc National De l’Umpemba.

Ichnotropis bivittata in DE WITTE (1953)

18 records from the Parc National De l’Umpemba. For details see the original article.

Fig. 88a. Ichnotropis nigrescens in LAURENT (1952).

Chez I. c. chapini, il est égal à 1.11 et 1.43 chez deux spécimens d’Adra.


Fig. 88b. Ichnotropis nigrescens in LAURENT (1952).

Fig. 89. Ichnotropis bivittata in DE WITTE (1953).

ICHNOTROPIS BIVITTATA IN DE WITTE (1953)

- 88 -

Revue de Zoologie et de Botanique Africaines, Bruxelles, 45 (3-4): 198-203.

ICHNOTROPIS BIVITTATA IN DE WITTE (1953)

Revue de Zoologie et de Botanique Africaines, Bruxelles, 45 (3-4): 198-203.

ICHNOTROPIS BIVITTATA IN DE WITTE (1953)

Revue de Zoologie et de Botanique Africaines, Bruxelles, 45 (3-4): 198-203.
Ichnotropis overlaeti in DE WITTE (1953)

2 records (but a lot of specimens) from the Parc National De l’Umpemba. For details see the original article. One new record outside the park: M’Pala (Kanzenze).

Ichnotropis longipes in DE WITTE (1953)

20 records from the Parc National De l’Umpemba. For details see the original article. One new record outside the park: M’Pala (Kanzenze).

Ichnotropis capensis in LOVERIDGE (1953)


LOVERIDGE (1953) sets I. macrolepidOTA, I. longipes and I. overlaeti into the synonymy of I. capensis.

New records for Dilolo (Democratic Republic of the Congo), Waterberg plateau (Namibia), Chishawasha (Zimbabwe), Waterberg district (South Africa) and Kasungu (Malawi).

Fig. 90. Ichnotropis overlaeti in DE WITTE (1953).

Fig. 91. Ichnotropis longipes in DE WITTE (1953).

Fig. 92a. Ichnotropis capensis in LOVERIDGE (1953).

Fig. 93. All records listed up to 1953 with their original (sub)species designation.
Ichnotropis capensis in MERTENS (1955)


New records for Namibia: Waterberg plateau, Mupapama, Sambiu, Okahandja, Ogosongomo and Oshikango.

Ichnotropis microlepidota MARX, 1956


Just after I. macrolepidota, I. longipes and I. overlaeti were canceled (OVERIDGE 1953), we are treated with yet another new species: Ichnotropis microlepidota MARX, 1956, from the foot of Mount Moco (Angola).

Although MARX (1956) was aware of the specimen from the same location described by PARKER (1936), and the similarities of that specimen with the newly described species of Ichnotropis microlepidota, he left this without consequences (MARX 1956).
than posterior loreal; four upper labials anterior to subocular; one subocular dorsal scales above and below the mouth, separated from the posterior loreal by a freno-ocular; an enlarged temporal scale in a subocular and the fifth upper labial and separated from the parietals by four temporal scales; tympanum distinct, with an enlarged anterior shield; lower eyelid with a series of vertically enlarged scales in the midline.

Five pairs of chinshields, the plates of the first three pairs in contact medially; gular scales imbricate.

Dorsal scales strongly keeled and imbricate, distinctly shorter than rounded ventral plates; 40 scales around middle of body; ventral plates in 10 longitudinal and 25 transverse series; preanal region covered with irregular scales; scales on dorsal side of forelimbs enlarged and imbricate; subdigital lamellae quinquecarinate, 17 under fourth toe; femoral–preanals pores 11–16.

Caudal scales strongly keeled except smooth in the anterior ventral region; 27 scales in the fourth whorl behind the postanal granules.

Body length 52 mm., regenerated tail 37 mm.

Color (in alcohol): head dark brown above; frontal and first supracleithral light gray with dark fine spots; a light stripe running below eye from snout through tympanum to neck, breaking up into light spots on sides of body; lip with black blotches; under surface of head light gray with some black mottling; back with irregular longitudinal black bands, the light gray spots along the center of these bands forming irregular ocelli; ventral plates light gray with numerous tiny black spots except along posterior edges; dorsal surface of tail similar to back but lighter; under surface of tail uniformly light tan.

Paratypes.—CNHM nos. 74283–84, 74286–87, collected with the type. Tails of three of the paratypes are incomplete; that of specimen no. 74284 measured 56 mm., which is 0.52 of total length. For variation of these specimens see Table 1.

Remarks.—This form and Ichnotropis bieitata Bocage differ from the other known forms of this genus in having the following combination of characters: (1) a single frontonasal, (2) a single anterior loreal, (3) prefrontals in contact with second (largest) supracleithral, and (4) the two largest supracleithral (second and third) separated from the supraciliary by a series of small scales.

I. microlepidota can be distinguished from bieitata by the much smaller dorsal scales and their greater number at mid-body, and the lower number of lamellae under the fourth toe (Table 2). Parker (1936, p. 135) noted that his specimen from Mount Moco, which he tentatively identified as bieitata, had unusually small dorsal scales (45–56 rows at mid-body) and might represent a racial differentiation of I. bieitata. The other three bieitata are from Chita, Bie Province, Angola. In Table 2 data from Boulenger (1921, p. 180) are also included.

Table 2.—Variation in Scale Characters of I. microlepidota and I. bieitata

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of specimens</th>
<th>Lamellae under 4th toe</th>
<th>Scales at mid-body</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. microlepidota</td>
<td>3</td>
<td>16–17 (16.6)</td>
<td>43–50 (47.0)</td>
</tr>
<tr>
<td>I. bieitata</td>
<td>1</td>
<td>18–20 (19.6)</td>
<td>34–49 (36.0)</td>
</tr>
</tbody>
</table>

*Mean in parentheses.

Predation.—The type series (nos. 74283–87) was removed from the crop of a male chanting goshawk, Melierax metabates Heuglin (CNHM no. 224087). The hawk, with its lizard food, is figured on page 64 of the Annual Report of this Museum for the year 1955.

REFERENCES

BOULENGER, G. A.

PARKES, H. W.
Ichnotropis capensis bivittatus in HELLMICH (1957a)

Fig. 98. Ichnotropis bivittatus in HELLMICH (1957a).

Ichnotropis capensis bivittata in HELLMICH (1957b)

The same records for Bela-Vista (Angola).

Fig. 99. Ichnotropis bivittatus in HELLMICH (1957b).

Ichnotropis in LOVERIDGE (1957)

Just a checklist of the reptiles and amphibians of East Africa (Uganda; Kenya; Tanganyika; Zanzibar). LOVERIDGE (1957) is now listing I. bivittata as subspecies of I. capensis.

Fig. 100. Ichnotropis in LOVERIDGE (1957).

Ichnotropis microlepidota in MARX (1958)

Fig. 101. Ichnotropis microlepidota in MARX (1958).

Ichnotropis in BROADLEY (1962)

New records for Angola: Cameia, Fazenda Santa Cruz and Calombe.

Fig. 102. I. capensis bivittata in MANAÇAS (1963).

Ichnotropis capensis bivittata in MANAÇAS (1963)
Ichnotropis capensis bivittata in ROBERTSON et al. (1963)


New records from the area around Kafukola (Tanzania).

Fig. 104. Ichnotropis capensis bivittata in ROBERTSON et al. (1963).

Fig. 105. All records listed up to 1963 with their original (sub)species designation.
ICHNOTROPIS IN LAURENT (1964)


LAURENT (1964) becomes aware of conflicting sympatric subspecies, so the obvious solution is easy; everything becomes subspecies of I. capensis, except for I. bivittata.

**Genre Ichnotropis Peters**

La systématique de ce genre Ichnotropis est encore très mal étalée. Naga (LAURENT 1952) a déjà rendu à ces genres toutes commodités, sous espèces et variétés: dans une seule unité spécifique (I. capensis) compréhensif racem, capensis (A. SMITH), long新一代 BOUQUENCHE, le plus haut niveau du genre Ichnotropis comprend deux formes distinctes: Ichnotropis and Ichnotropis sp. Dans le cas où nous avons adopté, depuis 1952, ne me parait plus défendable de devenir un dernier, et de mettre en doutes le centre de distribution de la totalité de notre souches. Ichnotropis in LARQ (1964) becomes aware of conflicting sympatric subspecies, so the obvious solution is easy; everything becomes subspecies of I. capensis, except for I. bivittata.

**Ichnotropis bivittata bivittata in LAURENT (1964)**

New records:
- Alto Cuilo (Angola).

**Ichnotropis capensis overlaeti in LAURENT (1964)**

Remarks are made on the resemblance of chapini, overlaeti and nigrescens.

New records:
- Alto Cuilo (Angola).
- Caluango (Democratic Republic of the Congo).

**Ichnotropis capensis overlaeti in LAURENT & WITTE (1964)**

(Fig. 106)

![Ichnotropis bivittata bivittata in LAURENT (1964)](image)

![Ichnotropis bivittata bivittata in LAURENT (1964)](image)

![Ichnotropis bivittata bivittata in LAURENT (1964)](image)

![Ichnotropis bivittata bivittata in LAURENT (1964)](image)

![Ichnotropis bivittata bivittata in LAURENT (1964)](image)
**Ichnotropis capensis** in **LAURENT (1964)**

LAURENT (1964) didn’t know where the female came from, but it looks a little melanistic. Let’s keep on the safe side, and claim this as a new subspecies without name. You never can be sure if others might find a look-alike somewhere else in Africa.

**Ichnotropis capensis** in **BROADLEY (1966)**

**Ichnotropis capensis** in Broadley (1967a)


New record: Gona-re-Zhou (Zimbabwe).

At mid-day the winged termites emerged and brought out the lizards in force. Until this time, the only lacertids we had seen were adult *Ichnotropis capensis* and juvenile *I. squamulosa*.

**Ichnotropis grandiceps** in Broadley, 1967b


Three Lizards caught by T.N. Liveredge and S.W. Goossard on 20th May, 1967, near the Caprivi-Botswana border, were described by Broadley (1967b) as another new species.
Annotated bibliographic history of *Ichnotropis*

**Fig. 117b.** *Ichnotropis grandiceps* in Broadley (1967b).

**Fig. 117c.** *Ichnotropis grandiceps* in Broadley (1967b).

**Fig. 118.** All records listed up to 1967 with their original (sub)species designation.
Some data on growth rate in Broadley (1967c), and clutch size in Broadley (1967c) and Fitch (1970).

**Ichnotropis capensis** in **Broadley (1967c)**

**Ichnotropis grandiceps** in **Haacke (1970)**

New records for *Ichnotropis grandiceps*:
- Ndobe (Botswana)
- Farm Deo Volente (Namibia)
- Grootfontein District (Namibia)

**Ichnotropis in Fitch (1970)**
**Ichnotropis capensis** and **I. bivittata** in BROADLEY (1971)

Several new records of *I. capensis* for Zambia. Although for *Ichnotropis bivittata* two records are indicated in the map, in the text it reads: the only Zambezia specimen is from Mhala.

![Fig. 123. ROBERT FRIEDRICH WILHELM MERTENS (1894-1975).](image)

**Ichnotropis capensis** and **I. grandiceps** in MERTENS (1971)

![Fig. 124. *I. capensis* and *I. grandiceps* in MERTENS (1971).](image)

**Ichnotropis capensis** in MERTENS (1971)

- **Alcyna capensis** A. Smith, 1838, Mag. nat. Hist., London, (2) 2: 94. — Terra typica: "Sandy deserts around Latako" (= Guruman, Benhaman). **Ichnotropis capensis** — MERTENS 1955: 70, Taf. 10, Fig. 45; Taf. 21, Fig. 120. **Ichnotropis c. capensis** — HAUSSER 1970: 281 (Farm Deo Volente, Groenfontein District). Sowohl ich das von mir selber gesammelte Material dieser bisher unerforschten Art studiert habe, kann ich mich nicht entschließen, die von Boukender beschriebene **Ichnotropis longipes** als validen Taxon, auch nicht als Untertart von *Ichnotropis capensis* anzuerkennen.

![Fig. 125. *Ichnotropis capensis* in MERTENS (1971).](image)

**Ichnotropis grandiceps** in BROADLEY (1973)

Record for Zimunya (Zimbabwe).

![Fig. 126. All records listed up to 1973 with their original (sub)species designation.](image)

**Ichnotropis capensis** and **I. grandiceps** in BROADLEY (1973)

- **Ichnotropis squamulosa** Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 617: Tete, Mozambique. This species is widespread in Zambia, but apparently absent from the Kavango Province (Map 5).
- **Ichnotropis capensis** (A. Smith, 1838, Mag. nat. Hist., 2, p. 94: "Sandy deserts around Latako") = Khurman, Cape Province. This species is widespread in western Zambia, but has not been taken east of Lusaka (Map 5).
**Ichnotropis capensis** in **BROADLEY (1974)**
See: BROADLEY (1973) and BROADLEY (1979).

**Ichnotropis** in **GRUNDY & WURST (1976)**
The Occurrence of Parietal Eyes in Recent Lacertilia (Reptilia). - Journal of Herpetology, 10 (2): 113-121.

**Abstract.** The occurrence of parietal eyes among lizards (Suborder Lacertilia) was determined by examining museum specimens and noting the presence of a parietal ‘spot’. The parietal ‘spot’ is a reliable indication of the presence of an underlying parietal eye. The parietal eye is absent in Dibamidae, Pygopodidae, Helodermatidae, Lanthanotidae, Anelytropsidae, Gekkonidae, and Teiidae. It is present in most members of Xantusiidae, Scincidae, Cordylidae, Lacertidae, Varamidae, Anniellidae, Anguidae, Xenosauridae, Iguanidae, Agamidae, and Chamaeleontidae.

**Ichnotropis capensis** in **JACOBSEN (1977)**

Record for the Burkea savanne (South Africa).

**Ichnotropis capensis** in **ROADLEY (1974)**
See: ROADLEY (1973) and ROADLEY (1979).

Study site: Zimunya (Zimbabwe).

**Ichnotropis capensis** in **ROADLEY (1978)**

**Fig. 127.** *Ichnotropis capensis* in JACOBSEN (1977).

**Fig. 128.** *Ichnotropis capensis* in BROADLEY (1978).

**Fig. 129.** The wild syringa, *Burkea africana*. 
**Ichnotropis capensis** in **POYNTON & BROADLEY (1978)**

Abstract: The herpetofauna of southern Africa is currently receiving an increased amount of attention. The Zoological Society of Southern Africa held a symposium on herpetology and ichthyology in 1975, the proceedings of which have been published in Zoologica Africana, and no less than 17 papers dealt specifically with research carried out recently on southern African amphibians and reptiles. Our aim in this chapter, therefore, can be no more than to sketch the present state of knowledge and thinking in a rapidly changing field.

**Ichnotropis capensis** and **Ichnotropis grandiceps** in **BROADLEY (1979)**

Abstract: A fourteen-month marking/recapture study of the sympatric lacertids *Ichnotropis squamulosa* and *I. capensis* (Sauria: Lacertidae) was carried out at Zimunya township near Umtali. This confirmed that these lizards have staggered life cycles and that individuals rarely live for more than 12 months, thus reducing competition for food between similar-sized lizards of the two species.

Study site: Zimunya (Zimbabwe).

**Conclusions**
The data obtained from the Zimunya field study confirm that there is a temporal separation by size in sympatric *Ichnotropis squamulosa* and *I. capensis*, apart from occasional adults that survive into their second year. However the limited data available for the somewhat larger species *Ichnotropis grandiceps* (Broadley 1967a), which is sympatric with both *I. squamulosa* and *I. capensis* at its type locality on the Botswana/Capriví border, suggests that this is not an 'annual' species, for the type series consists of two adult ♀♂ with snout-vent lengths 65-70 mm and a juvenile (s.v.l. 41 mm), all collected on 30 May. Four more specimens, collected during the first half of April, have snout-vent lengths ranging from 38,2 to 64,8 mm (Haacke 1970).

Fig. 130. *I. capensis* and *I. grandiceps* in BROADLEY (1979).
ICHNOTROPIS in BRANCH (1981)


The record in Pianka (1971) applies to *M. squamulosa*.

ICHNOTROPIS in WELCH (1982)


The plea for suppressing *Thermophilus* Fitzinger, 1843 was not necessary. Loveridge (1957) probably never addressed this issue in the right way to the nomenclature commission, moreover, the assumption made by Loveridge (1957) was incorrect (see figure 136, discussion at Bedriaga (1886), and Tubbs (1987)).
**Ichnotropis capensis** in Auerbach (1985)
The Reptiles of Gaborone.
A Guide to the Reptiles of the South-Eastern Hardveld of Botswana. -
The Botswana Book Centre, Gaborone. 48 pp.

![Ichnotropis capensis in Auerbach (1985).](image1)

**Ichnotropis capensis and Ichnotropis grandiceps** in Auerbach (1986)
First steps in Setswana herpetology. - Botswana Notes and Records Volume, 18: 71-90.

![Ichnotropis capensis and Ichnotropis grandiceps in Auerbach (1986).](image2)

**Ichnotropis capensis** in Busack & Maxson (1987)

New record: Khwai (Botswana).

![Ichnotropis capensis in Busack & Maxson (1987).](image3)

**Ichnotropis in Tubs** (1987)

![Ichnotropis in Tubs (1987).](image4)

**Ichnotropis capensis and Ichnotropis grandiceps** in Auerbach (1987)

Like others before, Auerbach (1987) put *I. longipes* into the synonymy of *I. capensis*. An extensive list of trivial names is given. Likewise descriptions of both species, notes on reproduction and distribution.

A long list of recorded localities is also included. The type locality of *I. grandiceps* is named: Dibejama, 40 km west of Muhembo.

See next page.
Fig. 143. *I. capensis* and *I. grandiceps* in Auerbach (1987).
Ichnotropis capensis in JACOBSEN (1987)

Ichnotropis capensis and Ichnotropis grandiceps in BRANCH et al. (1988)

Ichnotropis capensis
Following the recommendation of LOVEJOY (1957), Branch and BROADLEY (1985) made a successful application to the International Commission for Nomenclature (ANON, 1987) for the suppression of Thermophilus Fitzinger, 1843 and conservation of Ichnotropis Peters, 1854.

L. grandiceps

Fig. 144b. Ichnotropis capensis in JACOBSEN (1987).

Ichnotropis capensis and Ichnotropis grandiceps in BRANCH et al. (1988).

Fig. 145. I. capensis and I. grandiceps in BRANCH et al. (1988).

Fig. 146. All records listed up to 1988 with their original (sub)species designation.
**Ichnotropis capensis capensis** in BROADLEY (1988)

A checklist of the reptiles of Zimbabwe, with synoptic keys. - Arnoldia Zimbabwe, 9 (30): 369-430.

**Ichnotropis capensis** and **I. grandiceps** in BRANCH (1988)


**Ichnotropis bivittata** in BROADLEY & HOWELL (1991)

A Check List of the Reptiles of Tanzania with synoptic keys. - Syntarsus, 1: 70 pp.

Abstract: This check list records 273 species of reptiles from Tanzania, divided among the suborders as follows: Pleurodira 6; Cryptodira 11; Sauria 120; Amphisbaenia 11; Serpentes 123; Crocodylia 2. Synoptic keys are provided for the identification of the various taxa. A zoogeographical analysis has resulted in the taxa being assigned to the floristic regions defined by WHITE (1983).
ICHNOTROPIS CAPENSIS AND I. BIVITTATA IN BROADLEY (1991)


Abstract: The amphibian fauna of northwestern Zambia was quite well known, but no systematic collection of reptiles had ever been made. This was rectified when I spent the period 23 September to 12 October 1990 based at Sakeji School near Kelenge and collected 258 reptiles and 77 amphibians. Five reptile species are new for Zambia, i.e. Adolfus africanus, Causus lichtensteini, Limnophis bicolor, Thrasops j. jacksonii and Rhamnophis aethiopissa ituriensis.

Fig. 153. I. capensis and I. bivittata in BROADLEY (1991).

ICHNOTROPIS BIVITTATA BIVITTATA (Boodie)
NMZB 1511 Sakeji stream at 11°22'S 24°15'E
A female with 38 midbody scale rows.

ICHNOTROPIS CAPENSIS (A. Smith)
NMZB 10520, 10543-53, 10576-9, 10624, 10645-7, 10697-761 Hillwood Farm
NMZB 10755 Rime Source
Twenty-one adults with 36-40 midbody scale rows.

This was a common species in savanna areas. Specimens were found in the stomachs of a Phalangomumus semiturnicurus and a Thelotornis kirkielli.

Fig. 154. All records listed up to 1991 with their original (sub)species designation.
**Ichnotropis in Bischoff (1991)**


**Ichnotropis in Baur & Günther (1995)**


**Ichnotropis in Branch & McCartney (1992)**


New record: 50 km east of Cuito Cuanavale (Angola).

**Ichnotropis capensis capensis in Branch & McCartney (1992)**

*Ichnotropis capensis capensis* (A. Smith 1838)

PEM R4622: approximately 50 km E of Cuito Cuanavale (15°14’S, 19°37’E: 1519Ba); caught in foxhole at about 10:00h, 4 April 1988.

An adult male (45 + 104 mm), with two termite heads in stomach. Scutellation: 4 UL prior to subocular; 38 scales midbody; 24 lamella under fourth toe; occipital well-developed, crescentic, and extending only slightly behind parietales; striations on head well-developed; 12/13 femoral pores.

Remarks: This specimen appears to be the first record of the nominate race from Angola.

**Ichnotropis in Branch (1993)**


See Branch (1988).
Annotated bibliographic history of *Ichnotropis*

*Ichnotropis* in *Jacobsen* (1997)

*Ichnotropis capensis* in *Vonesh* (1998)

In *De Witte* (1966) there is no record of *Ichnotropis capensis*, only the “*Ichnotropis capensis chapini*” record of *Schmidt* (1919) is mentioned.

*Ichnotropis capensis* in *Vanhooystdonck & Van Damme* (1999)
Evolutionary relationships between body shape and habitat use in lacertid lizards. - Evolutionary Ecology Research, 1: 785-805.

Abstract: The aim of this study was to determine if divergence in habitat use among lacertid lizards is paralleled by morphological differentiation. For 35 lacertid species, we measured body, head and limb dimensions. Habitat use was inferred from the literature: ground-dwelling on open terrain, ground-dwelling in vegetated areas, shrub-climbing, tree-climbing, saxicolous (i.e. rock-climbing). Traditional (i.e. non-phylogenetic) statistical analyses suggest morphological differences among species groups with different habitat use. Ground-dwelling species from open habitats tend to have longer femurs, tibiae and humeri (relative to body length) than other groups. Cursorial (i.e. level-running) species have relatively high heads and trunks compared to climbing species. These differences follow bio-mechanical predictions and it is tempting to consider them as adaptations to habitat use. However, phylogenetic analyses of the data fail to establish a clear relationship between habitat use and morphology in the data set considered. There is a weak indication that the differences in head and trunk height have evolved as an adaptation to different habitat use, but the differences in relative limb dimensions among species groups with different habitat use vanish. Either adaptation of limb dimensions to habitat use has not occurred in lacertid lizards, or our methods are unable to demonstrate such an adaptation. We show that uncertainties in the topology of the phylogenetic tree used are unlikely to influence the outcome of our study. We also address the fact that habitat use is often similar in different branches of the phylogenetic tree, and the consequences this may have for the power of our statistical analyses.

*Ichnotropis* in *Branch* (1998)

See *Branch* (1988).

*Ichnotropis capensis* in *Vanhooystdonck & Van Damme* (1999)
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*Ichnotropis* in *Vonesh* (1998)

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*Ichnotropis* in *Branch* (1998)

See *Branch* (1988).
**Ichnotropis** in HAAGNER et al. (2000)


**Ichnotropis capensis** in HAAGNER et al. (2000)

New records: Sakeji school (Zambia), Chingola (Zambia), Situnda Pan (Zambia), Siyenge Pans, Isoka (Zambia), Lusaka (Zambia) and Mbala (Zambia).

*Ichnotropis capensis* (A. Smith 1838)

**Material examined:** PEM R6277-80, 6282-83 - Sakeji School, Northwestern Province (1124Ab); PEM R12489-90 - Chingola, Copperbelt Province (1227Db); PEM R12621 - Situnda Pan, Luiwa Plains National Park, Western Province (1422Da); PEM R12622-23 - Siyenge Pans, Luiwa Plains National Park, Western Province (1422Dd): 12 adult males, the largest measuring 189(64+125)mm; 5 adult females, the largest intact specimen measuring 164(61+103)mm. Another female (PEM R1999) had a SVL of 68 mm. Light brown dorsum with well developed lateral lines, absent in one female (PEM R6277). Supralabials 8, supralabials anterior to subocular 4, midbody scale rows 38-40, lamellae under fourth toe 19-22, prefrontal not in contact with anterior supraocular.

**Additional material:** PEM R6394-97 - Isoka, Northern Province (1032Ba), E Knowles-Jordan; PEM R1999 - Lusaka, Central Province (1528Ad); PEM R2817-13 - Mbala, Northern Province (0831Cd), H Bredo; PEM R12318-21 - Balovale, Northwestern Province (1323Ca).

**Diet:** Only two stomachs were empty. Prey items included: Isoptera (6), Orthoptera (7), Coleoptera (3) and Aranaeae (3). Four specimens from Sakeji all contained numbers of worker termites: PEM R6278 with 48, R6283 - 32, R6281 - 29 and R6279 with 27. The last also contained a small cricket and one Chingola specimen (PEM R12489) contained 22 worker termites, 6 termite heads and one soldier. Simbotwe and Garber (1979) reported that Isoptera comprised 99.6% of the diet of *I. capensis* from the Dambwa Forest Reserve (1725Dd).

**Reproduction:** An adult: Sakeji female (PEM R6277) contained no developing ova during July; a female from Lusaka (PEM R1999) had 6(3/3) ova (6.8x4.2mm) in December, and 2 females (PEM R2817-18) from Mbala had 7(4/3) and 6(3/3) ova, respectively, (4.3-4.6x 2.9-3.8mm) in December. Males collected during January had a rich bronze-brown colour and their testes appeared inactive (flaccid, 3.2-4.6x2.6-3.2mm). Three males collected during October (PEM R12621-23) were in breeding colouration (bright orange flanks, dorsolateral white line, dorsum rusty brown, ventrum cream) with large testes (6.0-6.8x 2.8-3.1mm).

**Parasites:** None found. Simbotwe (1979) reported nematodes (*Parathelandros* sp.) from the stomach of a specimen from Dambwa Forest Reserve (1725Dd).

**Notes:** Although Broadley (1971a) recorded this species as widespread in western Zambia, no previous records appear to exist for the Copperbelt Province. The Chingola records indicate a north-westerly range extension of more than 300km. Broadley (1979) recorded asynchronous reproductive cycling between the ‘annual’ lizards *I. capensis* and *I. squamulosa*. The presence of adults of both *I. capensis* and *I. bivittata* in July at Sakeji mitigates against the same phenomenon occurring between the latter two species.

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**Fig. 165a. Ichnotropis capensis** in HAAGNER et al. (2000).

**Fig. 165b. Ichnotropis capensis** in HAAGNER et al. (2000).

**Fig. 166. Collection localities** in HAAGNER et al. (2000).

The listed location of Sakeji school is wrongly indicated on this map (red dot) and should have been at the location of the green dot.
**Ichnotropis capensis** in **Arnold (2002)**


**Abstract:** Differences in surface structure (oberhautchen) of body scales of lacertid lizards involve cell size, shape and surface profile, presence or absence of fine pitting, form of cell margins, and the occurrence of longitudinal ridges and pustular projections. Phylogenetic information indicates that the primitive pattern involved narrow strap-shaped cells, with low posteriorly overlapping edges and relatively smooth surfaces. Deviations from this condition produce a more sculptured surface and have developed many times, although subsequent overt reversals are uncommon. Like variations in scale shape, different patterns of dorsal body micro-ornamentation appear to confer different and conflicting performance advantages. The primitive pattern may reduce friction during locomotion and also enhances dirt shedding, especially in ground-dwelling forms from moist habitats. However, this smooth micro-ornamentation generates shine that may compromise cryptic coloration, especially when scales are large. Many derived features show correlation with such large scales and appear to suppress shine. They occur most frequently in forms from dry habitats or forms that climb in vegetation away from the ground, situations where dirt adhesion is less of a problem. Micro-ornamentation differences involving other parts of the body and other squamate groups tend to corroborate this functional interpretation. Micro-ornamentation features can develop on lineages in different orders and appear to act additively in reducing shine. In some cases different combinations may be optimal solutions in particular environments, but lineage effects, such as limited reversibility and different developmental proclivities, may also be important in their genesis. The fine pits often found on cell surfaces are unconnected with shine reduction, as they are smaller than the wavelengths of most visible light.

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**Ichnotropis bivittata bivittata** in **Haagner et al. (2000)**

**Ichnotropis bivittata bivittata** (Bocage 1866)

**Material examined:** PEM R6280, R6284 - Sakeji School, Northwestern Province (1124Ab): 1 adult male measuring 126(42+84)mm and 1 adult female, SVL 40mm. Supralabials 8, mid-body scale rows 38-39, lamellae under 4th toe 17-18.

**Diet:** The female contained a large grasshopper and 16 ant mandibles; the male contained 5 ant mandibles.

**Reproduction:** The male’s testes measured 4.2x2.7mm; the female contained no developing ova.

**Notes:** PEM R6280 was removed from the stomach of a *Thelotornis oatesi* (PEM R6195). This species was known from only one specimen from Mbala, Northern Province (0831Cd), until 1957, when Frank Ansell collected another (NMZB 1511) in the Northwestern Province. The above are only the third and fourth specimens for Zambia. Adults of both *I. bivittata* and *I. capensis* were collected from Sakeji during July, and it may be significant that *I. bivittata* had only eaten ants and *I. capensis* contained only termites (Broadley, pers. comm.).

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Fig. 167. Sakeji school, in the northwest of Zambia.

Fig. 168. *Ichnotropis bivittata* in Haagner et al. (2000).

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Fig. 169. Phylogenetic distribution of large dorsal scales (1) in Arnold (2002).

Fig. 170. Micro-ornamentation on dorsal scales of *I. capensis* (x4,000) in Arnold (2002).

Fig. 171. All records listed up to 2000 with their original (sub)species designation.
Ichnotropis in SPAWLS et al. (2002)


Ichnotropis bivittata in SPAWLS et al. (2002)

Identification:
The Angolan Rough-scaled Lizard is a slender, medium-sized (snout-vent to 7.8 cm; total length to 24.5 cm) lacertid with a pointed snout and distinctive colour pattern. On the head, the frontonasal scale is single, undivided, the dorsal head shields strongly striated or keeled; the prefrontal scale is separated from the supraciliaries by one or two rows of small scales and the subocular scale borders the upper lip. The dorsal and lateral scales are enlarged, pointed, overlapping and strongly keeled in 34 to 40 rows around the middle of the body; the ventral scales are rounded, hexagonal, arranged in eight to 10 longitudinal rows, 27 to 33 transverse series. There are 18 to 24 spiny lamellae between the fourth toe, and nine to 13 femoral pores on each thigh. The dorsal colour pattern consists of a well-demarcated, broad, bronzy brown to coppery reddish uniform stripe that includes the entire top of the head and width of the back and extends the length of the body to the tip of the tail. The brown dorsal stripe is bordered laterally by an unmarked, jet-black stripe originating at the nostril, passing beneath the eye and extending the length of the body and tail; at midbody, the black stripes are about half the width of the dorsal stripe; these are, in turn, bordered by thin, pure white, lateral stripes about two scales wide, originating on the rostral scale, passing posteriorly through the dorsal half of the upper labial scales, the length of the body (somewhat diffuse at midbody) and onto the tail beyond its base. A second pair of black stripes, passing through the lower edge of the upper labial scales and the upper edge of the lower labials, originates at the snout, broadens beyond the mouth and terminates at the origin of the forelimbs. Beneath, the Angolan Rough-scaled lizard is whitish, usually unmarked. In breeding males, there is frequently a brilliant orange-red stripe between the fore- and hind-limbs, and the white stripes anterior to midbody can be bright chrome yellow. Juveniles may have similar, less-distinct markings as adults, occasionally pattern-less except for a round white spot above the shoulder.

Habitat and Distribution:
In East Africa, the Angolan Rough-scaled Lizard is known only from two specimens collected at Ipeni, Udzungwa Mtns; it also occurs just across the Zambian border at the south end of Lake Tanganyika. The species is clearly an inhabitant of both drier and wetter miombo woodland habitats and might be expected in more localities in southern Tanzania. The range of *I. bivittata* extends west from southern Tanzania, through northern Zambia and Shaba Province, Congo to Angola.

Natural History:
The Angolan Rough-scaled Lizard is probably not an “annual species” (see *I. squamulosa*). It is a diurnal predator on insects and can be found active during the warmest part of the day. Although evidently favouring sandy open areas, specimens have been encountered in wooded *Brachystegia* areas as well.
**Ichnotropis tanganicana** in SPAWLS et al. (2002)

**IDENTIFICATION:**
Known only from the type specimen (possibly a subadult), the Tanzanian Rough-scaled Lizard appears to be a rather small (snout-vent 3.8 cm; tail absent) lacertid similar to the Angolan Rough-scaled Lizard in possessing a single, undivided frontonasal scale and the subocular scale bordering the lip, but differing from it in smaller size, in the prefrontal scale in contact with the supraciliaries, and the head shields being weakly striated or keeled. The dorsal and lateral scales are enlarged, pointed, overlapping and strongly keeled in 36 rows at midbody; the ventral scales are smooth and in eight longitudinal and 25 transverse series. There are 19 lamellae beneath the fourth toe and 11 or 12 femoral pores under the thighs. The original description of the colour pattern includes “bronzey olive above with a few small transverse blackish spots in three longitudinal series on the nape and two on the body; a black streak from the nostril to the eye, and another on the edge of the mouth; a white, black-edged streak from below the eye, through the ear, to above the axil; white, black-edged occular spots on the posterior part of the back, on the hind limbs, and on the tail; lower parts white.”

**TANZANIAN ROUGH-SCALED LIZARD**
(*Ichnotropis tanganicana*)

Based on the feebly striation of the head scales and aspects of the arrangement of the head shields, the describer of this species, G. A. Boulenger, considered it to be the most primitive member of the genus.

**HABITAT AND DISTRIBUTION:**
The Tanzanian Rough-scaled Lizard is known only from a single specimen collected at an unspecified locality on the east coast of Lake Tanganyika, in western Tanzania. This entire area is within the wetter Zambezian miombo woodland vegetation type.

**NATURAL HISTORY:**
Nothing is known of the natural history of this species.

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**Ichnotropis capensis and Ichnotropis grandiceps** in GRIFFIN (2002)

**Ichnotropis capensis** in GRIFFIN (2002)

New records: Mamili National Park, Etosha National Park, Mangetti Game Camp and Mahango Game Reserve (Namibia).

**Ichnotropis grandiceps** in GRIFFIN (2002)

Fig. 175. *Ichnotropis capensis* in GRIFFIN (2002).

**Ichnotropis grandiceps** in GRIFFIN (2002)

![Map showing distribution of Ichnotropis grandiceps](image)

Fig. 176. *Ichnotropis grandiceps* in GRIFFIN (2002).

**Fig. 177. All records listed up to 2002 with their original (sub)species designation.**
**Ichnotropis capensis** and **Ichnotropis grandiceps** in **BROADLEY (2004)**


**Ichnotropis bivittata** in **BROADLEY (2004)**


**Ichnotropis bivittata** in **BROADLEY & COTTERILL (2004)**

The Angolan Rough-scaled Lizard ranges from Angola east through southern Katanga, northern Zambia and northern Malawi to southern Tanzania. In the P.N.U. it inhabits the Kibara plateau (Witte 1953).

**Ichnotropis capensis** in **BROADLEY & COTTERILL (2004)**

**Ichnotropis capensis** (A. Smith 1838).—The Cape Rough-scaled Lizard has a wide range in south-central Africa. In the P.N.U. it occurs at low altitudes, 585 - 1050 m (Witte 1953 [as I. longipes Boulenger, a synonym]).

**Ichnotropis bivittata** in **BISCHOFF (2005)**


The shown image in BISCHOFF (2005) was made by FELIX HULBERT near Kinshasa in the Democratic Republic of the Congo in 2004. This specimen is also present with two images on www.lacerta.de.

**Ichnotropis capensis** in **SCHNEIDER et al. (2005)**

Checklist of Vertebrates of Mozambique. - Universidade Eduardo Mondlane Faculdade de Agronomia e Engenharia Florestal Departamento de Engenharia Florestal Maputo, Moçambique. 227 pp.

**Ichnotropis capensis** in **BRANCH (2006)**

An annotated bibliographic history of *Ichnotropis*

**Ichnotropis** in **ALEXANDER & MARAIS (2007)**


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**Fig. 185.** *Ichnotropis* in **ALEXANDER & MARAIS (2007).**

**Fig. 186.** GRAHAM

**Fig. 187.** JOHAN MARAIS.

**Fig. 188.** All records listed up to 2007 with their original (sub)species designation.
**Ichnotropis capensis** in BAUER et al. (2009)

New record for Koanaka Hills (Botswana).

**Ichnotropis capensis** (Smith, 1838) (Fig. 9)
Material: Five specimens: TNHC 68743–47 from the ‘Koanaka Hills.’
Habitat: TNHC 68743 was observed on a sand ridge northwest of Koanaka South. TNHC 68744 and TNHC 68745 were observed on a sandy track in dense shrub west of Koanaka South at 20° 09.167’ S, 21° 11.355’ E. TNHC 68746 and TNHC 68747 were caught in pitfall traps placed in dense shrub near Koanaka South.
Comments: Although the Koanaka area was included within Branch’s (1998) range map for this species, these specimens represent the first published record of voucher material for the Koanaka Hills and QDS 2021 Aa.

Fig. 189. **Ichnotropis capensis** in BAUER et al. (2009).

**Ichnotropis capensis** in MARAIS (2009a)
Trip to Caprivi/Namibia with AARON BAUER and BILL BRANCH. - http://www.johanmarais.co.za

New record for Katima Mulilo.

**Ichnotropis capensis** in MARAIS (2009b)
Trip to Koanaka Hills, Botswana. - http://www.johanmarais.co.za

Fig. 191. **Ichnotropis capensis** in MARAIS (2009b).

**Ichnotropis grandiceps** in TURNER (2010)
*Ichnotropis grandiceps.* – The IUCN Red List of Threatened Species.

Fig. 192. **Ichnotropis grandiceps** in TURNER (2010).

**Ichnotropis grandiceps** in MARAIS (2009b)
Trip to Koanaka Hills, Botswana. - http://www.johanmarais.co.za

Fig. 193. Pan and Aha Hills from Koanaka.
Ichnotropis in Kapli et al. (2010)
A re-analysis of the molecular phylogeny of Lacertidae with currently available data. - Basic and Applied Herpetology, 25: 97-104.

Ichnotropis capensis in JACOBSEN et al. (2010)

Record for San Sebastian Peninsula (Mozambique).

Ichnotropis capensis (A. Smith) 1838
A terrestrial lizard, that has been recorded throughout the Peninsula in open Miombo woodland. This record extends the distribution of the species 175 km north of the nearest record along the coast at Inhambane. It appears that this species occurs in two discrete populations, one along the coast of KwaZulu-Natal and southern Mozambique, with the main population extending from the northern Cape, Northwest and Limpopo Provinces in South Africa to Botswana, Zimbabwe, eastern Namibia and Angola.

Fig. 196. Ichnotropis capensis in JACOBSEN et al. (2010).

Ichnotropis tanganicana in CARO et al. (2011)

Records for the Katavi National Park (Tanzania) were expected, but not found.

Fig. 195. San Sebastian Peninsula (Mozambique).
**Ichnotropis capensis** in **KIRCHHOF (2011)**


**Records:** Soutpansberg, Polokwane and Waterberg (South Africa).

In den Regionen südlich des Soutpansbergs in der Polokwane-Ebene und am Fuße des Waterbergs wurden *Ichnotropis capensis* und *Nucras holobi* entdeckt.

**Fig. 198.** *Ichnotropis capensis* in **KIRCHHOF** (2011).

**Ichnotropis capensis** and **Ichnotropis grandiceps** in **KIRCHHOF et al. (2011)**


**Fig. 199.** *I. capensis* and *I. grandiceps* in **KIRCHHOF** et al. (2011).

**Ichnotropis** in **CONRADIE (2012)**


Cubango River Basin: *I. bivittata* and *I. capensis*.

Cuito River Basin: *I. capensis capensis* and *I. grandiceps*.

The record of *Ichnotropis grandiceps* was later reduced to *Ichnotropis* ssp. (**CONRADIE** et al. 2016).

**Ichnotropis capensis** and **Ichnotropis bivittata** in **EDWARDS** et al. (2012)

Convergent Evolution Associated with Habitat Decouples Phenotype from Phylogeny in a Clade of Lizards. - PLoS ONE 7 (12): e51636. doi:10.1371/journal.pone.0051636

**Abstract:** Convergent evolution can explain similarity in morphology between species, due to selection on a fitness-enhancing phenotype in response to local environmental conditions. As selective pressures on body morphology may be strong, these have confounded our understanding of the evolutionary relationships between species. Within the speciose African radiation of lacertid lizards (Eremiaini), some species occupy a narrow habitat range (e.g. open habitat, cluttered habitat, strictly rupicolous, or strictly psammophilic), which may exert strong selective pressures on lizard body morphology. Here we show that the overall body plan is unrelated to shared ancestry in the African radiation of Eremiaini, but is instead coupled to habitat use. Comprehensive Bayesian and likelihood phylogenies using multiple representatives from all genera (2 nuclear, 2 mitochondrial markers) show that morphologically convergent species thought to represent sister taxa within the same genus are distantly related evolutionary lineages (*Ichnotropis squamulosa* and *Ichnotropis* spp.; *Australolacerta rupicola* and *A. australis*). Hierarchical clustering and multivariate analysis of morphological characters suggest that body, and head, width and height (stockiness), all of which are ecologically relevant with respect to movement through habitat, are similar between the genetically distinct species. Our data show that convergence in morphology, due to adaptation to similar environments, has confounded the assignment of species leading to misidentification of the taxonomic position of *I. squamulosa* and the *Australolacerta* species.

![Figure 2. Clustering and principal components analysis of morphological markers. Boxplots of the first three principal component axes (center) for each morphological group (A, B) retrieved by hierarchical clustering (shown right). Positive values of the PC axes indicate larger body dimensions, whilst negative values indicate smaller body dimensions. Morphological groupings are shaded as follows: A1 = bright green, A2 = lime green, A3 = green, B1 = blue, B2 = purple. The phylogenetic tree (left) is color coded by species according to its morphological group membership. Morphological measurements are shown on lizard schematic, and line colors correspond to sets of original variables that loaded onto each PC (PC1 = red, PC2 = yellow, PC3 = light blue). Percentage of variance contributed to each PC axis is given. IC = *Ichnotropis capensis*, IB = *Ichnotropis bivittata.*](image-url)

**Fig. 200.** *Ichnotropis* in **CONRADIE** (2012).
Annotated bibliographic history of *Ichnotropis*

**Ichnotropis capensis** in KENNEDY et al. (2012)
Effect of Fire on the Herpetofauna of the Koanaka Hills, Ngamiland, Botswana. - Check List, 8 (4): 666-674.

Abstract: Ngamiland is one of the most remote regions in Botswana, and its herpetofauna is largely under-surveyed. This study documents the herpetofauna of the Koanaka Hills (KH) in Ngamiland in 2009 following extensive fire destruction and compares it to the pre-fire herpetofauna collected in 2008. We also provide new records for the region for three amphibian and six reptile species, and document vouchers for two taxa that were sighted but not collected in 2008. During 2009, 14 reptile and three amphibian species were collected, bringing the total number of confirmed herpetofaunal taxa near the KH to three amphibian and 19 reptile species. For seven species this is the first published occurrence in quarter degree square 2021 Aa. Analyses measuring changes in the KH herpetofauna following the fire are inconclusive due to differences in collection effort and weather conditions. However, these data suggest that fire impact was minimal.

Additional records: Koanaka Hills (Botswana).

**Ichnotropis capensis** (Smith 1838; Figure 7)

Material. 18 specimens: TNHC B4970–87.

Other records. TNHC 68743–7 (Bauer et al. 2009).

Location and Habitat. TNHC B4979 was collected on a dirt track near Koanaka South. TNHC B4971–8 were found in a dry pan at 20°09.20’S, 21°11.36’E. TNHC B4970 was found in a sandy area behind the main camp at 20°09.19’S, 21°11.24’E. TNHC B4981–7 were collected in a sandveld area darting under bushes at 20°09.52’S, 21°11.57’E. TNHC B4980 was caught in a pitfall trap placed in dense shrub northwest of Koanaka South at 20°09.31’S, 21°11.38’E.

![Figure 7. Ichnotropis capensis found on sandy dirt track near Koanaka South.](image)

**Fig. 202. Ichnotropis capensis in KENNEDY et al. (2012).**

**Ichnotropis capensis** and **Ichnotropis grandiceps** in CONRADIE (2013)
The herpetofauna of the lower Cuito and lower Cuando river. A report on a rapid biodiversity survey conducted in April 2013. - Port Elizabeth Museum (Bayworld). 14 pp.

During the period 12 April – 1 May we undertook a herpetological survey of the lower reaches of the Cuito and Cuando River (Figure 1).

**Fig. 203. I. capensis and I. grandiceps in CONRADIE (2013).**

![Figure 204. All records listed up to 2012 with their original (sub)species designation.](image)
The following 2 “sympatric” studies, during preparation unaware of their mutual existence (MAYER pers. comm.; EDWARDS pers. comm.), came to the same conclusion: *Ichnotropis squamulosa* should be transferred in *Meroles*.

**Ichnotropis capensis** in ENGLEDER et al. (2013)


Abstract: Eremiadinae, one of three subfamilies of Lacertidae, are distributed throughout Asia and Africa. Previous phylogenetic studies suggested that one of the main groups of Eremiadinae (the Ethiopian clade) consist of two clades with predominately East-African and South-African distribution. Yet, especially the latter one, which includes the genera *Pedioplanis*, *Meroles*, *Ichnotropis*, *Tropidosaura* and *Australolacerta*, was not well supported in the molecular phylogenetic analysis. In this study, we analysed the phylogenetic relationships among the genera of the ‘South African clade’ to assess whether this group actually forms a highly supported clade and to address questions concerning the monophyly of the genera. We sequenced sections of the widely used mitochondrial genes coding for 16S rRNA, 12S rRNA and cytochrome b (altogether 2045 bp) as well as the nuclear genes c-mos, RAG-1, PRLR, KIF24, EXPH5 and RAG-2 (altogether 4473 bp). The combined data set increased the support values for several nodes considerably. Yet, the relationships among five major lineages within the ‘South African clade’ are not clearly resolved even with this large data set. We interpret this as a ‘hard polytomy’ due to fast radiation within the South African lacertids. The combined tree based on nine marker genes provides strong support for the ‘South African Clade’ and its sister group relationship with the ‘East African Clade’. Our results confirm the genus *Tropidosaura* as a monophylum, while *Ichnotropis* is paraphyletic in our trees: *Ichnotropis squamulosa* appears more closely related to *Meroles* than to *Ichnotropis capensis*. Furthermore, the monophyly of *Meroles* is questionable as well. Based on our results, *I. squamulosa* should be transferred from *Ichnotropis* into the genus *Meroles*. Also, the two species of *Australolacerta* (*A. australis* and *A. rupicola*) are very distantly related and the genus is perhaps paraphyletic, too. Finally we propose a paleogeographical scenario in the context of palaeoclimatic data and compare it with a previously postulated hypothesis.

**Ichnotropis capensis** and *Ichnotropis bivittata* in EDWARDS et al. (2013)


Abstract: Molecular phylogenetic analyses of southern African lacertid lizards (Eremiadini) using mitochondrial and nuclear markers revealed two examples of generic assignments incompatible with monophyletic clades. *Australolacerta ARNOLD 1989*, a genus endemic to South Africa and to which two isolated species have been referred, is paraphyletic at the generic level. In addition, the species *Ichnotropis squamulosa* PETERS 1854 was found to be embedded within the genus *Meroles*. To resolve the paraphyly in *Australolacerta* we erect a new genus, *Vhembelacerta* EDWARDS, BRANCH, HERREL, VANHOYYDONCK, MEASEY, & TOLLEY, gen. nov., to accommodate *Lacerta rupicola* FITZSIMONS 1933. To maintain a monophyletic *Ichnotropis PETERS 1854*, *Ichnotropis squamulosa* PETERS 1854 is transferred to *Meroles GAY 1838*, now named *Meroles squamulosus* comb. nov. Where necessary the genera affected by these actions are re-characterized.
**Ichnotropis in Herrmann & Branch (2013)**

An updated and annotated species checklist for the Namib Desert and Namibia, with listing of *Ichnotropis capensis* and *Ichnotropis grandiceps*.

**Ichnotropis in Mayer (2013)**

Mayer (2013) considers *I. tanganicana* as an invalid species, and *I. microlepidota* as a doubtful species.

**Ichnotropis capensis in Pietersen (2014)**

New records: Vilanculos and Panda (Mozambique).

**Ichnotropis in Pietersen et al. (2013)**

New record: Chigubo (Mozambique).

**Ichnotropis capensis** (A. Smith, 1838)
A specimen was collected at Chigubo by WDH (TM 29272). This record is 230 km southeast of the nearest population in southeastern Zimbabwe (Branch, 1998) and 235 km southwest of the population on the San Sebastian Peninsula (Jacobsen et al., 2010).

Fig. 208. *I. capensis* in Pietersen et al. (2013).
Ichnotropis capensis and Ichnotropis bivittata in Baeckens et al. (2015)

Chemical signalling in lizards: an interspecific comparison of femoral pore numbers in Lacertidae. - Biological Journal of the Linnean Society, 114: 44-57.

Abstract: Animals communicate via a variety of sensory channels and signals. Studies on acoustic and visual communication systems suggest that differences in the physical environment contribute to the variety of signalling behaviour, with species investing in those signals that are transmitted best under the local conditions. Whether or not environmental tuning also occurs in chemical communication systems has received much less attention. In the present study, we examined the effect of several aspects of the physical environment on the chemical communication system of lacertid lizards (family Lacertidae). The numbers of femoral pores are used as a proxy reflecting how much a particular species invests in and relies upon chemical signalling. Femoral pores are specialized epidermal structures that function as a secretion channel for the waxy substance produced by glands. In some lacertid species, the secretion carries infochemicals that play an important role in social communication. The number of femoral pores varies considerably among species. We have compiled data on femoral pore numbers for 162 species and tested for the effects of climate and substrate use. After correcting for body size and taking the phylogenetic relationships among the species into account, we found no effect of climate conditions or latitude on species pore numbers. Substrate use did affect pore numbers: shrub-climbing species tended to have fewer femoral pores than species inhabiting other substrates.

Ichnotropis bivittata in Iñeich & Le Garff (2015)


First (proved) record for Gabon: Batéké Plateau.

In fact our specimen is not the first mention of the species for Gabon but actually it is the first time the country is clearly indicated and demonstrated. Bouleenger (1921) reported a specimen from MNHN-RA collections (no collection number indicated but in fact MNHN-RA 1892.0010) which he mentioned as "Congo français (Pobéguin)". Pobéguin is not the collect location but refers to CHARLES-HENRI-OLIVIER Pobéguin (1856-1951). He was a French official who spent several years in Gabon, part of the former Congo français, and provided Paris Natural History Museum with collections, mostly botanical specimens. He visited Ogooué valley and particularly the Batéké Plateau which is covering part of actual Gabon but also Peoples Republic of Congo (former Congo Brazzaville). That specimen has no collect location but according to the places visited by Pobéguin, it is more likely that the specimen was collected in the same area than our more recent MNHN-RA 2013.1031 specimen, somewhere in the Batéké Plateau area in southeastern Gabon.

### Table 1. Morphological comparison of main scelion characters between MNHN-RA 2013.1031 and Ichnotropis bivittata, Abdaflor ghiomeux and Powenouwe/Smol. Data after Bocage (1885, 1893) and Mars (1906) FP: frontoparietal, WP: interparietal, SL: supralabial.

<table>
<thead>
<tr>
<th></th>
<th>MNHN-RA 2013.1031</th>
<th>I. bivittata</th>
<th>P. xamal</th>
<th>J. ghiomeux</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorsal scales with sl. 3</td>
<td>15</td>
<td>17</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>Venter scales with sl. 3</td>
<td>34</td>
<td>36</td>
<td>40</td>
<td>36</td>
</tr>
<tr>
<td>Supraoculars</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Canthus</td>
<td>pointed</td>
<td>pointed</td>
<td>pointed</td>
<td>pointed</td>
</tr>
<tr>
<td>Anterior body length</td>
<td>104</td>
<td>106</td>
<td>107</td>
<td>106</td>
</tr>
<tr>
<td>Posterior body length</td>
<td>63</td>
<td>65</td>
<td>66</td>
<td>65</td>
</tr>
<tr>
<td>Head length</td>
<td>21</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Head width</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total length</td>
<td>186</td>
<td>188</td>
<td>190</td>
<td>188</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ventral doral scale filaments</td>
<td>4</td>
<td>4 (4-6)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Ventral caudal scale filaments</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Ventral border of tail</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Ventral filaments</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Ventral scales</td>
<td>105</td>
<td>105</td>
<td>105</td>
<td>105</td>
</tr>
</tbody>
</table>

**Fig. 211.** Batéké Plateau in Gabon.

**Fig. 212.** Ichnotropis bivittata in Iñeich & Le Garff (2015).
Ichnotropis in Lewin et al. (2016)


Abstract:

Aim To map and assess the richness patterns of reptiles (and included groups: amphisbaenians, crocodiles, lizards, snakes and turtles) in Africa, quantify the overlap in species richness of reptiles (and included groups) with the other terrestrial vertebrate classes, investigate the environmental correlates underlying these patterns, and evaluate the role of range size on richness patterns.

Location Africa.

Methods We assembled a data set of distributions of all African reptile species. We tested the spatial congruence of reptile richness with that of amphibians, birds and mammals. We further tested the relative importance of temperature, precipitation, elevation range and net primary productivity for species richness over two spatial scales (ecoregions and 1° grids). We arranged reptile and vertebrate groups into range-size quartiles in order to evaluate the role of range size in producing richness patterns.

Results Reptile, amphibian, bird and mammal richness are largely congruent (r = 0.79–0.86) and respond similarly to environmental variables (mainly productivity and precipitation). Ecoregion size accounts for more variation in the richness of reptiles than in that of other groups. Lizard distributions are distinct with several areas of high species richness where other vertebrate groups (including snakes) are species-poor, especially in arid ecoregions. Habitat heterogeneity is the best predictor of narrow-ranging species, but remains relatively important in explaining lizard richness even for species with large range sizes.

Main conclusions Reptile richness varies with similar environmental variables as the other vertebrates in Africa, reflecting the disproportionate influence of snakes on reptile richness, a result of their large ranges. Richness gradients of narrow-ranged vertebrates differ from those of widespread taxa, which may demonstrate different centers of endemism for reptile subclades in Africa. Lizard richness varies mostly with habitat heterogeneity independent of range size, which suggests that the difference in response of lizards is due to their ecological characteristics. These results, over two spatial scales and multiple range-size quartiles, allow us to reliably interpret the influence of environmental variables on patterns of reptile richness and congruency.

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Ichnotropis bivittata in Ceríaco et al. (2016)


Família Lacertidae

Lagartixa-de-escamas-ásperas-de-Angola

Ichnotropis bivittata Bocage, 1866

Descrição: Tamanho máximo: 80 mm. Lacertídeo elegante de porte médio. Possui uma coloração castanha com manchas escuras ao longo do dorso formando uma linha contínua do topo da cabeça à cauda. Apresenta duas linhas brancas bem distintas nos flancos, a segunda linha cobre o lábio superior desvanecendo chegando à inserção dos membros posteriores. O lábio inferior possui uma linha vermelha ou alaranjada, podendo ser visível na parte lateral do pescoço. O ventre é branco.

Locais de colheita na Província de Malanje: "Bange N’gola" (Boulenger 1905: 110, 1921: 185); "Duque de Bragança" (Bocage 1866a: 45, 1895: 30; Boulenger 1887: 78, 1905: 110, 1921: 185; Ferreira: 1903: 15; Loveridge 1933: 308, 1957: 234; Bauer et al. 1995: 41).

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Fig. 213. Ichnotropis in Lewin et al. (2016).

Fig. 214. Ichnotropis bivittata in Ceríaco et al. (2016).

Fig. 215. All records listed up to 2016 with their original (sub)species designation.
Ichnotropis bivittata, Ichnotropis capensis and Ichnotropis ssp. in CONRADIE et al. (2016)
The herpetofauna of the Cubango, Cuito, and lower Cuando river catchments of south-eastern Angola.
Amphibian and Reptile Conservation, 10 (2): 6-36.

Table 3 (continued). The following are updated species lists for amphibians based on historical records as well as data from the new surveys within the boundaries of the Cubango, Cuito, and Cuando river basin. Type of record: V = Voucher, O = Observation, L = Literature record.

<table>
<thead>
<tr>
<th>Species</th>
<th>Cubango River</th>
<th>Cuito River</th>
<th>Cuando River</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ichnotropis</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bivittata Rouveret, 1866</td>
<td>L.</td>
<td>—</td>
<td>—</td>
<td>Monard 1937b</td>
</tr>
<tr>
<td>capensis (Birich, 1838)</td>
<td>L.</td>
<td>—</td>
<td>L.</td>
<td>Rouveret 1895; Monard 1931, 1937b; Branch and McCartney 1992</td>
</tr>
<tr>
<td>ssp.</td>
<td>—</td>
<td>V</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

Ichnotropis spp.
Rough-scaled Lizard

Material: PEM R20008–9 (25), 20486–8 (30h), 21490 (59), and 21843–5 (55). Comment: Branch and McCartney (1992) referred an adult male (SVL 45 mm) from Cuito-Cuanavale as the first record of *I. capensis* from Angola. Our additional material comprises juveniles and small adults (Fig. 9d, maximum SVL = 45 mm). Broadley (1967) described *I. grandiceps* based on a very small series (n = 3) from the Caprivi Strip. He differentiated it from sympatric *I. capensis* based on higher midbody scale counts (44–47), a broader head, five upper labials anterior to the subocular, and an occipital scale that did not protrude past the paretials. In our series the mid-body scale count is low (36–42), upper labials are mostly four (seven out of the 12 examined), and the occipital scale protrudes past the paretials. The specimens thus display a mixture of features intermediate between the two species. Although an adult male with bright yellow flanks (indicative of *I. capensis* male breeding coloration) was observed in the same area as juveniles (Conradie pers. obs, it was not collected and scalation could not be determined). The genus *Ichnotropis* includes a number of poorly-known northern species, and the lack of recent material of taxa such as *I. grandiceps*, *I. tanganicana*, *I. microlepidota*, *I. bivittata pallida*, etc., has precluded a modern revision. These difficulties are compounded by the annual reproductive strategies of some species (Broadley 1979) that make collection of series of adults and juveniles difficult. A revision of Angolan species, and the description of new taxa, is in preparation.

*Ichnotropis grandiceps* – Since its description (Broadley 1967) from the Caprivi area, no new material has been discovered. As noted for *Ichnotropis* sp. (above), the status of new Angolan material and the validity of *I. grandiceps* are under investigation.

Fig. 216. *Ichnotropis bivittata, Ichnotropis capensis and Ichnotropis ssp.* in CONRADIE et al. (2016).

Fig. 217. Vegetation upper Cacuchi River in CONRADIE et al. (2016).

Fig. 218. Dambo on upper Cacuchi River in CONRADIE et al. (2016).
**Ichnotropis in UETZ (2017)**


**Ichnotropis capensis** in *UETZ* (2017)

**Higher Taxa**
Lacertidae, Sauria, Lacertilia, Squamata (lizards)

**Subspecies**
Ichnotropis capensis capensis (S. Smith, 1938)
Ichnotropis capensis nigriceps LAURENT, 1955

**Common Names**
Cape rough-scaled lizard, Smith's rough-scaled sand lizard

**Synonyms**
Angina capensis SMITH 1938
Ichnotropis capensis - DU NERDEM & BIRSON 1890: 171
Ichnotropis capensis - FITZINGER 1843: 21
Ichnotropis capensis nigriceps - SANTOS 1983
Ichnotropis capensis capensis - PETERS 1854: 613
Ichnotropis capensis - BOCQUERON 1857: 274
Ichnotropis capensis angolensis - BOUQUERON 1902: 17 (see LOVOUGRISE 1953: 159)
Ichnotropis capensis angolensis - FITZINGER 1843: 204
Ichnotropis capensis - AUBRECHT 1907: 131
Ichnotropis capensis - RANGEL et al. 2000
Ichnotropis capensis - EDWARDS et al. 2013

**Distribution**
From Tanzania (T.Namibia, Zambia, Zimbabwe, Mozambique, Botswana: Republic of South Africa, RSA Democratic Republic of the Congo (Zaire), Angola

**Reproduction**
Oviparous

**Type Locality**
"Sand desert around Lake Lokwale, L. Kivirumia"

**Fig. 219. Ichnotropis capensis in UETZ (2017).**

**Ichnotropis bivittata** in *UETZ* (2017)

**Higher Taxa**
Lacertidae, Sauria, Lacertilia, Squamata (lizards)

**Subspecies**
Ichnotropis bivittata bivittata BOOKE, 1866
Ichnotropis bivittata patricia LAURENT, 1964

**Common Names**
Angola rough-scaled lizard

**Synonyms**
Ichnotropis bivittata BOOKE 1866: 63
Ichnotropis bivittata patricia - ASHMOLEN et al. 1863
Ichnotropis bivittata - HIUARD et al. 1993
Ichnotropis bivittata - BROADLEY & HOWELL 1991: 18
Ichnotropis bivittata - EDWARDS et al. 2013
Ichnotropis bivittata - CORNIER et al. 2016

**Distribution**
Sierra Leone, São Tomé & Príncipe, Sao Tome & Principe Islands, Angola, Zambia, N Mozambique, Mozambique, South Africa

**Reproduction**
Oviparous

**Types**
Synonym: ZMB 5827

**Comment**
Synonyms in Lasona were probably destroyed by a fire in 1976

**Taxonomy**
Rahm (after "m" on ear and Latin: "bivittata" = band or stripe)

**Fig. 220. Ichnotropis bivittata in UETZ (2017).**

**Ichnotropis chapini** in *UETZ* (2017)

**Higher Taxa**
Lacertidae, Sauria, Lacertilia, Squamata (lizards)

**Subspecies**
Ichnotropis chapini chapini SCHMIDT 1919
Ichnotropis chapini - MITTEL 1952
Ichnotropis chapini - EDWARDS et al. 2013

**Common Names**
Congo rough-scaled lizard

**Synonyms**
Ichnotropis chapini BRADLEY 1967: 132
Ichnotropis chapini - BRADLEY 1967: 132
Ichnotropis chapini - EDWARDS et al. 2013

**Distribution**
DRC, Angola, NE Namibia

**Reproduction**
Oviparous

**Types**
Holotype: ZMUB 10107

**Comment**
Not listed by BROADLEY & FOWTMAN 19549 for the Democratic Republic of the Congo (Zaire).

**Fig. 221. Ichnotropis chapini in UETZ (2017).**

**Ichnotropis tanganicana** in UETZ (2017)

**Higher Taxa**
Lacertidae, Sauria, Lacertilia, Squamata (lizards)

**Subspecies**
Ichnotropis tanganicana tanganicana (Peter Uetz, 1854)
Ichnotropis tanganicana - RANGEL et al. 2000
Ichnotropis tanganicana - EDWARDS et al. 2013

**Common Names**
Tanzanian rough-scaled lizard

**Synonyms**
Ichnotropis tanganicana BOUQUERON 1857: 274
Ichnotropis tanganicana - BROADLEY & HOWELL 1991: 18
Ichnotropis tanganicana - EDWARDS et al. 2013

**Distribution**
Tanzania (a salt marsh at Lake Tanganyika)

**Reproduction**
Oviparous

**Types**
Holotype: ZMUB 10108

**Comment**
Only known from the holotype (type BRADLEY & HOWELL 1991)

**Fig. 222. Ichnotropis tanganicana in UETZ (2017).**

**Ichnotropis microlepidota** in UETZ (2017)

**Higher Taxa**
Lacertidae, Sauria, Lacertilia, Squamata (lizards)

**Subspecies**
Ichnotropis microlepidota microlepidota (Peter Uetz, 1854)
Ichnotropis microlepidota - RANGEL et al. 2000
Ichnotropis microlepidota - EDWARDS et al. 2013

**Common Names**
Peter's rough-scaled lizard

**Synonyms**
Ichnotropis microlepidota PHILIP 1854
Ichnotropis microlepidota - EDWARDS et al. 2013

**Distribution**
Angola

**Reproduction**
Oviparous

**Types**
Holotype: ZMB 5828

**Comment**
Diagnosis. An Ichnotropis with a single horn instead, a single anterior row, premaxilla in contact with the second supracoccis, a small series of scales separating the second and third supracoccis from the supracoccis, unusually small dorsal scales, and a high number of scales around the middles of the body (from MARK 2006).

**Fig. 223. Ichnotropis microlepidota in UETZ (2017).**

**Ichnotropis grandiceps** in UETZ (2017)

**Higher Taxa**
Lacertidae, Sauria, Lacertilia, Squamata (lizards)

**Subspecies**
Ichnotropis grandiceps grandiceps (Peter Uetz, 1854)
Ichnotropis grandiceps - RANGEL et al. 2000
Ichnotropis grandiceps - EDWARDS et al. 2013

**Common Names**
Caspian rough-scaled lizard

**Synonyms**
Ichnotropis grandiceps BRADLEY 1967: 132
Ichnotropis grandiceps - BRADLEY 1967: 132
Ichnotropis grandiceps - EDWARDS et al. 2013

**Distribution**
DRC, Angola, NE Namibia

**Reproduction**
Oviparous

**Types**
Holotype: ZMUB 10106, an adult male

**Comment**
Rahm (after "m" on ear and Latin: "grandiceps" = grand or large)

**Fig. 224. Ichnotropis grandiceps in UETZ (2017).**
Discussion

Similarities and differences in morphology

Initially the distinction between species was determined solely by differences in squamation and relative length of the hindlimb (Hewitt 1910; Schmidt 1919; Boulenger 1921). Coloration description were made in the early descriptions, but these were at first not used in distinguishing between species. The first key to the species, which covers 5 of the final 11 described forms, was compiled by Boulenger (1921). In table 1 a representation of the keys are given.

**Ichnotropis tanganicana**

According these keys *I. tanganicana* has the most resemblances with *I. bivittata*, only differing in the degree of striation of the upper head shields, and the almost absence of supraciliar granules between the supraciliar plates and the supraocular plates. Although Loveridge (1933), who examined the only specimen of *I. tanganicana* in London himself, is confident that the differences between *I. tanganicana* and *I. bivittata* are clearly distinguishable, I tend to the position that a single specimen is above all a single specimen, which might have some deviating characters, but not a species. Add to this the lack of a terra typica, and the absence of additional material, there is no reason to uphold this species, as suggested by Mayer (2013), unless future phylogenetic research might prove differently.

**Ichnotropis chapini**

More or less the same is applicable to *I. chapini*, which according Boulenger’s keys is most related to *I. capensis* and *I. longipes*, differing in only two keys. The first, what might appear as a big difference, the superposed double anterior loreal plates, could easily be an individual deviation.
<table>
<thead>
<tr>
<th>Year</th>
<th>Species</th>
<th>n=1</th>
<th>n=21</th>
<th>n=11</th>
<th>n=4</th>
<th>n=1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>I. tanganica</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>I. bivittata</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>I. capensis</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>I. longipes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>I. chapini</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Upper head shields strongly striated**

**Single frontonasal plate**

**Subocular plate bordering the mouth**

**Occipital plate present**

**34-40 scales and plates around middle of the body**

**8-15 femoral pores**

**Anterior loreal plate(s)**

**Frонтonasal plate broader than long**

**Prefrontal plate in contact with anterior of the two large supraocular plates**

**Large supraocular plates in contact with superciliar plates**

**Hind limbs**

<table>
<thead>
<tr>
<th></th>
<th>I. tanganica</th>
<th>I. bivittata</th>
<th>I. capensis</th>
<th>I. longipes</th>
<th>I. chapini</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=1</td>
<td>n=21</td>
<td>n=11</td>
<td>n=4</td>
<td>n=1</td>
</tr>
<tr>
<td>Upper head shields strongly striated</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Single frontonasal plate</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Subocular plate bordering the mouth</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Occipital plate present</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>34-40 scales and plates around middle of the body</td>
<td>36</td>
<td>34-40</td>
<td>34-36</td>
<td>36-38</td>
<td>35</td>
</tr>
<tr>
<td>8-15 femoral pores</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Anterior loreal plate(s)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Frонтonasal plate broader than long</td>
<td>equal</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Prefrontal plate in contact with anterior of the two large supraocular plates</td>
<td>yes</td>
<td>usually</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Large supraocular plates in contact with superciliar plates</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Hind limbs</td>
<td>short</td>
<td>short</td>
<td>medium</td>
<td>long</td>
<td>short</td>
</tr>
</tbody>
</table>

**Table 1.** Representation of the key to the species by BOULENGER (1921), completed (1) with data from SCHMIDT (1919), and (2) data from INEICH & LE GARFF (2015). (2*) is referring to two superposed small anterior loreal plates in contrast to one big anterior loreal plate.

The second, the frontonasal plate which is not broader than long, could also easily be an individual deviation, and even less distinct. Compare these plates in the images given for *I. bivittata* and *I. chapini*, are they that different? To base conclusions on such observations, you need at least a few extra specimens, and preferably a lot more. Fortunately LAURENT makes the following remark: “It remains to emphasize the fact, until now passed unnoticed, of the invalidity of the allegedly diagnostic character of *chapini*, namely the existence of two superimposed frenales (=loreals). In the two specimens of Adra, already mentioned in 1933 by G.F. DE WITTE, the anterior frenal is singular.” (LAURENT 1952).

---

**Fig. 228.** Dorsal view of *I. bivittata* (INEICH & LE GARFF 2015).

**Fig. 229.** Dorsal view of *I. capensis* (BROADLEY & HOWELL 1991).

**Fig. 230.** Dorsal view of *I. chapini* (SCHMIDT 1919).
According to the authors *I. overlaeti* is different from *I. bivittata* by the position of the large anterior supraocular plate, separated from the prefrontal by one or more small supraocular plates. (DE WITTE & LAURENT 1942). This argument is the same as the biggest difference between *I. bivittata* and both *I. capensis* and *I. longipes*. *Ichnotropis* *overlaeti* should be different compared to *I. capensis* by the dimension of the large anterior supraocular plate, being longer than the distance that separates it from the posterior frenal (=loreal) (DE WITTE & LAURENT 1942). Subsequently this should become a new key, if we really could believe this would be a valid argument for assigning a new species. We are fortunate that LOVERIDGE (1953) had considered this, and obviously rejected it, by placing *I. overlaeti* in the synonymy of *I. capensis*.

### Table 2. Adapted key to the species based on BOULENGER (1921). New “species” *I. overlaeti* is listed (DE WITTE & LAURENT 1942).

<table>
<thead>
<tr>
<th>1942</th>
<th><em>I. bivittata</em></th>
<th><em>I. capensis</em></th>
<th><em>I. longipes</em></th>
<th><em>I. chapini</em></th>
<th><em>I. overlaeti</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper head shields strongly striated</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Single frontonasal plate</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Subocular plate bordering the mouth</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Occipital plate present</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>34-40 scales and plates around middle of the body</td>
<td>34-40</td>
<td>34-36</td>
<td>36-38</td>
<td>35</td>
<td>33-38</td>
</tr>
<tr>
<td>8-15 femoral pores</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>11-12</td>
</tr>
<tr>
<td>Frontonasal plate broader than long</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>equal</td>
</tr>
<tr>
<td>Prefrontal plate in contact with anterior of the two large supraocular plates</td>
<td>usually</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Large supraocular plates in contact with superciliar plates</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Hind limbs</td>
<td>short</td>
<td>medium</td>
<td>long</td>
<td>short</td>
<td>?</td>
</tr>
</tbody>
</table>

Consequently, we have to delete this key (implemented in table 2). However the isolated location of this alleged species, separated from all other known observations of *Ichnotropis* by a large strip of rainforest, might be in favor of a special status. Future phylogenetic research might solve this question too.

### *Ichnotropis macrolepidota*

The position of *I. macrolepidota* is simple: BOULENGER placed this species in the synonymy of *I. capensis* (BOULENGER 1921), what can be supported given the published specifications (PETERS 1854), and confirmed by LOVERIDGE (1953).

### *Ichnotropis overlaeti*

*Ichnotropis overlaeti* is considered to be a new species by DE WITTE & LAURENT (1942), based on 5 specimens, with a female paratype (R.G. 40) from Kwango, which was earlier described as *Ichnotropis capensis* by BOULENGER (1897). No information was given on the relative length of the hind limb.

According the keys, the only difference with the other *Ichnotropis* forms is the shape of the frontonasal plate.

DE WITTE & LAURENT (1942) are suggesting that this new species is most closely related to *Ichnotropis bivittata* and *Ichnotropis capensis*.
Annotated bibliographic history of *Ichnotropis*

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L'AURENT (1952) introduced one new discriminating character: coloration. He suggested that *I. c. nigrescens* most resembled *I. c. capensis* and *I. c. chapini*, however the coloration of *I. c. nigrescens* was much darker, especially on the ventral side. Additional *I. c. nigrescens* differs from *I. c. overlaeti* by a much larger frontonasal plate (L'AURENT 1952).

L'AURENT (1952) also focused on the frontonasal plate broader than long key. He compared width/length ratios:

<table>
<thead>
<tr>
<th>Character</th>
<th><em>I. bivittata</em> n=21</th>
<th><em>I. capensis</em> n=20</th>
<th><em>I. chapini</em> n=1</th>
<th><em>I. c. nigrescens</em> n=1 (out of 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper head shields strongly striated</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Single frontonasal plate</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Subocular plate bordering the mouth</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Occipital plate present</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>34-40 scales and plates around middle of the body</td>
<td>34-40</td>
<td>34-38</td>
<td>35</td>
<td>between 33-38</td>
</tr>
<tr>
<td>8-15 femoral pores</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>11 or 12</td>
</tr>
<tr>
<td>Frontonasal plate broader than long</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>both</td>
</tr>
<tr>
<td>Prefrontal plate in contact with anterior of the two large supraocular plates</td>
<td>usually</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Large supraocular plates in contact with superciliar plates</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

Table 3. Key to the species adapted to LOVERIDGE (1953). New “subspecies” *I. capensis nigrescens* is listed (L'AURENT 1952).

**Ichnotropis longipes**

Not satisfied by the head/foot ratio of males as key, and given the previously raised doubt by HEWITT & CAMB (1916), LOVERIDGE (1953) reexamined this feature, and came to the conclusion that there is no basis for separation of a zoo-geographical race based on this character. Consequently *I. longipes* disappears in the synonymy of *I. capensis* (LOVERIDGE 1953), which latter fact is implemented in Table 3.

**Ichnotropis capensis nigrescens**

When describing *Ichnotropis capensis nigrescens* only two collection locations (Bolobo and Luluabourg) are presented (L'AURENT 1952). The record for Luluabourg was previously described as *I. overlaeti* (DE WITTE & LAURENT 1942), what enabled me to list *I. c. nigrescens* in table 3, otherwise it would have been impossible, because L'AURENT (1952) was focussing in his description on other things, and actually questioning the keys used so far as reliable discriminating factors.

L'AURENT (1952) was convinced that geographical (habitat) differences were a more logical way to distinguish between forms. However, this kind of data was previous commonly not included, so L'AURENT (1952) had no alternative to admit provisionally a series of races, consequently introducing the odd phenomenon of sympatric subspecies (*I. capensis bivittata* living in the same area of Luluabourg as *I. capensis nigrescens* and probably not separated by different habitat).

LAURENT (1952) introduced new discriminating character: coloration. He suggested that *I. c. nigrescens* most resembled *I. c. capensis* and *I. c. chapini*, however the coloration of *I. c. nigrescens* was much darker, especially on the ventral side. Additional *I. c. nigrescens* differs from *I. c. overlaeti* by a much larger frontonasal plate (LAURENT 1952).

LAURENT (1952) also focused on the frontonasal plate broader than long key. He compared width/length ratios:

<table>
<thead>
<tr>
<th>Species</th>
<th>Width/Length Ratio</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>I. overlaeti</em></td>
<td>0.85 - 1.14</td>
<td>n = 4 (used to be 5)</td>
</tr>
<tr>
<td><em>I. capensis</em></td>
<td>1.18 - 1.22</td>
<td>n = 2</td>
</tr>
<tr>
<td><em>I. chapini</em></td>
<td>1.11 - 1.43</td>
<td>n = 3</td>
</tr>
</tbody>
</table>

Given the sample size not statistical very convincing data. Moreover, DE WITTE & LAURENT (1942) considered the *I. overlaeti* frontonasal plate broader than long key still as equal. The truth should be found somewhere in the middle.

Are the given characteristics enough to defend the erection of a new subspecies? In 2012 we disregarded all the erected subspecies on www.lacerta.de, including *I. c. nigrescens*, because, in the case of the latter, 2 darker lizards, next to the introduction of sympatric subspecies, was not convincing at all. Unless future phylogenetic research might prove differently, *I. c. nigrescens* will keep the invalid assignation.
### 1956

<table>
<thead>
<tr>
<th>Character</th>
<th>I. bivittata n=25</th>
<th>I. capensis n=20</th>
<th>I. chapini n=1</th>
<th>I. microlepidota n=5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper head shields strongly striated</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Single frontonasal plate</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Subocular plate bordering the mouth</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Occipital plate present</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>32-40 scales and plates around middle of the body</td>
<td>32-40</td>
<td>34-38</td>
<td>35</td>
<td>43-50</td>
</tr>
<tr>
<td>8-15 femoral pores</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>10-13</td>
</tr>
<tr>
<td>Frontonasal plate broader than long</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes(^1)</td>
</tr>
<tr>
<td>Prefrontal plate in contact with anterior of the two large supraocular plates</td>
<td>usually</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Large supraocular plates in contact with superciliar plates</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Subdigital lamellae under the 4th toe less than 18</td>
<td>18-24</td>
<td>18-24</td>
<td>?</td>
<td>16-17</td>
</tr>
</tbody>
</table>

Table 4. Key to the species adapted to MARX (1956). (\(^1\)): See figure 232. (\(^2\)): adjusted for added specimens of *I. bivittata*.

### *Ichnotropis microlepidota*

Probably the best story told in the genus of *Ichnotropis* is the terra typica of *I. microlepidota*; the crop of a shot chanting goshawk at the foot of Mount Moco in Angola (see introduction), in which it appeared together with the 4 paratypes, the only 5 specimens ever recorded. Maybe the *I. bivittata* specimen of PARKER (1936) should have been included in this species.

The differences to *I. bivittata*, which is the most resembling species, and all other species, are clear: Higher number of scales around middle of the body, resulting in smaller dorsal scales, and a slightly lesser count of subdigital lamellae under the 4th toe, which feature is now added to the list of keys.

MAYER (2013) considers this a doubtful species, but for now I will leave it listed for further comparison.

![Fig. 232. Holotype of *Ichnotropis microlepidota* (MARX 1956).](image-url)
1964

<table>
<thead>
<tr>
<th></th>
<th>I. bivittata</th>
<th>I. capensis</th>
<th>I. chapini</th>
<th>I. microlepidota</th>
<th>I. b. pallida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper head shields strongly striated</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Single frontonasal plate</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Subocular plate bordering the mouth</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Occipital plate present</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>32-40 scales and plates around middle of the body</td>
<td>32-40</td>
<td>34-38</td>
<td>35</td>
<td>43-50</td>
<td>36</td>
</tr>
<tr>
<td>8-15 femoral pores</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>10-13</td>
<td>11</td>
</tr>
<tr>
<td>Frontonasal plate broader than long</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Prefrontal plate in contact with anterior of the two large supraocular plates</td>
<td>usually</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Large supraocular plates in contact with supracleial plates</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Subdigital lamellae under the 4th toe less than 18</td>
<td>18-24</td>
<td>18-24</td>
<td>?</td>
<td>16-17</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 5. Key to the species adapted to MARX (1956). New “subspecies” I. bivittata pallida is listed (LAURENT 1964).

**Ichnotropis bivittata pallida**

Probably LAURENT had been able to read about the biological species concept (MAYR 1942), and must have come to the conclusion that sympatric subspecies was not a very proper taxonomical approach. Consequently he restored the specific status of *Ichnotropis bivittata*, and in the process found even a specimen that could provide a second subspecies; *Ichnotropis bivittata pallida* (LAURENT 1964).

According the list of keys, this is indeed *I. bivittata*; no differences at all. But LAURENT (1964) did find some differences: It looks more pale, which must have been in connection with its sub-desert habitat, the foot a little longer compared to the head, the scales and striated cephalic plates less prominent, the interparietale has curved edges and converging towards the rear, and with a posterior edge situated in front of that of the parietalia, the frontoparietalia rather small and separated from each other by the interparietale, that touches the fronto plate (LAURENT 1964). A very impressive list of differences, most of them visible in figure 233. Too bad we are treated with only one specimen, so we cannot exclude the possibility of individual variation.

In accordance with the situation around *I. c. nigrescens*, and unless future phylogenetic research might prove differently, I regard this specimen as synonym of *I. bivittata*, without extra subspecies designation.
1967

<table>
<thead>
<tr>
<th></th>
<th>I. bivittata n=25</th>
<th>I. capensis n=20</th>
<th>I. chapini n=1</th>
<th>I. microlepidota n=5</th>
<th>I. grandiceps n=3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper head shields strongly striated</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Single frontonasal plate</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Subocular plate bordering the mouth</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Occipital plate present</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>32-40 scales and plates around middle of the body</td>
<td>32-40</td>
<td>34-38</td>
<td>35</td>
<td>43-50</td>
<td>44-47</td>
</tr>
<tr>
<td>8-15 femoral pores</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>10-13</td>
<td>12-13</td>
</tr>
<tr>
<td>Frontonasal plate broader than long</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Prefrontal plate in contact with anterior of the two large supraocular plates</td>
<td>usually</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Large supraocular plates in contact with superciliar plates</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Subdigital lamellae under the 4th toe less than 18</td>
<td>18-24</td>
<td>18-24</td>
<td>?</td>
<td>16-17</td>
<td>23-26</td>
</tr>
</tbody>
</table>

Table 6. Key to the species adapted to MARX (1956). Ichnotropis grandiceps is listed (BROADLEY 1967).

**Ichnotropis grandiceps**

According the list of keys, it looks if *I. grandiceps* is the small scaled variation of *I. capensis*, like *I. microlepidota* is the small scaled variation of *I. bivittata*. This is at least intriguing, and requires additional investigation. Equally intriguing is the absence of new records for both *I. microlepidota* and *I. grandiceps* in recent years.

BROADLEY (1967) described some additional discriminating characters: Relative large head compared to *I. capensis*, less pronounced striation of the upper head shields compared to all listed species, consistently having 4 upper labial plates anterior to the subocular plate, and larger snout-vent length compared to *I. microlepidota*. The first character, the relative bigger head, might be true, but none of the underlying data are presented. The characters regarding striation, and 4 upper labial plates are weak, due to the small sample size. The last given difference with *I. microlepidota*, the number of subdigital lamellae under the 4th toe, is valid, but seen the relative small difference of this key to the range in some of the other species, I will abandon this key. In order to simplify the morphological keys even further, the same is applicable to the frontonasal plate broader than long key, and all other keys which show no distinction within the present genus, and previously

<table>
<thead>
<tr>
<th></th>
<th>I. bivittata n=25</th>
<th>I. capensis n=20</th>
<th>I. chapini n=1</th>
<th>I. microlepidota n=5</th>
<th>I. grandiceps n=3</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-40 scales and plates around middle of the body</td>
<td>32-40</td>
<td>34-38</td>
<td>35</td>
<td>43-50</td>
<td>44-47</td>
</tr>
<tr>
<td>Prefrontal plate in contact with anterior of the two large supraocular plates</td>
<td>usually</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

Table 7. Morphological key to the species of *Ichnotropis*, originally based on BOULENGER (1921), adapted to the current findings.
only were necessary to distinguish with Meroles (Ichnotropis) squamulosa. The remaining two keys are presented in table 7.

Although the present taxonomy of Ichnotropis is not confirmed by breeding experiments nor genetics, Edwards et al. (2013) did demonstrate that there are at least two different species within the genus. The used Ichnotropis SANBI herpbank specimens KTH09-075, assigned to I. bivittata, and AMB6001, AMB6007, WP031, all three assigned to I. capensis, did show in the constructed phylogenetic tree sufficient basis for speciation (Edwards et al. 2013). If there is conformity between genetics and the present morphological keys, remains to be seen. Until more genetic data becomes available, I consider the listed species in table 7 as

<table>
<thead>
<tr>
<th></th>
<th>Tropical savanna</th>
<th>Warm desert</th>
<th>Warm semi-arid</th>
<th>Humid subtropical</th>
<th>Humid subtropical Subtropical oceanic highland</th>
<th>Warm oceanic</th>
<th>Humid subtropical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ichnotropis capensis</td>
<td>14%</td>
<td>2%</td>
<td>46%</td>
<td>27%</td>
<td>8%</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Ichnotropis chapini</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ichnotropis grandiceps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ichnotropis bivittata</td>
<td>32%</td>
<td>3%</td>
<td>15%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ichnotropis microlepidota</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 235. Gathered distribution records plotted on the KÖPPEN-GEIGER climate classification map (Peel et al. 2007). A: Records for I. capensis including synonyms (red), I. chapini (green) and I. grandiceps (white). B: Records for I. bivittata including synonym (blue) and I. microlepidota (white).
possible species, which, according to the morphological keys, could represent two groups: Group A, including *I. capensis*, *I. chapini* and *I. grandiceps*, and group B, including *I. bivittata* and *I. microlepidota*. I have presented the gathered distribution data of these 5 possible species on the Köppen-Geiger climate classification map (Peel et al. 2007), and extracted the data regarding occurrence in different climate zones, presented in figure 235. This data is for illustration of the differences within these possible species only, and might become, after a future genetic based revision of the genus, completely different. However, at least the maps provide a nice overview on the present distribution situation.

**Conclusions**

1. **Taxonomic history**

In the early days of the genus, a few demonstrable mistakes were included in the taxonomic history of *Ichnotropis*. From these mistakes, the wrongly identified records of what should have been *Tropidosaura montana*, are usually still listed as a synonym of *Ichnotropis* (Uetz 2017). It is therefore necessary that *Ichnotropis* synonym lists will be stripped of the following records: *Tropidosaura capensis* Duméril & Bibron (1839), *Tropidosaura capensis* Steindachner (1867), and *Thermophilus capensis* Fitzinger (1843), all three being a synonym of *Tropidosaura montana* Fitzinger, 1826.

2. **Necessary additional research**

In order to understand the taxonomy of *Ichnotropis* better than today, it is necessary to perform a phylogenetic investigation of the voucher specimens of all previously described taxa, together with a selection of museum specimens, which have a special interest because of their geographical origin. Regarding the special geographical interest locations we might think of extremities in the expected distribution ranges, possible overlapping areas, and opposed to the usual highland habitats, the lowland collection locations, which are also different by the deviating climate conditions. Such research could provide the answers to many open questions in this poorly understood genus.

![Fig. 237. Male *I. bivittata* near Kinshasa.](image1)

### Higher Taxis Lacertidae, Sauropsida, Squamata (Sauria)

<table>
<thead>
<tr>
<th>Subspecies</th>
<th>Common Names</th>
<th>Synonym</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ichnotropis capensis capensis</em> (Smitt, 1828)</td>
<td>Cape rough-necked lizard, Smith’s rough-necked lizard</td>
<td><em>Aphysca capensis</em> Smitt, 1828</td>
</tr>
<tr>
<td><em>Ichnotropis capensis microlepidota</em> Laurent, 1852</td>
<td></td>
<td><em>Tropidosaura microlepidota</em> Laurent, 1852</td>
</tr>
<tr>
<td><em>Ichnotropis chapini</em> Duméril &amp; Bibron (1839)</td>
<td></td>
<td><em>Tropidosaura chapini</em> Duméril &amp; Bibron, 1839</td>
</tr>
<tr>
<td><em>Ichnotropis grandiceps</em> Duméril &amp; Bibron (1839)</td>
<td></td>
<td><em>Tropidosaura grandiceps</em> Duméril &amp; Bibron, 1839</td>
</tr>
<tr>
<td><em>Ichnotropis bivittata</em> Duméril &amp; Bibron (1839)</td>
<td></td>
<td><em>Tropidosaura bivittata</em> Duméril &amp; Bibron, 1839</td>
</tr>
<tr>
<td><em>Ichnotropis microlepidota</em> Duméril &amp; Bibron (1839)</td>
<td></td>
<td><em>Tropidosaura microlepidota</em> Duméril &amp; Bibron, 1839</td>
</tr>
</tbody>
</table>

![Fig. 238. Synonym list of *I. capensis* in Uetz (2017).](image2)

![Fig. 239. Holotype of *Ichnotropis grandiceps* in the National Museum of Natural History.](image3)
Acknowledgement

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References


MARAI, J. (2009a): Trip to Caprivi/Namibia with AARON BAUER and BILL BRANCH. - www.johanmarais.co.za


