STUDIES ON THE FAUNA OF CURAÇAO AND OTHER CARIBBEAN ISLANDS: No. 124.

LIZARDS OF THE GENUS CNEMIDOPHORUS FROM THE LEEWARD GROUP AND THE ADJACENT MAINLAND OF SOUTH AMERICA

by

LIESBETH LAMMERÉE

(Zoölogisch Laboratorium, Utrecht)

When WAGENAAR HUMMELINCK (1940, p. 83–85) made a survey of the lizards of Curaçao, Aruba, Bonaire and the Venezuelan Islands, he could give no more than a short list of specimens collected, together with a few critical remarks, and a single table on "Variation in *Cnemidophorus*" based on 379 specimens. In later years more material has been collected by the same investigator in the same region, which has been entrusted to the author for further study. This enabled her to give special attention to a few data which have been disturbing the zoogeographical concept of the *lemniscatus*-group for a long time already.

It has been known for quite a while that the species *Cnemidophorus lemniscatus* has a remarkably uniform distribution along the northern coast of South America as far as Suriname, while on the chain of islands nearby, which is called Leeward Group – in contrast to the Windward Group which comprises the Lesser Antilles from the Virgin Islands to Grenada – a number of species and subspecies occur which may be more or less related to the mainland species. Up till now the classification of these island populations appears to be a question of individual taste only, in which an arbitrary judgement is necessarily involved.

When visiting Aruba's Hydroponics Farm in 1963, HUMMELINCK witnessed the destruction of many live *Cnemidophorus* which were infesting the beds of vegetables and causing considerable damage. These lizards (vernacular name: blausana, kodo-do, ragadiesjie) were caught in primitively made wire-traps with lettuce as a bait. In co-operation with E. J. VAN DER KUIP and his assistants a fair number of speci-

mens were collected, and entrusted to the author for further examination within the scope of her students' practical course in taxonomy.

Thanks are due to dr. P. WAGENAAR HUMMELINCK for his kind interest in my work; to drs. M. S. HOOGMOED, Jr., from the Rijksmuseum van Natuurlijke Historie at Leiden (RMNH), and to dr. D. HILLENIUS, Zoölogisch Museum of Amsterdam (ZMA), for the loan of material.

For the photographs I have to thank dr. HUMMELINCK and Mr. H. VAN KOOTEN and his assistants from the Zoological Laboratory at Utrecht: Plates Ia, II–III & IX–XII, from life; Ib, from a freshly killed specimen; IV–VIII, from alcohol-specimens.

Since SEBA (1735, p. 88, 145) described two lizards from the New World, which were introduced into zoological literature as *Lacerta lemniscata* LINNAEUS (1758, p. 209) and as *Seps murinus* LAURENTI (1768, p. 63), there has been much confusion about the distribution of these species (see BURT 1931, p. 50). The latter further mentions (1) WERNER's report (1900, p. 266) on a *murinus*, said to have been collected at Puerto Cabello, Venezuela; (2) VAN LIDTH DE JEUDE's (1904, p. 89) Gonini-specimen, and (3) BEEBE's record (1919, p. 212) from Bartica District, Guyana. BURT, furthermore, seems to be surprised by (4) DE ROOY's (1922, p. 252) listing of a *Cnemidophorus murinus* from "Caracas Bay," as most of her other specimens came from Curaçao. His feelings of doubt were lessened, however, by two specimens in the collection of the American Museum of Natural History (AMNH) being labelled "Guiana, South America" and "Venezuela."

In this connection the following remarks should be made:
(1) As WERNER's description clearly refers to a specimen of *Cnemidophorus lemniscatus*, no problems arise from this misidentification.
(2) No trace of any material referring to VAN LIDTH DE JEUDE's "*Cnemidophorus murinus*, Laur. One specimen from the Gonini. Collected Oct. 9th '03," Suriname, could be discovered in the Leyden Museum.
(3) BEEBE's Guyana record refers to *Cnemidophorus lemniscatus*.
(4) Caracas Bay (Caracas Baai, in older times "Kraken Baai"), mentioned by Miss DE ROOY, is a well-known bay in Curaçao, where much collecting has been done by dr. C. J. VAN DER HORST in 1920.

In the Leyden Museum, two male specimens (RMNH 3404) of

Cnemidophorus murinus murinus (body-length 143–151 mm) are labelled "Suriname," while from the Zoölogisch Museum of Amsterdam two more male specimens of the same subspecies from "Suriname" (ZMA 12753 and 12735) may be mentioned (body-length 58 and 146 mm resp.).

According to HUMMELINCK (1940, p. 85) the records of *murinus* "in Venezuela, Trinidad and Guyana ... probably refer to introduced specimens or are caused by inexact labelling." In later years this investigator observed large specimens of *lemniscatus* near Caracas (Ven.) and at Brokopondo (Sur.), showing a colour design which looks similar to that of typical *murinus*.

The author has no doubt whatsoever about *Cnemidophorus murinus murinus* being confined to the island of Curaçao.

MEASUREMENTS

Body-length: from the tip of the snout to the anterior margin of the anus. [Fig. 22]

Tail-length: from the anterior margin of the anus to the tip of the tail. – Measurements have been made from complete tails (other measurements are placed in parenthesis).

The tail-length in both ♂ and ♀ specimens does not increase with growth. The impression was confirmed that in smaller specimens tails are – as a rule – relatively longer. We may accept that completely regenerated tails are generally slightly shorter than normal ones. Regarding individual cases, there are quite a number of regenerated tails which are relatively longer than normal ones. Comparing the total length of the ten longest regenerated specimens of *arubensis* to normal specimens of about the same body-length, the tail of the first lot appeared to be *2.14*, of the second lot *2.28* body-length. [Fig. 23]

Total length: body-length and tail-length combined. – To be used used only if the tail is complete.

Head-length: from the tip of the snout to the posterior margin of the ear, along a line parallel to the median axis of the head.

Head-width, taken at two points: the greatest width, and the width at temporal level.

Foreleg: from the insertion of the limb to the tip of the longest finger, excluding the claws.

The length of the foreleg is relatively the same in males and females, and is not influenced by growth. The same may be said of the hindleg and its longest finger.

Hindleg: from the insertion of the limb to the tip of the longest finger, excluding the claws.

Longest finger of hindleg: from the insertion of the finger to its tip, excluding the claw.

Thumb: from the insertion of the thumb to its tip, excluding the claw.

The length of the thumb is relatively the same in males and females. [Fig. 24]

Axilla-groin: from the posterior margin of insertion of the foreleg to the anterior margin of insertion of the hindleg.

As expected, this measurement corresponds with the body-length.

Hindlegs adpressed: the distance between the longest fingers of the hindleg and snout.

This distance is merely a function of the length of the hindleg and the distance axilla-groin; a most unreliable measurement in preserved specimens.

Limbs adpressed: the distance between the longest fingers of the corresponding front- and hindlegs.

This distance is almost constant; it certainly does not increase with body-length, which also may follow from the length of the legs, being independent of growth.

Longitudinal rows of ventrals: Counting of these rows is often very arbitrary; small or undeveloped lateral rows of scales

have been counted as halves or quarter rows, as follows: ¼–8–¼ or ½–8–½, and indicated in the graphs as 8½ or 9, although these numbers per individual do not exist.

No difference between males and females could be observed. – A characteristic which is preferably used by herpetologists when studying *Cnemidophorus*. [Fig. 25]

Transverse rows of ventrals: Counting of these rows is relatively easy..

No difference between males and females could be observed, but the differences between species are well defined. – A characteristic to which, in our opinion, still too little value is attached by herpetologists. [Fig. 26]

Femoral pores: Counted at the right and the left side separately.

No distinct difference in number of femoral pores between males and females, and between right and left could be observed. – A characteristic independent of size, which may very well be used for systematic purposes. [Fig. 27]

Caudals in 15th tailring: The number of scales in the 15th caudal ring behind de cloaca.

A characteristic which – as far as we know – has never been used in *Cnemidophorus*, but still may be of use in discerning different species. [Fig. 28]

Suprabrachials: Counting of these plates is often very arbitrary.

A characteristic which appears to be not very valuable for separating species. [Fig. 29]

Continuity of brachials: The following distinctions were made, and indicated 1–4 for practical use: 1 = brachials continuous; 2 = brachials subcontinuous; 3 = brachials narrowly discontinuous; 4 = brachials discontinuous.

A characteristic which, because of its subjectivity, is only valuable for taxonomic purposes in special cases. [Fig. 30]

Pre-anal plates: The series of 3–5 enlarged scales just anterior to the cloaca. [Fig. 31]

Pre-anal scales: A row of smaller scales encircling the preanal plates. Not counted are the very small scales at the anterior margin of the cloaca.

The number of pre-anal plates and scales appears to be scarcely variable, and shows no sexual differences. [Fig. 32]

No distinct variation in Supraoculars (3), Parietals (5), Anal scales (2–3) and Circumorbital scales (class I of ZWEIFEL 1965, fig. 6) could be observed.

Cnemidophorus lemniscatus lemniscatus (Linnaeus, 1758)

(Figs. 22, 24–34; Pl. Ia)

blauwe Hagedis, MERIAN 1719, pl. 23. ["De blauwe Hagedis met haare eyers vertoone ik voornamentlyk hier by, om het blad te vercieren, sy had haar nest in myn huis in de grond gemaakt, in het nest lagen vier eyeren, wit en rond, zo als op den steel drie te zien zyn, deze heb ik op myn reize naar Holland mede scheep genomen, daar my den jonge Hagedissen op Zee uitkwamen, zo klein als op den steel een te zien is, maar uit gebrek van haar moeder en voetzel zyn sy gestorven."]

Lacerta, Africana, Guineensis, SEBA 1734, p. 145, pl. 92 fig. 4. ["Caeruleus color totum corporis truncum, à capite ad caudam usque, tingit, plurimus variegatus, supra dorsum praecipuè, lemniscis albicantibus. Caput gracile insignes squamae obtegunt. Cervix, femora, pedes, & venter rhomboideis squamis vestiuntur. Cauda exilibus annulis, marmoris in modum variegatis, cincta est." — *"Afrikaanse Hagedis van Guinea.* Deze blaauwe Guineesche Hagedis is vol met witte banden over den rug en 't gehele lijf, van het hoofd tot aan den staart. Het kleine, smalle, hoofdt is met grote schubben belegt, en de nek, schinkels en benen, als mede de buik, zijn met ruitige schubben bekleed. De staart is fijn geringt en gemarmert."] Fig. 33.

Lacerta, Americanus, lemniscatus, SEBA, 1734, p. 88, pl. 53 fig. 9. ["Dorsum ejus versicolores ornant taeniae; dum caudam annuli ambiunt, squammaeque insignes, albae, tegunt caput. Caeterum totus colore dilute caeruleo perfundatus est." — *"West-Indisch Hagedisje.* Het zelve is met verscheide verwen van bandtjes over den rug gesiert, met een geringt staartje, zynde 't hoofdt met grote, witte schobben gedekt. Voorts is het geheel licht blaauwverwig."] Fig. 34.

non Lacerta, Brasiliensis, de Bahia, Taraguira incolis vocata, SEBA 1734, p. 144. pl. 91 fig. 3. [Considered by BURT 1931, p. 32, as being indicated by LINNAEUS as *Lacerta lemniscata.*]

Lacerta lemniscata, LINNAEUS 1754, p. 47. [*"cauda tereti longa, pedibus pentadactylis,*

dorso lineis longitudinalibus octo striato. Amoen. Acad. 1. p. 130. n. 16. Syst. nat. 36. n. 20. Differt a praecedenti lineis albis longitudinalibus octo, femoribus albo punctatis, digitis ubique quinquis. &c."]

Lacerta lemniscata LINNAEUS, 1758, p. 209. ["L. cauda tereti longa, dorso lineis octo striatis. *Mus. Ad. Fr.* 1. *p.* 47. Lacerta eadem. *Seb. mus.* 1. *t.* 92. *f.* 4. *Habitat in* Guinea. *Multum affinis L. agili.*"]

Seps lemniscatus; LAURENTI 1768, p. 60. [Refers to SEBA, pl. 92 fig. 4.]

Teivs lemniscatus; MERREM 1820, p. 60–61. [Refers to SEBA, pl. 53 fig. 9, pl. 92 fig. 4. MERIAN, pl. 23. LINNAEUS 1758, and later authors.]

?Ameiva murina; FITZINGER 1826, p. 51. ["ex America, Surinamia."]

Cnemidophorus lemniscatus; DUMÉRIL & BIBRON 1839, p. 128–131. ["Des scutelles sur la face supérieure du haut des bras. Huit séries longitudinales de plaques ventrales." Refers to MERIAN, pl. 23, SEBA, pl. 91 fig. 3, and other authors, but not to LINNAEUS. "Le Cnemidophore galonné nous a très souvent été envoyé de Cayenne. Nous en possédons aussi un individu adressé de la Martinique par M. Plée. Le musée royal des Pays-Bas en renferme des exemplaires qui proviennent de Surinam."]

— *lemniscatus*; DUMÉRIL & BOCOURT 1870, p. 268. [Name only.]

— *lemniscatus*; BOULENGER 1885, p. 363. [Description; Colombia, Venezuela, Trinidad, Guyana, Brasil.]

— *lemniscatus*; VAN LIDTH DE JEUDE 1887, p. 132. [Caracas.]

— *lemniscatus*; COPE 1892, p. 30. – 1900, p. 568. [No new data.]

— *lemniscatus*; WERNER 1900, 266. ["Orocué, Mai 1897; St. Thomas, Okt. 1896; Curaçao, Okt. 1896." Doubtful.]

— *murinus*; VAN LIDTH DE JEUDE 1904, p. 89. ["One specimen from the Gonini, collected Oct. 9th '03." Doubtful.]

— *lemniscatus*; GADOW, 1906, p. 301. [In table only.]

— *lemniscatus*; MEEK 1910, p. 417. [Margarita and mainland of Venezuela.]

— *murinus*; VAN LIDTH DE JEUDE 1914, p. 206. ["In Suriname komen ... voor: *Cnemidophorus murinus* Laur. die olijfgroen gekleurd is met groote ronde blauwe vlekken op de zijden, en *Cnemidophorus lemniscatus* Daud. met witte met zwart afgezette langsstreepen op den rug."]

— *lemniscatus gaigei* RUTHVEN, 1915, p. 1–5, pl. 1. [Colombia, Santa Marta.]

— *lemniscatus* (*lemniscatus*); RUTHVEN 1915, p. 1, pl. 1. [Guyana.]

— *lemniscatus lemniscatus*; BARBOUR 1916, p. 221. [Tobago.]

— *lemniscatus lemniscatus*; BEEBE 1919, p. 212. [British Guiana.]

— *murinus*; BEEBE 1919, p. 212. [Bartica-district, British Guiana.]

— *lemniscatus lemniscatus*; BURT & BURT, 1931. [Refers to LINNAEUS' *Lacerta lemniscata* and DUMÉRIL & BIBRON's *Cnemidophorus lemniscatus*.] – 1931a, p. 324–325. [Brazil. British Guiana, Colombia, Dutch Guiana, Venezuela.]

— *lemniscatus lemniscatus*; BURT 1931, p. 30–40. [Full literature, systematic notes, diagnosis, description, habitats, habits and affinities. "The blue race runner occurs from northern Brazil and Colombia north to Guatamala. It is found on Tobago and Trinidad, as well as on Old Providence and other recently isolated coastal islands."]

— *lemniscatus lemniscatus*; EISENTRAUT 1933, p. 228–232. [Relationship between *C. lemniscatus lemniscatus* and *C. lemniscatus nigrocolor*.]

— *lemniscatus lemniscatus*; WAGENAAR HUMMELINCK 1940, p. 83–84. [Characters. "Werner cites Curaçao; this probably refers to an introduced specimen or

inexact labelling. Central America, Colombia, Venezuela, Guyana, northern Brazil, Trinidad, Tobago; Margarita, Cubagua!, Coche!, Los Testigos!, Los Frailes!"]

— *lemniscatus lemniscatus*; DUNN & SAXE 1950, p. 157–158. [San Andrés and Providencia. Systematic and biological notes.]

— *lemniscatus lemniscatus*; MARCUZZI 1951, p. 28–34. [Descriptions; Margarita, Los Frailes, Venez. continent.]

— *lemniscatus lemniscatus*; BEEBE 1952, p. 175. ["Striped Runner; Foot-shaker. Rara. Arima Valley, Trinidad."]

— *lemniscatus lemniscatus*; ALEMÁN 1952, p. 14. [Baruta – El Hatillo, Ven.]. – 1953, p. 208. [Sierra de Perija.]

— *lemniscatus lemniscatus*; RAND 1954, p. 260–261. [Mainland of Central America.]

— *lemniscatus lemniscatus*; BRONGERSMA 1956, p. 168–169. [Tobago. Figs. of frontoparietals and parietals.]

— *lemniscatus lemniscatus*; ROZE 1959, p. 13. [Monagas. Ven.]

— *lemniscatus lemniscatus*; UNDERWOOD 1962, p. 91, 169, 177. [Trinidad, Tobago, South America.]

SURINAME: Kabel, Sta. 564, 31.VIII.1955 (1 ♀, RMNH, Hummelinck); Brokopondo, 11.IX.1966 (1 ♀, ZMA 12691); 12.IX.1966 (2 ♀, ZMA 12693–94; 1 ♀ ZMA 12711); 14.IX.1966 (1 ♀, ZMA 12698); 31.X.1966 (1 ♀, ZMA 12710); 25.XI.1966 (1 ♀, ZMA 12701); 16.XI.1966 (1 ♀, ZMA 12702, all H. Nijssen coll.); Suriname, 1948–1949, Natuurwet. Suriname-Exp. (10 ♂, 2 ♀, RMNH); Suriname, about 1830 (2 ♂, 1 ♀, RMNH 3400, H. H. Dieperink); Suriname, 1844 (2 ♂, 3 ♀, RMNH 3404, Firma Frank).

VENEZUELA: Morro de Puerto Santo, E. of Carúpano, Sta. 126, 12.VI.1936 (1 ♂, RMNH 7755, Hummelinck); Morro de Chacopato, Araya, Sta. 127, 27.VI.1936 (1 ♂, RMNH 7756, Hummelinck); Carirubana, Paraguaná, Sta. 279, 15.II.1937 (1 ♀, RMNH 7753, Hummelinck); Caracas, about 1850 (3 ♂, 4 ♀, RMNH 3398, R. F. Lansberge); Venezuela, about 1885 (2 ♂, 1 ♀, RMNH 5688, J. R. H. Neervoort van de Poll).

COLOMBIA: Cabo de la Vela, Goajira, Sta. 290, 22.I.1937 (1 ♂, 2 ♀, RMNH 7750, Hummelinck); Río Hacha, Goajira, Sta. 293, 18.I.1937 (6 ♂, 4 ♀, RMNH 7751, Hummelinck).

TOBAGO: Crown Point, 28–30.X.1953 (2 ♂, RMNH 10167, G. F. Mees); Scarborough, 18.I.1955 (1 ♂, 1 ♀, Hummelinck).

TRINIDAD: *Chacachacare*, Sta. 580, 11.I.1955 (1 ♀).

LOS TESTIGOS: *Morro de la Iguana*, 14.VI.1936 (2 ♂, RMNH 7763, Hummelinck).

LOS FRAILES: *Puerto Real*, 18.VI.1936 (3 ♂, RMNH 7764, Hummelinck).

COCHE: 22.I.1936 (5 ♂, 1 ♀, RMNH 7757, Hummelinck).

MARGARITA: Punta Ballena, Pampatar, 9.V.1936 (1 ♂, ZMA); Porlamar, 19.V.1936 (5 ♂, 1 ♀, RMNH 7761); 5.VIII.1936 (1 ♂, ZMA 12713); El Cerrito, E. La Asunción, 27.V.1936 (1 ♂, RMNH 7760); Playa Brava, S. Porlamar, 4.VI.1936 (1 ♀, RMNH 7762); San Juan Bautista, 11.VIII.1936 (1 ♀, RMNH 7762). – All Hummelinck coll.

ARUBA: San Nicolas, 16.IV.1953 (1 ♀, Frère Antoon van Vorstenbosch; Pl. VI).

Without locality: (4 ♂. ZMA 10336).

Measurements (54♂ and 38♀, see list of material)

Body-length: ♂ 45–*74.78*–93 mm. ♀ 36–*61.50*–75 mm. [Fig. 22]
Tail-length: ♂ 93–*140.0*–223 mm, *1.87* body-length (18 tails). ♀ 82–*128.09*–151 mm, *2.08* body-length (11 tails). [Fig. 23]
Head-length: ♂ 13–*19.67*–26 mm, *0.26* body-length. ♀ 10–*15.53*–18 mm, *0.25* body-length.
Greatest width of head: ♂ 7–*11.04*–15 mm, *0.56* head-length. ♀ 5–*8.53*–11 mm, *0.55* head-length.
Width of head at temporal level: ♂ 6–*9.48*–13 mm, *0.48* head-length. ♀ 5–*7.63*–10 mm, *0.49* head-length.
Foreleg: ♂ 10–*24.96*–33 mm, *0.33* body-length. ♀ 12–*21.63*–26 mm, *0.35* body-length.
Hindleg: ♂ 33–*49.09*–61 mm, *0.66* body-length. ♀ 26–*45.71*–53 mm, *0.74* body-length.
Longest finger of hindleg: ♂ 12–*16.68*–21 mm, *0.22* body-length. ♀ 10–*14.03*–18 mm, *0.23* body-length.
Thumb: ♂ 2–*4.1*–6 mm, *0.055* body-length. ♀ 2–*3.8*–5 mm, *0.062* body-length. [Fig. 24]
Hindlegs adpressed: ♂ 10–*16.98*–30 mm, *0.23* body-length. ♀ 6–*15.50*–24 mm, *0.25* body-length.
Limbs adpressed: ♂ 24–*36.92*–49 mm, *0.49* body-length. ♀ 14–*26.60*–36 mm, *0.43* body-length.
Longitudinal rows of ventrals: ♂ 8–*8.03*–18½. ♀ 8–*8.05*–18½. [Fig. 25]
Transverse rows of ventrals: ♂ 30–*32.37*–35. ♀ 30–*32.73*–35. [Fig. 26]

Femoral pores – Caudals in 15th tailring – Suprabrachials – Continuity of brachials – Pre-anal plates and scales: see Figs. 27, 28, 29, 30, 31 and 32 resp.

Cnemidophorus lemniscatus nigricolor Peters, 1873

(Figs. 22, 24–32; Pl. VII)

Cnemidophorus nigricolor PETERS, 1873, p. 76–77. ["Ganz einfarbig schwarz oder schwarzbraun mit helleren bräunlichen Linien auf dem Nacken und dergleichen kleine Flecken auf der Aussenseite des Vorderarmes, des Ober- und Unterschenkels, Marmorirung des Unterkinnes und der hellern Ränder der Schilder

und Schuppen der Unterseite. Bauchschuppen in acht Längsreihen, wie gewöhnlich bei *Cn. lemniscatus*, dem diese Art auch im Habitus und in der Pholidosis sehr ähnlich ist. Sie unterscheidet sich jedoch von ihm in der letzteren dadurch, dass die Schuppen der Halsfalte kaum grösser als die des Unterkinnes, die beiden grossen Schuppenreihen des Oberarms viel kleiner als bei jener Art und die Schuppen des ersten Viertels oder Drittels der Unterseite des Schwanzes glatt und ungekielt sind. Vier Exemplare dieser durch ihre Färbung sehr auffallender Art, drei ganz schwarze und ein helleres, sind mir von Hrn. Dr. A. Ernst in Caracas zugesandt worden. Er fand diese Eidechsen ausserordentlich häufig auf der venezuelanischen Inselgruppe Los Roques ... Die Eidechse hat bei den Fischern keinen Namen. Sie ist nicht schnell und zwei Leute fingen in einer halben Stunde gegen 80 Exemplare."]

— *nigricolor*; Duméril & Bocourt 1870–1909, p. 268. ["Huit écailles humérales offrant plusieurs séries de moyenne grandeur." In key, without other data.]
— *nigricolor*; Boulenger 1885, p. 364. [Refers to Peters. No new data.]
— *nigricolor*; van Lidth de Jeude 1887, p. 132. ["Four specimens from Los Roques (small islands north of Venezuéla)."]
— *nigricolor*; Cope 1893, p. 30. [From literature.]
— *nigricolor*; Gadow 1906, p. 301. [In Table.]
— *nigricolor*; Meek 1910, p. 417–418. [Excluding material from Aruba and probably Margarita. Los Roques, Aves, and Blanquilla.]
— *nigricolor*; Ruthven 1923, p. 8–9. ["C. *nigricolor* from Los Roques is easily distinguished from *C. arubensis* by the color, by the smooth scales beneath the base of the tail, and by the smaller brachial scales."]
— *nigricolor*; Werner 1925, p. 537. [Los Roques.]
— *lemniscatus nigricolor*; Burt 1931, p. 40–43. [Diagnosis and description; variation, range, habitat and habits, affinities to other species. "*Nigricolor* may be distinguished from *murinus* and *arubensis* by the absence of large, round, light spots on the sides and by the smaller size; in addition it differs from ... *murinus*, by the possession of 8 rows of ventral plates instead of 10 or 12."]
— *lemniscatus nigricolor*; Eisentraut 1933, p. 228–232. [Island melanism. Los Roques.]
— *lemniscatus nigricolor*; Wagenaar Hummelinck 1940, p. 83–84. [Characteristics. "Los Hermanos!, Blanquilla, Tortuga!, Orchila, Los Roques, Las Aves."] — 1940a, p. 112–113, 120, 122–123. [Zoogeogr.] — 1943, p. 174. [No new data.] — 1943a, p. 34. [No new data.]
— *lemniscatus nigricolor*; Marcuzzi 1951, p. 34. [No new data.]
— *lemniscatus nigricolor*; Roze 1956, p. 85–86, 1 fig. [Los Roques, Orchila.]
— *lemniscatus nigricolor*; Alemán 1960, p. 56. [No new data.]
— *lemniscatus nigricolor*; Bergmans 1965, p. 59. [No new data.]

Blanquilla: Playa Valuchu, 21.VII.1936 (7 ♂, 5 ♀, ZMA 10785); Puerto El Jaque, 22.VIII.1936 (4 ♂, RMNH 7745); Plantío El Jaque, 22.VIII.1936 (1 ♂, 1 ♀, RMNH 7746, Hummelinck).
Los Roques: *Isla Larga*, 26.VII.1936 (4 ♂, 1 ♀, RMNH 717 & 5692, 7747, Hummelinck).
Las Aves: *Ave de Barlovento*, 27.VII.1936 (4 ♂, 5 ♀, RMNH 7748, Hummelinck).

Measurements (21♂ and 13♀, see list of material)

Body-length: ♂ 39–*66.38*–98 mm. ♀ 41–*60.46*–77 mm. [Fig. 22]
Tail-length: ♂ 117–*143.67*–163 mm, *2.16* body-length (3 tails). ♀ 92–*100.50*–109 mm, *1.66* body-length (2 tails). [Fig. 23]
Head-length: ♂ 10–*17.24*–25 mm, *0.26* body-length. ♀ 11–*14.67*–19 mm, *0.24* body-length.
Greatest width of head: ♂ 5–*9.62*–16 mm, *0.55* head-length. ♀ 6–*7.92*–10 mm, *0.54* head-length.
Width of head at temporal level: ♂ 5–*8.05*–12 mm, *0.46* head-length. ♀ 5–*6.92*–9 mm, *0.47* head-length.
Foreleg: ♂ 13–*24.95*–34 mm, *0.37* body-length. ♀ 14–*21.67*–30 mm, *0.36* body-length.
Hind-leg: ♂ 30–*47.16*–65 mm, *0.71* body-length. ♀ 31–*42.08*–57 mm, *0.70* body-length.
Longest finger of hindleg: ♂ 11–*15.95*–22 mm, *0.24* body-length. ♀ 11–*14.64*–19 mm, *0.24* body-length.
Thumb: ♂ 2–*4.00*–6 mm, *0.06* body-length. ♀ 2–*3.7*–5 mm, *0.06* body-length. [Fig. 24]
Hindlegs adpressed: ♂ 5–*11.68*–24 mm, *0.18* body-length. ♀ 5–*12.27*–18 mm, *0.20* body-length.
Limbs adpressed: ♂ 23–*37.05*–56 mm, *0.56* body-length. ♀ 19–*30.82*–47 mm, *0.51* body-length.
Longitudinal rows of ventrals: ♂ 8–8.02–$\frac{1}{2}$8$\frac{1}{2}$. ♀ 8–8.33–$\frac{1}{2}$8$\frac{1}{2}$. [Fig. 25]
Transverse rows of ventrals: ♂ 32–34.14–36. ♀ 33–34.33–36. [Fig. 26]

Femoral pores – Caudals in 15th tailring – Suprabrachials – Continuity of brachials – Pre-anal plates and scales: see Figs. 27, 28, 29, 30, 31 and 32 resp.

Cnemidophorus lemniscatus arubensis

van Lidth de Jeude, 1887

(Figs. 22–32; Pls. Ib, IIa, IIIa, IV, V, VIII)

Cnemidophorus murinus; Cope 1885, p. 181. [Specimens from Aruba only.]
— *arubensis* van Lidth de Jeude, 1887, p. 132–133. ["This species shows great resemblance on one side with *C. murinus*, on the other side with *C. lemniscatus*.

It agrees with *C. lemniscatus* in the number of the rows of ventrals, viz. 8; as to the coloration it resembles *C. murinus*.

Head moderate. Nostrils between the two nasals. Parietals five, supraoculars four, five or six supra-labials, no freno-orbital, anterior gular scales subequal, without enlarged medians; mesoptychium with three or four rows of enlarged scales, separated from the free edge of the collar by four or five rows of small granules. Dorsal scales small, granular, smooth. Ventral plates in eight longitudinal and thirty-five till thirty-seven transverse series. Generally three large preanals forming a triangle, but sometimes the foremost of the three divided in two parts. The anterior row of the brachials larger than the following, though not so large as those in *C. lemniscatus*; the ante-brachials in two rows, the inner largest, the outer extending only half down the inner; forearm entirely granular inferiorly. Femorals in six or seven rows, one of which is large; tibials in two or three rows, the outer very large. Femoral pores generally thirty, in one specimen twenty-six and twenty-seven. Male with a spine on each side of the vent. Olive above, sides with a great many rather large blue spots; these spots extend to the outer series of ventrals and cover the hinder limbs as far as the toes, no whitish longitudinal band on the hind side of the thighs. Two of the eight specimens have four bluish longitudinal bands on the upper part of the body, extending from the head to the tail, but moreover they show the blue ocelli on the sides and the hind limbs. Both these specimens are females. Eight specimens were captured in Aruba. (Native name: blausana)."]

— *arubensis*; BOULENGER 1894, p. 724. [Aruba.]

— *arubensis*; HARTERT 1902, p. 294. [Aruba.]

— *arubensis*; GADOW 1906, p. 301. ["Islands near Trinidad." Wrong locality.]

— *nigricolor*; MEEK 1910, p. 417. [Aruba; excluding material from Venezuelan Islands.]

— *arubensis*; VAN LIDTH DE JEUDE 1914, p. 206. ["... op Aruba eene soort voorkomt, *Cnemidophorus arubensis* Lidth, die als een tusschenvorm tusschen de beide voorgaande soorten [*Cn. lemniscatus* and *Cn. murinus*] kan beschouwd worden."]

— *arubensis*; DE ROOY 1922, p. 252. ["Known from Aruba only to which place Curaçao now may be added." The locality Curaçao must be mistaken!]

— *arubensis*; RUTHVEN 1923, p. 8. [Aruba. "This is Meek's *Cnemidophoris nigricolor*, from Aruba; and it probably is Cope's *C. murinus* from the same island. Although resembling *C. murinus* in coloration, *C. arubensis* is apparently most closely related to *C. lemniscatus*."]

— *arubensis*; WERNER 1925, p. 537. [Aruba.]

— *murinus arubensis*; BURT 1931, p. 51–53. ["The blausana is intermediate between *murinus* and *lemniscatus*. From *murinus* it is distinguished by its reduced number of full-sized ventral plates, having 8 instead of 10 or 12. It differs from *lemniscatus* in having a series of 27 or more femoral pores on each thigh instead of less than 27. Also, the spots on the sides are smaller and usually more numerous in adult males of *lemniscatus*. The lower sides of the young *arubensis* are spotted, those of young *lemniscatus*, unspotted. The dorsum of *arubensis* may be either lined or unlined; if lined, the ground color is usually brownish and the lines are wider and more poorly defined than usual in *lemniscatus*." Description, habitat and habits, and affinities to other species of the *lemniscatus*-group; "confined to the island of Aruba."]

— *murinus arubensis*; BURT & BURT 1931a, p. 324. ["Aruba, Dutch Leeward Islands."]
— *murinus arubensis*; BURT 1935, p. 1. [Aruba.]
— *lemniscatus arubensis*; WAGENAAR HUMMELINCK 1940, p. 84–85, pl. 13. [Characteristics. "Aruba."] — 1940a, p. 112, 115, 120, 124. [Zoogeogr.] — 1943, p. 174, 176, pl. 5. [No new data.] — 1943a, p. 33–34. [No new data.]
— *lemniscatus arubensis*; BERGMANS 1965, p. 59. [No new data.]

ARUBA: Aruba, 1885 (2 ♂, type & co-type, RMNH 710a–b). Daimarie, 3.VII.1930 (2 ♂, 1 ♀, RMNH 7735). – Boca Grandi, 5.I.1937 (1 ♂, ZMA 10783). – Seroe Culebra, 5.I.1937 (2 ♂, ZMA 10784). – Oranjestad, 13.XII. 1939 (3 ♂, 2 ♀, RMNH 7738); 13.XII.1939 (1 ♀, RMNH 7737). – Hydroponics Farm, northwest of Oranjestad, 8.XI.1963 (196 ♂, 74 ♀, Zoöl. Mus. Utrecht, RMNH, ZMA).

Measurements (206♂ and 78♀, see list of material)

Body-length: ♂ 61–*101.53*–127 mm, excluding a single giant specimen of 207 mm. ♀ 43–*79.49*–104 mm. [Fig. 22]

Tail-length: ♂ 171–*240.42*–294 mm, 1.75–*2.41*–2.66 times body-length, excluding one specimen of 91 mm with an intact tail of 117 mm only. [As the tail-length has been measured in non-regenerated specimens only, the regenerated tail of the giant specimen was not included.] ♀ 162–*186.3*–206 mm, 1.96–*2.34*–2.66 times body-length. [Fig. 23]

Head-length: ♂ 15–*26.21*–29 mm, *0.26* body-length. ♀ 17–*19.09*–28 mm, *0.24* body-length.

Greatest width of head: ♂ 8–*15.6*–23 mm, *0.59* head-length. ♀ 9–*11.5*–15 mm, 0.60 head-length.

Width of head at temporal level: ♂ 6–*11.74*–15 mm, *0.45* head-length. ♀ 8–*9.24*–12 mm, *0.48* head-length.

Foreleg: ♂ 22–*36.53*–45 mm, *0.35* body-length. ♀ 25–*29.36*–38 mm, *0.37* body-length.

Hindleg: ♂ 44–*71.39*–84 mm, 0.70 body-length. ♀ 47–*50.31*–68 mm, *0.63* body-length.

Longest finger of hindleg: ♂ 16–*24.19*–29 mm, *0.24* body-length. ♀ 15–*19.22*–22 mm, *0.24* body-length.

Thumb: ♂ 4–*5.7*–7 mm, *0.056* body-length. ♀ 4–*4.6*–6 mm, *0.057* body-length. [Fig. 24]

Hindlegs adpressed: ♂ 9–*21.19*–33 mm, *0.21* body-length. ♀ 12–*20.14*–31 mm, *0.25* body-length.

Limbs adpressed: ♂ 31–*37.92*–44 mm, *0.48* body-length. ♀ 33–*50.76*–68 mm, *0.50* body-length.

Longitudinal rows of ventrals: ♂ 8–*8.32*–10. ♀ 8–*8.26*–18½. [Fig. 25]

Transverse rows of ventrals: ♂ 33–*35.33*–39. ♀ 33–*35.20*–38. [Fig. 26]

Femoral pores: ♂ 26–*30.66*–39. ♀ 25–*31.48*–35. [Fig. 27]

Caudals in 15th tailring: ♂ 22–*24.9*–30. ♀ 23–*24.6*–27. [Fig. 28]

Suprabrachials: ♂ 8–*9.89*–12. ♀ 7–*9.43*–11. [Fig. 29]

Continuity of brachials: ♂ 2–*2.78*–4 (the greater part narrowly discontinuous, often subcontinuous, sometimes discontinuous). ♀ 1–*2.55*–4 (subcontinuous to narrowly discontinuous, rarely continuous or discontinuous). [Fig. 30]

Pre-anal plates: ♂ 3–*3.56*–4. ♀ 3–*3.25*–6. [Fig. 31]

Pre-anal scales: ♂ 9–*11.00*–15. ♀ 9–*11.85*–15. [Fig. 32]

Cnemidophorus murinus murinus (Laurenti, 1768)

(Figs. 22, 24–32; Pls. IIb, IIIb)

Lacerta caerulea, ex albo maculata, ex Java, SEBA 1735, II, p. 111, table 105 fig. 2. ["Hemelsblaauwe hagedis van *Java*, met witte vlekken. Deze Javaansche Hagedis is blaauwnervig over het gehele lijf, met witte vlakken langs weerzijden van den buik, de achterschinkels, en den staart. Aan 't hoofdt, van de ogen en den bek tot aan de diepe ingedogene ooren, zitten die langwerpige, witte strepen. Verder zijn het langwerpige, puntige, hoofdt, en de rug met kleine donkerblaawe schubbetjes egaal gekleurt. De geringde staart en poten zijn wat lichter blaaw. De onderlijfsche schubben zijn donker asch-graauw, groot, langwerpig, en vierkant. De *Indianen* zeggen, dat zij muizen vangen en verjagen, als mede de zelfde tot hun voedsel nemen."]

Seps murinus LAURENTI, 1768, p. 63. ["SEBA II.105.2. Corpore caeruleo; dorso immaculato; lateribus quadruplici serie longitudinali macularum rotundarum candidissimarum, descendendo magnitudine decrescente. *Habitat in Java; muribus vescens.*"]

? *Teivs cyaneus* MERREM, 1820, p. 61–62.

? *Cnemidophorus murinus*; WIEGMANN 1834. ["Surinamia."]

Cnemidophorus murinus; DUMÉRIL & BIBRON 1839. p. 126–128. [Refers to SEBA II, p. 111, tab. 105 fig. 2. Description, measurements; "Patrie: Le *Cnémidophore murin* est originaire de la Guyane. On le trouve à ce qu'il paraît aussi dans quelques Antilles." Possibly in part only.]

? *Cnemidophorus murinus*; DUMÉRIL & DUMÉRIL 1851, p. 116 ["Guyana," 1 ♂.]

— *murinus*; DUMÉRIL & BOCOURT 1870–1908, p. 268. [In key.]

— *murinus*; COPE 1885, p. 181. [Curaçao only.]
? — *murinus*; BOULENGER 1885, p. 361–362. ["Guyanas, Trinidad."]
— *murinus*; COPE 1893, p. 30. [Diagnosis. "Guyana, Curaçao, Trinidad."]
? — *murinus*; WERNER 1900, p. 266. [Puerto Cabello, Venezuela.]
— *murinus*; HARTERT 1902, p. 294. [Bonaire.]
— *murinus*; VAN LIDTH DE JEUDE 1904, p. 89 [from Suriname, possibly *Cn. lemniscatus*.]
— *murinus*; GADOW 1906, p. 301. ["Curacao."]
— *murinus*; MEEK 1910, p. 417. [Bonaire, Curaçao.]
— *murinus*; VAN LIDTH DE JEUDE 1914, p. 206. ["Op Curaçao en ook op Bonaire wordt *Cnemidophorus murinus* aangetroffen ...; Curaçao specimens only.]
— *murinus*; DE ROOY 1922, p. 252. [Specimens from Curaçao only. "Known from Guianas, Trinidad, Curaçao, Aruba and Bonaire."]
— *murinus*; RUTHVEN 1923, p. 8. [Curaçao, Bonaire, Klein Bonaire, Klein Curaçao. "COPE's *C. murinus* from Aruba is probably *C. arubensis*."]
— *murinus*; WERNER 1925, p. 537. [p.p.: Curaçao.]
— *murinus murinus*; BURT & BURT 1931, p. 236. ["This species is readily determined because it is the only form of Cnemidophorus with from 10 to 12 longitudinal series of large ventral plates. Otherwise it is very close to arubensis." Curaçao, Dutch Leeward Islands.] — BURT 1935, p. 1–5 [... the name *murinus* should be applied solely to the population on Curaçao."]
— *murinus murinus*; WAGENAAR HUMMELINCK 1940, p. 84–85. ["Some records may be taken to indicate that *C. murinus* occurs in Venezuela, Trinidad and Guyana (cf. Werner, de Rooy; Burt, 1931); they probably refer to introduced specimens or are caused by inexact labelling. Curaçao, Klein Curaçao."] — 1940a, p. 112, 115, 120, 124. [Zoogeogr.] — 1934, p. 174, 176, pl. 5. [No new data.] — 1943a, p. 33–34. [No new data.]
— *murinus murinus*; MENNE 1954, p. 24. [Curaçao.]
— *murinus murinus*; BERGMANS 1965, p. 58–59. [No new data.]

CURAÇAO: Plantage Jan Tiel, 7.V.1920 (3 ♂, ZMA 12754–12756, C. J. van der Horst). – Seroe di Boca, St. Joris, 7.IX.1936 (1 ♀, RMNH 7732, Hummelinck). – Emmastad, IV.1905 (1 ♀, ZMA 12714, J. Boeke); 15.V.1930 (1 ♀, ZMA 10776, Hummelinck). – Negropont, 11.IV. 1930 (1 ♀, RMNH 7733, Hummelinck); (2 ♀, ZMA 12757–12758). – Curaçao, (3 ♂, RMNH 718, J. R. H. Neervoort van de Poll); (2 ♂, 2 ♀, RMNH 5439, Th. Lens); (2 ♂, 1 ♀, ZMA 10360). – Rifwater, 9.II.1939 (1 ♀, RMNH 7511, H. W. C. Cossee).
KLEIN-CURAÇAO: 29.VIII.1936 (1 ♀, RMNH 7734, Hummelinck).
Suriname (in errore?): (1 ♂, ZMA 12753; 1 ♂, ZMA 12735; "ancien cabinet" 2 ♂, RMNH 3404).
Unknown locality: Rotterdamse Diergaarde Blijdorp, 14. XII.1937 (1 ♂, RMNH 7002).

Measurements (15♂ and 12♀, see list of material)

Body-length: ♂ 58–*107.25*–159 mm. ♀ 57–*86.75*–128 mm. [Fig. 22]
Tail-length: ♂ 106–*163.00*–299 mm, *1.52* body-length. ♀ 109–*165.80*–220 mm, 1.91 body-length (4 specimens). [Fig. 23]

Head-length: ♂ 13–*25.33*–36 mm, *0.24* body-length. ♀ 15–*21.92*–27 mm, *0.25* body-length.
Greatest width of head: ♂ 7–*15.47*–23 mm, *0.61* head-length. ♀ 8–*12.25*–16 mm, *0.56* head-length.
Head-width at temporal level: ♂ 6–*12.60*–18 mm, *0.50* head-length. ♀ 7–*10.58*–13 mm, *0.48* head-length.
Foreleg: ♂ 18–*36.87*–53 mm, *0.34* body-length. ♀ 21–*31.83*–44 mm, *0.37* body-length.
Hindleg: ♂ 38–*72.53*–102 mm, *0.68* body-length. ♀ 43–*62.00*–76 mm, *0.71* body-length.
Longest finger: ♂ 14–*24.13*–32 mm, *0.22* body-length. ♀ 15–*21.00*–25 mm, *0.24* body-length.
Thumb: ♂ 3–*6.00*–8 mm, *0.056* body-length. ♀ 4–*5.20*–6 mm, *0.069* body-length. [Fig. 24]
Hindleg adpressed: ♂ 6–*25.27*–47 mm, *0.24* body-length. ♀ 12–*24.27*–40 mm, *0.28* body-length.
Limbs adpressed: ♂ 29–*48.53*–66 mm, *0.44* body-length. ♀ 23–*39.45*–50 mm, *0.45* body-length.
Longitudinal rows of ventrals: ♂ 10–*10.17*–$\frac{1}{2}$10$\frac{1}{2}$. ♀ *10*. [Fig. 25]
Transversal rows of ventrals: ♂ 37–*39.87*–42. ♀ 38–*39.08*–41. [Fig. 26]

Femoral pores – Caudals in 15th tailring – Suprabrachials – Continuity of brachials – Pre-anal plates and scales: see Figs. 27, 28, 29, 30, 31 and 32 resp.

Cnemidophorus murinus ruthveni Burt, 1935

(Figs. 22, 24–32; Pls. IX–XII)

Cnemidophorus murinus; HARTERT 1902, p. 294. [Bonaire.]
Cnemidophorus murinus; MEEK 1910, p. 417. [p.p.: Bonaire.]
Cnemidophorus murinus; VAN LIDTH DE JEUDE 1914, p. 206. [p.p.: Bonaire.]
Cnemidophorus murinus; WERNER 1925, p. 537. [p.p.: Bonaire.]
Cnemidophorus murinus murinus; BURT 1931, p. 49 [p.p.: Bonaire.]
Cnemidophorus murinus murinus; COCHRAN 1934, p. 44. [p.p.: Bonaire.]
Cnemidophorus murinus ruthveni BURT, 1935, p. 1–3. ["Ventral plates 10 to 12, not 8 as in *arubensis*; femoral pores usually more than 35 on each thigh, not less as in *murinus*; body somewhat darker in color in *ruthveni* than in *murinus*." Bonaire.]

Cnemidophorus murinus ruthveni; WAGENAAR HUMMELINCK 1940, p. 84–85. [Characteristics. "Bonaire, Klein Bonaire."] — 1940a, p. 112, 115, 120, 123. [Zoogeogr.] — 1943, p. 174, 176. [No new data.] — 1943a, p. 33–34. [No new data.]

Cnemidophorus murinus ruthveni; Bergmans 1965, p. 59. [No new data.]

BONAIRE: Kralendijk, 27.IX.1930 (1 ♀, RMNH 7741); 20.X.1930 (2 ♂, RMNH 7742). – Plantage Bolivia, 2.IV.1937 (5 ♂, 1 ♀, RMNH 7740). – Fontein, 21.IX.1930 (1 ♀, RMNH 7739). – Dos Pos, 6.VI.1930 (RMNH 77738), 31.V.1930 (2 ♂, 3 ♀, ZMA 10777). All Hummelinck coll. – Kralendijk, 26.XII.1958 (8 ♂, 1 ♀, ZMA 12716–12723). – Bonaire, April 1966 (12 ♂, 4 ♀, ZMU, L.C.M. Wijffels).

KLEIN BONAIRE, S.E. part, 10.IX,1930 (1 ♂, ZMA 12734); Djompie, 17.X. 1930 (1 ♀, RMNH 7744); Hummelinck.

Measurements (31♂ and 11♀, see list of material)

Body-length: ♂ 50–*103.62*–146 mm. ♀ 50–*92.25*–107 mm. [Fig. 22]

Tail-length: ♂ 133–*214.57*–290 mm, *2.07* body-length. ♀ 121–*183.67*–243 mm, *1.99* body-length. [Fig. 23]

Head-length: ♂ 14–*24.39*–33 mm, *0.23* body-length. ♀ 13–*21.25*–25 mm, *0.23* body-length.

Greatest width of head: ♂ 7–*14.22*–25 mm, *0.54* head-length. ♀ 7–*12.18*–14 mm, *0.57* head-length.

Width of head at temporal level: ♂ 6–*12.37*–17 mm, *0.50* head-length. ♀ 6–*7.3*–12 mm, *0.34* head-length.

Foreleg: ♂ 20–*38.67*–53 mm, *0.37* body-length. ♀ 21–*33.75*–39 mm, *0.37* body-length.

Hindleg: ♂ 37–*74.90*–99 mm, *0.72* body-length. ♀ 40–*62.78*–70 mm, *0.68* body-length.

Longest finger of hindleg: ♂ 16–*25.74*–35 mm, *0.25* body-length. ♀ 15–*22.17*–25 mm, *0.24* mm body-length.

Thumb: ♂ 3–*6.1*–8 mm, *0.06* body-length. ♀ 3–*5.3*–6 mm, *0.06* body-length. [Fig. 24]

Hindlegs adpressed: ♂ 6–*20.88*–33 mm, *0.20* body-length. ♀ 7–*20.42*–29 mm, *0.22* body-length.

Limbs adpressed: ♂ 30–*52.80*–75 mm, *0.51* body-length. ♀ 30–*42.58*–51 mm, *0.46* body-length.

Longitudinal rows of ventrals: ♂ 12–*12.05*–12¼. ♀ 12–*12.04*–12¼. [Fig. 25]

Transverse rows of ventrals: ♂ 38–*40.43*–44. ♀ 38–*39.75*–42. [Fig. 26]

Femoral pores – Caudals in 15th tailring – Suprabrachials – Continuity of brachials – Pre-anal plates and scales: see Figs. 27, 28, 29, 30, 31 and 32 resp.

KEY TO CNEMIDOPHORUS OF THE LEEWARD GROUP AND THE ADJACENT MAINLAND

1a. Longitudinal rows of ventrals *8*; caudals in 15th tailring 18–*24*–27; transverse rows of ventrals 30–*34*–39; adults usually without a distinct bluish haze and whitish spots . . . . . *lemniscatus* 2

1b. Longitudinal rows of ventrals *10–12*; caudals in 15th tailring 31–*34*–37; transverse rows of ventrals 37–*40*–42; adults usually with a distinct bluish haze and white spots . . . *murinus* 3

2a. Femoral pores 19–*23*–26; brachials mostly continuous; suprabrachials 6–*7.5*–9; back and sides as a rule completely striped in adults as well as in juveniles, brownish to yellowish; spots on sides confined to interspaces or absent. [Body-length 35–*70*–91 mm] . . . . . *l. lemniscatus*

2b. Femoral pores 25–*31*–36; brachials narrowly discontinuous; suprabrachials 8–*9.7*–12; back and sides as a rule vaguely striped in juveniles and semi-adults, brownish to yellowish brown; adults as a rule not striped, with large whitish spots on the sides, often with a bluish haze. [Body-length 45–*90*–126 mm] . . . . . *l. arubensis*

2c. Femoral pores 24–*27*–30; brachials subcontinuous to narrowly discontinuous; suprabrachials 4–*6.4*–10; back not striped, dark brown to blackish; sides without spots or stripes. [Body-length 40–*64*–96 mm] . . . . . *l. nigricolor*

3a. Femoral pores 28–*32*–35; brachials narrowly discontinuous; suprabrachials 4–*6*–8; longitudinal rows of ventrals *10*. [Body-length 56–*101*–137 mm] . . . . . *m. murinus*

3b. Femoral pores 35–*40*–45; suprabrachials absent; longitudinal rows of ventrals *12*. [Body-length 50–*98*–146 mm] *m. ruthveni*

REFERENCES

ALEMÁN G., CÉSAR, 1952. Apuntes sobre reptiles y anfíbios de la región Baruta – El Hatillo. *Mem. Soc. Cienc. Nat. La Salle 12*, 31, 32 figs.

— 1952a. Ensayo sobre la variabilidad de pequeñas poblaciones de lagartos (Cnemidophorus lemniscatus nigricolor Peters, 1873) de las islas Los Roques y La Orchila. *Mem. Soc. Cienc. Nat. La Salle 12*, 32, p. 131–142.

— 1953. Contribución al estúdio de los reptiles y batracios de la Sierra de Perija. *Mem. Soc. Cienc. Nat. La Salle 13*, 35, p. 205–225.

— 1960. Sobre una pequeña colección de lagartos de las islas Las Aves de Venezuela. *Mem. Soc. Cienc. Nat. La Salle 20*, 55, p. 54–57, 3 figs.

BARBOUR, THOMAS, 1916. Amphibians and reptiles from Tobago. *Proc. Biol. Soc. Wash. 29*, p. 221–224.

BEEBE, WILLIAM, 1919. The higher vertebrates of British Guiana, with special reference to the fauna of the Bartica District. *Zoologica N.Y. 2*, 7, p. 205–227.

— 1952. Introduction to the ecology of the Arima Valley, Trinidad, B.W.I. *Zoologica N.Y. 37*, 4, p. 157–183, fig. 1–5, pls. 1–5.

BERGMANS, W., 1965. Enige Cnemidophorus-soorten en hun verspreiding. *Lacerta 23*, 8, p. 58–59.

BOULENGER, GEORGE ALBERT, 1885. *Catalogue of the lizards in the British Museum (Natural History), II*, ed. 2, 497 pp.

— 1894. Second report on additions to the lizard collection in the Natural History Museum. *Proc. Gen. Meetings Sci. Business Zool. Soc. London*, p. 722–736.

BRONGERSMA, L. D., 1956. On some reptiles and amphibians from Trinidad and Tobago, B.W.I. *Proc. Ned. Akad. Wetensch. (C) 59, Zool.*, p. 165–188, 4 figs., pl. 1.

BURT, CHARLES E., 1931. A study of the teiid lizards of the genus Cnemidophorus with special reference to their phylogenetic relationships. *Bull. U.S. Nat. Mus. 154*, 280 pp.

— 1935. A new lizard from the Dutch Leeward Islands (Cnemidophorus murinus ruthveni). *Occ. Papers Mus. Zool. Mich. 324*, 3 pp.

BURT, CHARLES E & BURT, MAY DANHEIM, 1931. The South American lizards in the collection of the United States National Museum. *Proc. U.S. Nat. Mus. 78*, 6, 52 pp.

— & — 1931a. South American lizards in the collection of the American Museum of Natural History. *Bull. Amer. Mus. Nat. Hist. 61*, 7, p. 227–395.

COCHRAN, DORIS M., 1934. Herpetological collections from the West Indies made by Dr. Paul Bartsch under the Walter Rathbone Bacon Scholarship, 1928–1930. *Smiths. Misc. Coll. 92*, 7, 48 pp.

COPE, EDWARD DRINKER, 1885. Twelfth contribution to the herpetology of tropical America. *Proc. Amer. Philos. Soc. Phila. 22*, p. 167–194.

— 1893. A synopsis of the species of the teiid genus Cnemidophorus. *Trans. Amer. Philos. Soc. Phila. 17* (n.s.), p. 27–52, pls. 6–13.

DUMÉRIL, AUGUSTE M. C. & BIBRON, G., 1839. *Erpétologie générale 5*, 854 pp.

DUMÉRIL, AUGUSTE & BOCOURT, 1870 (–1909). Études sur les reptiles et les batraciens. *Rech. zoöl. faune Amér. Centr. et Mexique 3*. [Preface d.d. 1908.]

DUMÉRIL, A. M. C. & DUMÉRIL, M. A., 1851. *Catalogue méthodique de la collection des reptiles*. Mus. Hist. nat. Paris, 224 pp.

DUNN, E. R. & SAXE, Jr., L. H., 1950. Amphibians and reptiles of San Andrés and Providencia. *Proc. Acad. Nat. Sci. Phila. 102*, p. 141–165.

EISENTRAUT, M., 1933. Inselmelanismus in der Gattung Cnemidophorus. *Zool. Anz. 101*, p. 228–232.

FITZINGER, L. I., 1826. *Neue Classification der Reptilien*. 66 pp.

GADOW, HANS, 1906. A contribution to the study of evolution based upon the Mexican species of Cnemidophorus. *Proc. Zoöl. Soc. London*, p. 277–375.

HARTERT, ERNST, 1902. Reise nach den Inseln des Caribischen Meeres. *Novitates Zool. Tring Mus. 9*, p. 273–295.

LAURENTI, J. N., 1768. *Synopsin reptilium*, 214 pp.

LIDTH DE JEUDE, TH. W. VAN, 1887. On a collection of reptiles and fishes from the West Indies. *Notes Leyden Museum 9*, p. 129–139.

— 1904. Reptiles and batrachiens from Surinam. *Notes Leyden Museum 25*, p. 83–94.

— 1914. Cnemidophorus. In: *Encyclopaedie van Nederlandsch West-Indië*, p. 206.

LINNAEUS, C., 1754. *Museum regis Adolphi Friderici*.

— 1758. *Systema naturae 1*, ed. 10, 824 pp.

MARCUZZI, GIORGIO, 1951. Osservazioni sulla sustematica e variabilità di alcune specie di Lucertole (Rept., Lacertilia) del Venezuela. *Arch Zool. Ital. 36*, p. 17–56.

MEEK, S. E., 1910. Notes on batrachians and reptiles from the islands north of Venezuela. *Publ. Field Mus. Nat. Hist. 148* (Zoöl. 7, 12), p. 415–418.

MENNE, H. A. L., 1954. De herpetofauna van Curaçao. *Lacerta 13*, 3, p. 24.

MERIAN, M. S., 1719. *Over de voortteeling en wonderbaerlijke veranderingen der Surinaemsche insecten*.

MERREM, B., 1820. *Versuch eines Systems der Amphibien*, 191 double pages.

PETERS, W., 1873. Über eine neue Art von Cnemidophorus. *SB Ges. naturf. Fr. Berlin*, p. 76–77.

RAND, S. A., 1954. Variation and predator pressure in an island and a mainland population of lizards. *Copeia 1954*, 4, p. 260–262.

ROOY, NELLY DE, 1922. Reptiles and amphibians of Curaçao. *Bijdr. Dierk. 22*, p. 249–253.

ROZE, J. A., 1956. La herpetofauna de las islas Los Roques y La Orchila. In: *El archipiélago de Los Roques y La Orchila*, Soc. Cienc. Nat. La Salle, Caracas, p. 79–86, 4 pls.

— 1959. Taxonomic notes on a collection of Venezuelan reptiles in the American Museum of Natural History. *Am. Mus. Novitates* 1934, 14 pp.

RUTHVEN, A. G., 1915 (Dec.). Description of a new subspecies of Cnemidophorus lemniscatus Laurenti. *Occ. Papers Mus. Zool. Mich. 16*, 4 pp., pl.

— 1923. The reptiles of the Dutch Leeward Islands. *Occ. Pap. Mus. Zool. Mich.* 10 pp.

SEBA, A., 1734. *Locupletissima rerum naturalium thesauri... I.*

— 1735. *Locupletissima rerum naturalium thesauri... II.*

TAYLOR, E. H., 1956. A review of the lizards of Costa Rica. *Un. Kansas Sci. Bull. 38*, 1, 322 pp.

TEST, F. H. & SEXTON, O. J. & HEATHWOLE, H., 1966. Reptiles of Rancho Grande and vicinity, Estado Aragua, Venezuela. *Misc. Publ. Mus. Zool. Un. Mich. 128*, 63 pp.

UNDERWOOD, G., 1964. *Reptiles of the eastern Caribbean.* Car. Affairs (n.s.) *1*, Extra-Mural Studies Un. W.I., 192 pp.

WAGENAAR HUMMELINCK, P., 1940. A survey of the mammals, lizards and mollusks. *Studies on the fauna of Curaçao, Aruba, Bonaire and the Venezuelan Islands*, p. 59–108, pl. 9–16. [= *Stud. fauna Curaçao 1*]

— 1940a. Zoogeographical remarks. *Stud. fauna Curaçao 1*, p. 109–130.

— 1943. Zoögeografische opmerkingen over de Nederlandsche Benedenwindsche Eilanden. *West-Indische Gids 25*, p. 168–180, 8 pls.

— 1943a. Zoögeografische opmerkingen over de Nederlandsche Benedenwindsche Eilanden. *Vakblad voor Biologen 24*, p. 31–35.

WERNER, F., 1900. Ueber Reptilien und Batrachier aus Colombien und Trinidad. *Verh. Zoöl. Bot. Ges. Wien 50*, p. 262–272.

— 1925. Zur Kenntnis der Fauna der Insel Bonaire. *Ztschr. Wiss. Zool. 125*, p. 533–556.

WIEGMANN, A. F. A., 1834. *Herpetologia Mexicana* (*1*), p. 1–54, pl. 1–10.

ZWEIFEL, R. G., 1963. Variation in and distribution of the unisexual lizard, Cnemidophorus tesselatus. *Novitates Am. Mus. 2235*, 49 pp.

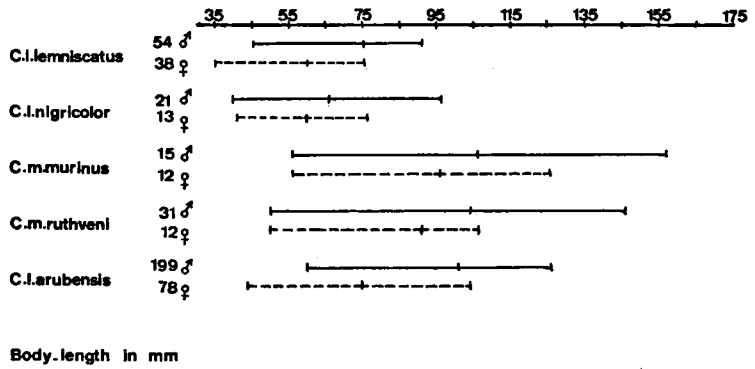


Fig. 22. Body-length of the specimens of *Cnemidophorus* discussed in this paper.

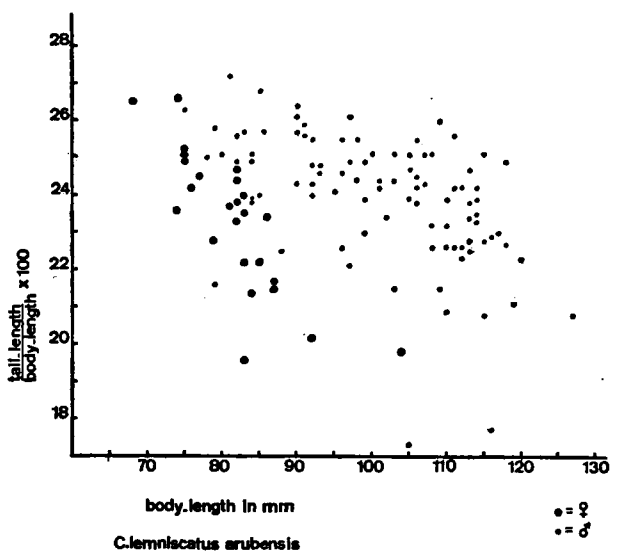


Fig. 23. Variation in ratio of tail-length to body-length in the specimens of *Cnemidophorus lemniscatus arubensis* studied.

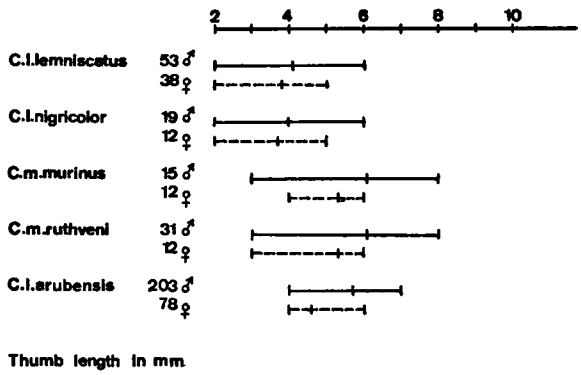


Fig. 24. Thumb length of the specimens of *Cnemidophorus* measured.

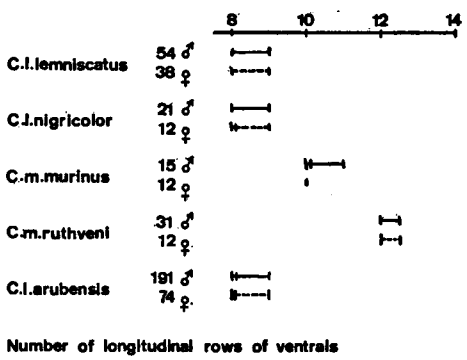


Fig. 25. Number of longitudinal rows of ventrals in the specimens of *Cnemidophorus* counted.

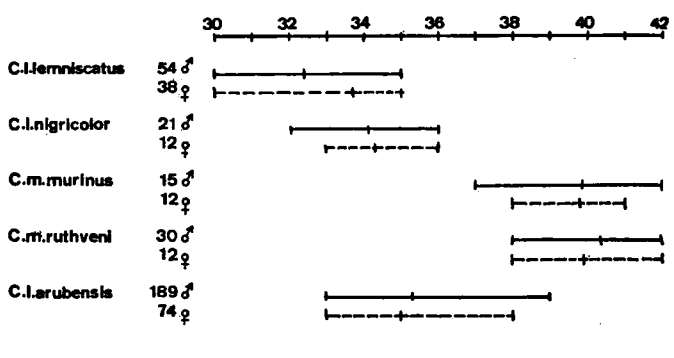


Fig. 26. Number of transverse rows of ventrals in the specimens of *Cnemidophorus* counted.

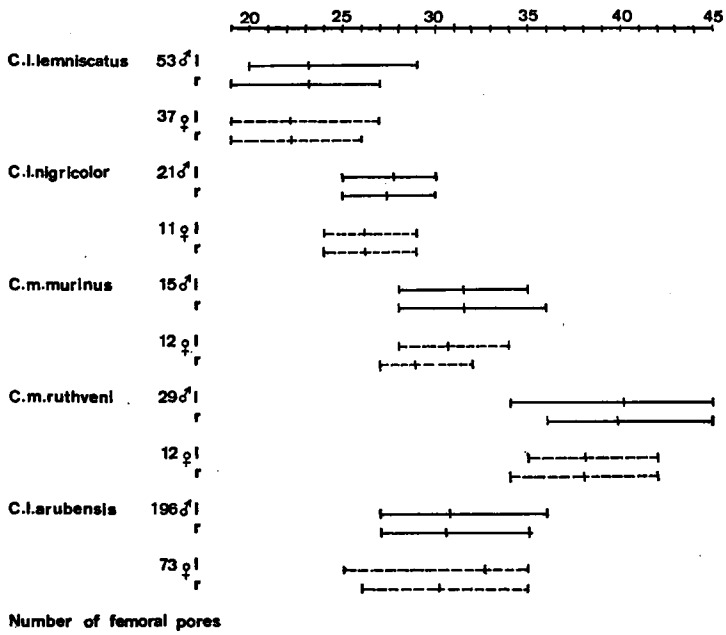


Fig. 27. Number of femoral pores in the specimens of *Cnemidophorus* counted.

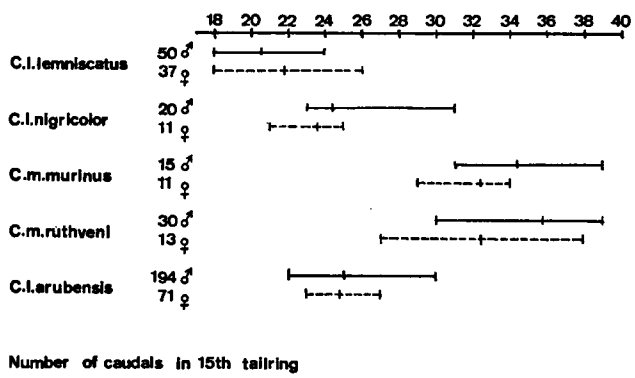


Fig. 28. Number of caudals in 15th tailring in the specimens of *Cnemidophorus* counted.

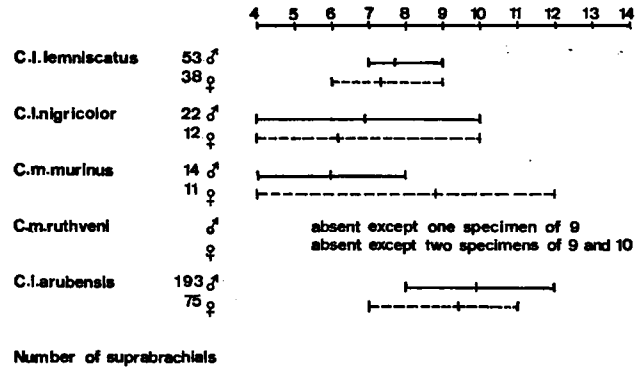


Fig. 29. Number of suprabrachials in the specimens of *Cnemidophorus* studied.

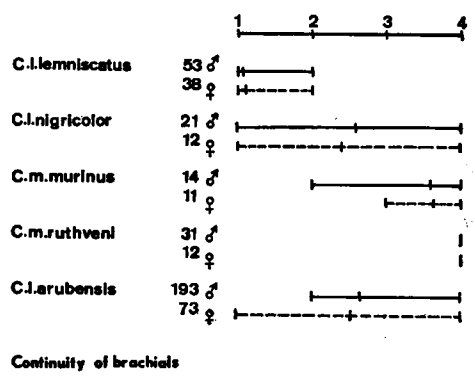


Fig. 30. Continuity of brachials in the specimens of *Cnemidophorus* studied. – The following distinctions were made for practical use: 1 = continuous; 2 = subcontinuous; 3 = narrowly discontinuous; 4 = discontinuous.

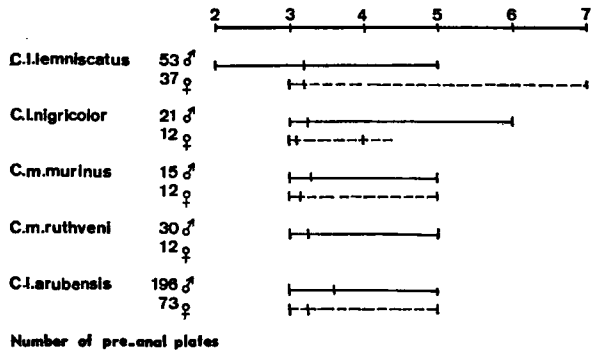


Fig. 31. Number of preanal plates in the specimens of *Cnemidophorus* counted.

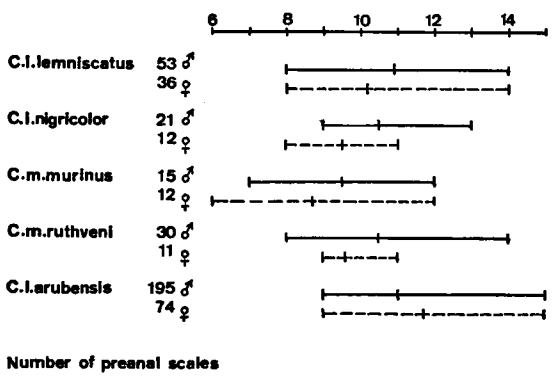


Fig. 32. Number of preanal scales in the specimens of *Cnemidophorus* counted.

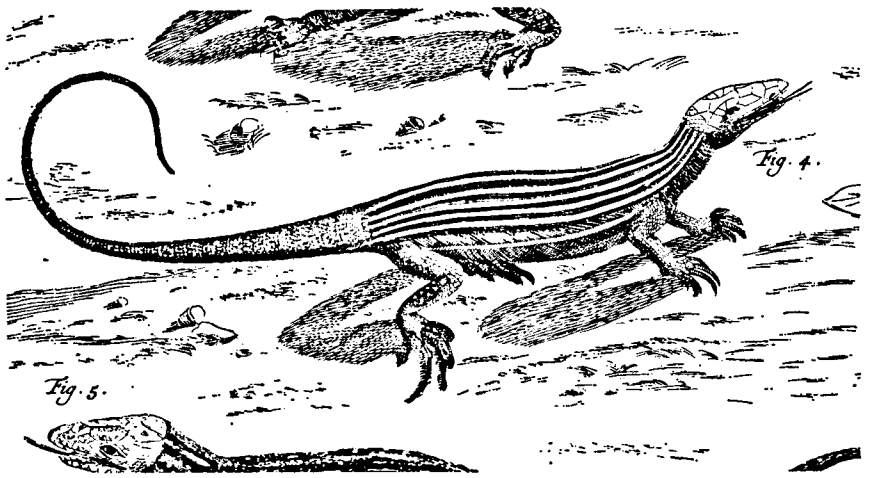


Fig. 33. Lacerta, Africana, Guinensis, SEBA 1734, pl. 92 fig. 4, being the figure to which LINNAEUS 1758 refers when describing his *Lacerta lemniscata*, and LAURENTI 1768 for his *Seps lemniscatus*. (Courtesy of Artis Library, Amsterdam).

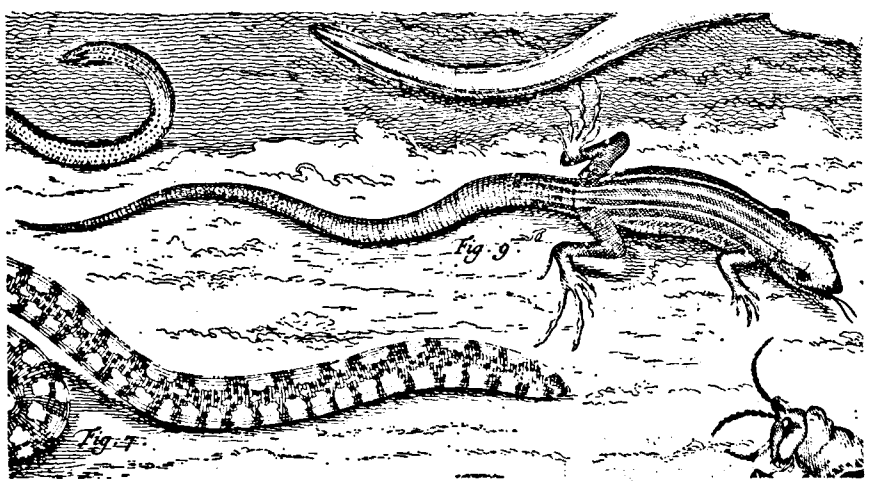
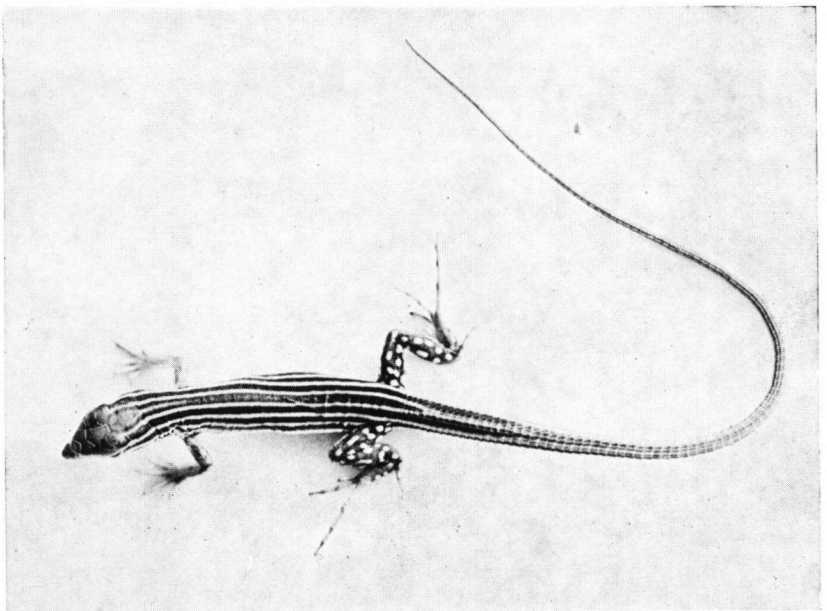
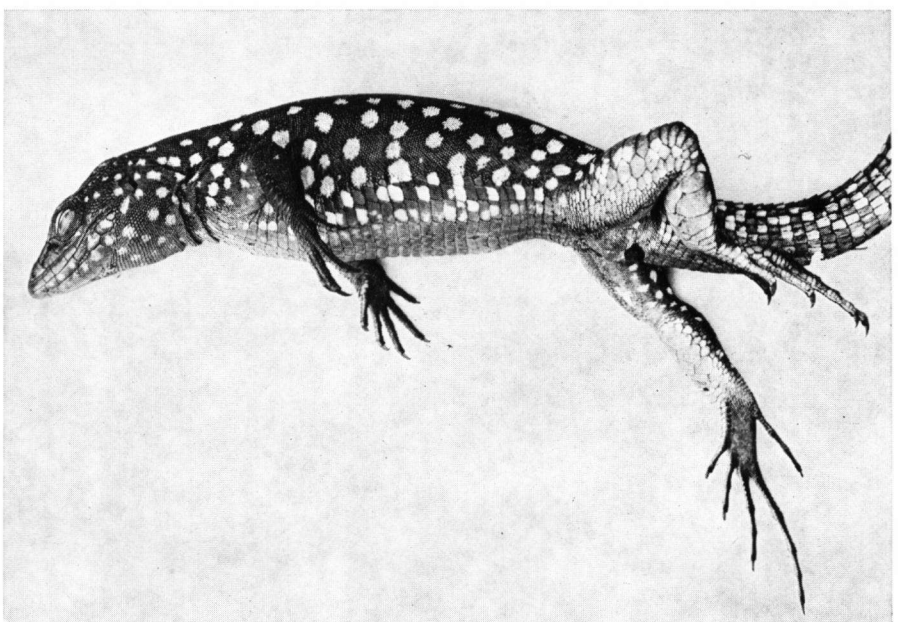


Fig. 34. Lacerta, Americanus, lemniscatus, SEBA 1934, pl. 53 fig. 9, being the figure to which MERREM 1820 refers, before quoting SEBA's pl. 92 fig., 4 when dealing with his *Teivs lemniscatus*. (Courtesy of Artis Library, Amsterdam).

PLATE I

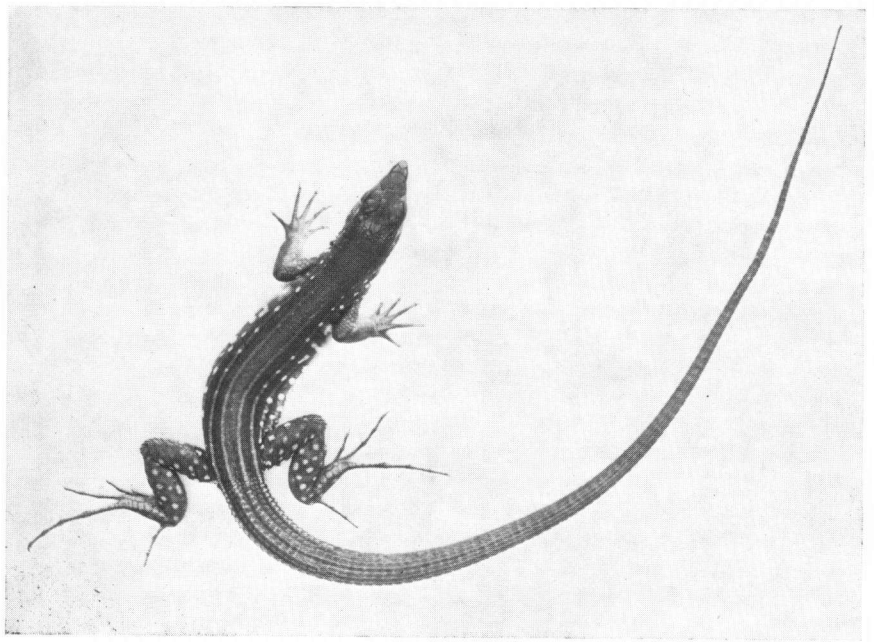


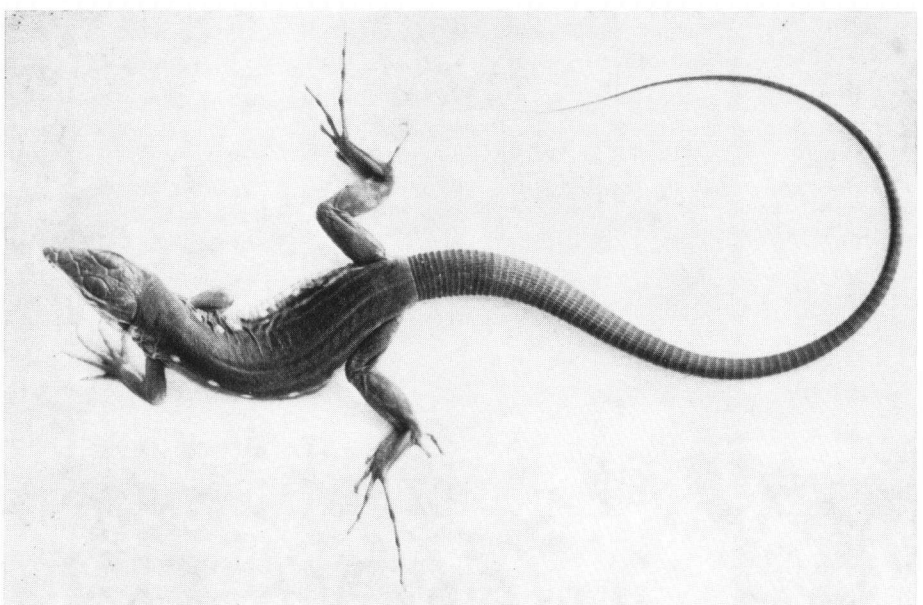


Ia. *Cnemidophorus lemniscatus lemniscatus*: young female from Carirubana, Península de Paraguaná, VENEZUELA, 17.II.1936. – Back with creamish longitudinal stripes and blackish bands, except the medial one which is greyish; limbs with whitish dots; breast creamish in colour; belly yellow.

Ib. *Cnemidophorus lemniscatus arubensis*: fully adult male from Oranjestad, ARUBA, 21.XII.1936. – Back brownish green with indistinct longitudinal stripes; sides somewhat bluish green; ventral parts dirty creamish in colour. Lateral parts and upper sides of limbs and caudal part conspicuously covered with white or bluish-white dots. Margin of upper eye-lid yellow; lower eye-lid bluish.

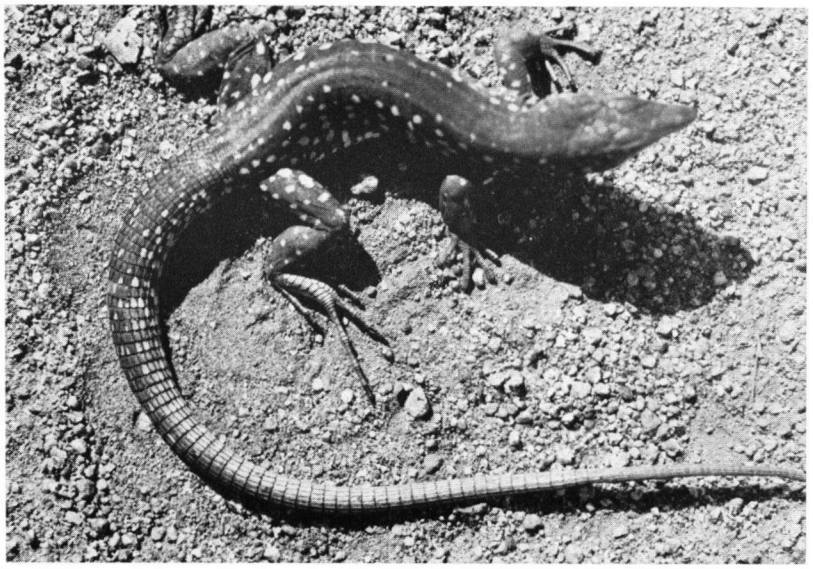
PLATE II

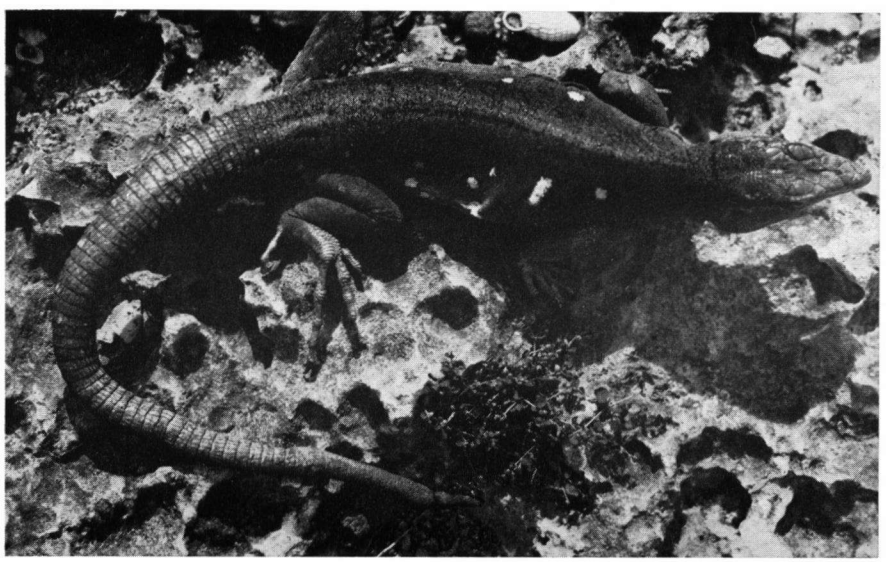




IIa. *Cnemidophorus lemniscatus arubensis*: semi-adult male from Oranjestad, ARUBA, 23.XII.1936. – Back greenish brown with distinct longitudinal stripes. Lateral parts and upper side of hindlegs covered with white dots.

IIb. *Cnemidophorus murinus murinus*, semi-adult female from Paradijs, Willemstad, CURAÇAO, 23.IX.1936.

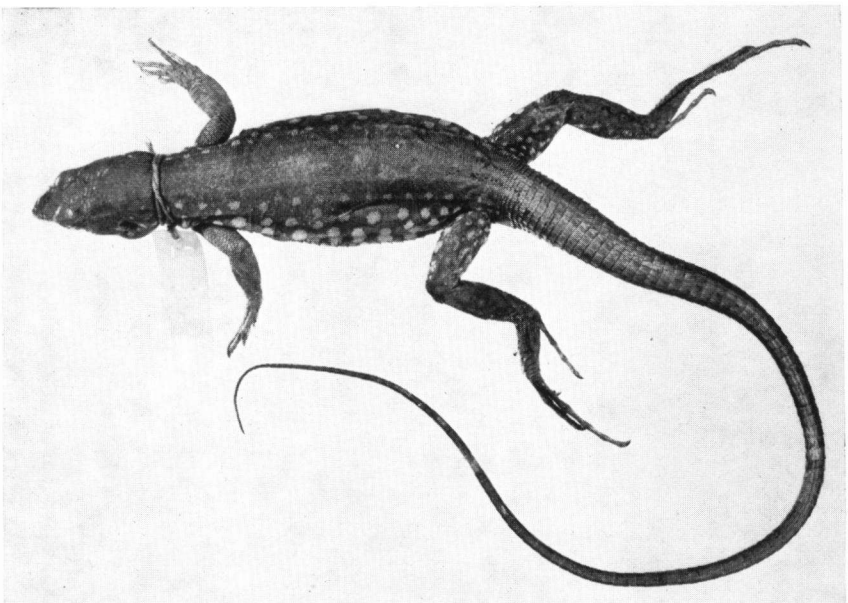


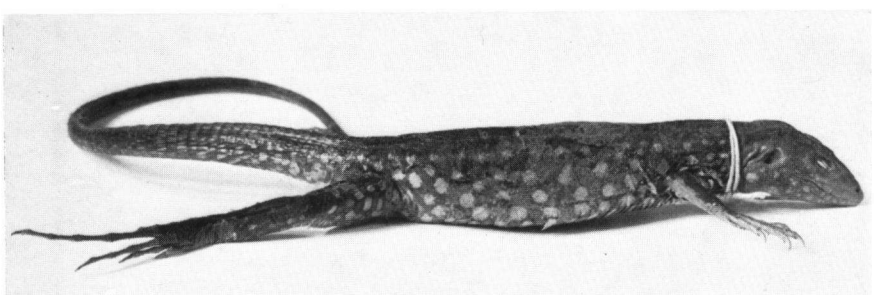


IIIa. *Cnemidophorus lemniscatus arubensis*: fully adult male from Oranjestad, ARUBA, 21.XII.1936. – Specimen from Pl. Ib.

IIIb. *Cnemidophorus murinus murinus*: fully adult male from Savonet, CURAÇAO, 29.X.1936. – Body-length 108 mm, tail 251 mm.

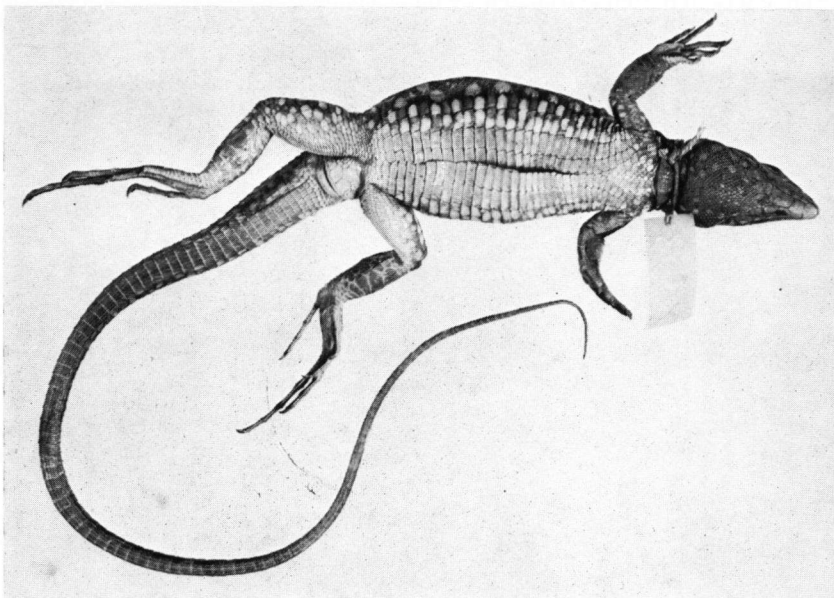
PLATE IV

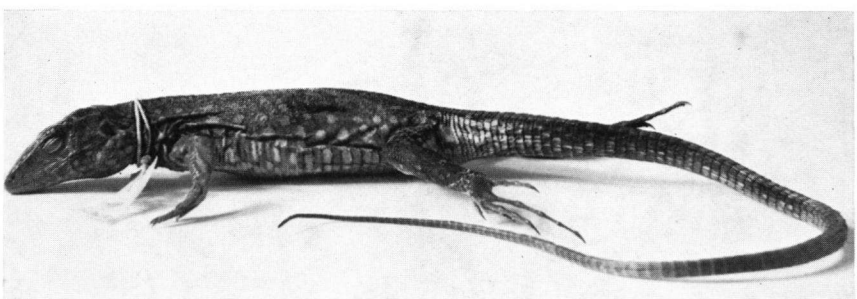




IVa. *Cnemidophorus lemniscatus arubensis*: male from ARUBA in dorsal view (RMNH 710a; type of *Cnemidophorus arubensis* Lidth, 1887).

IVb. *Cnemidophorus lemniscatus arubensis*: same specimen, from the right.

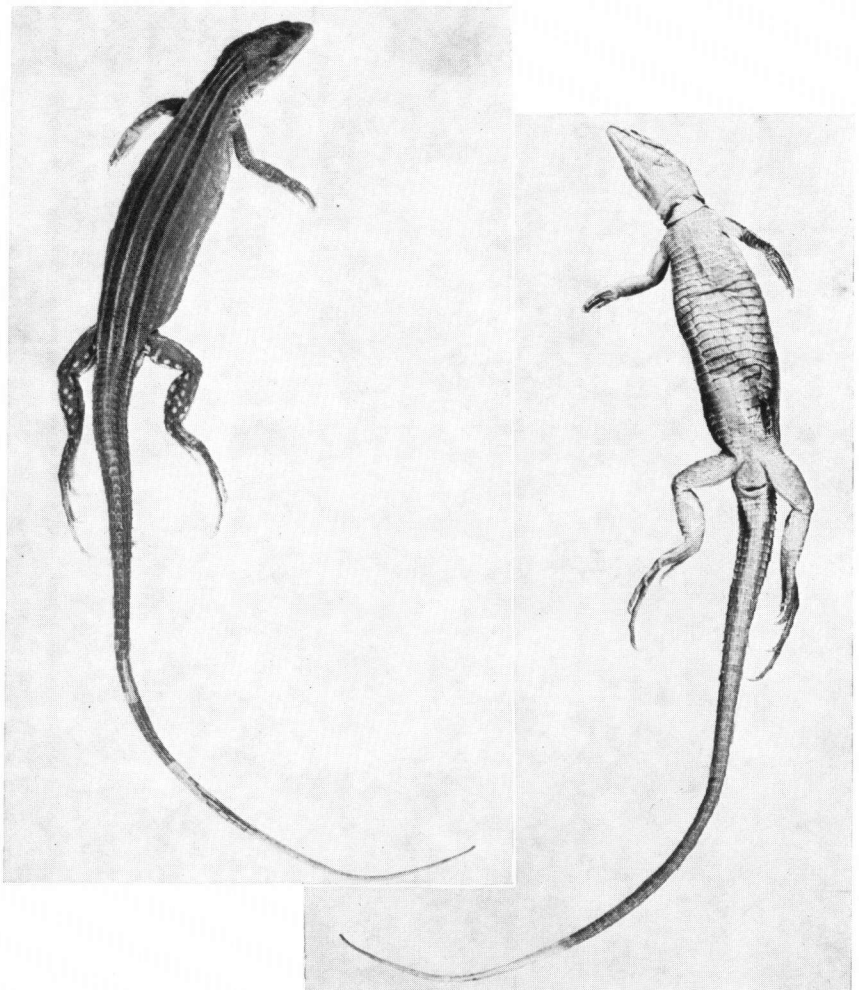




Va. *Cnemidophorus lemniscatus arubensis*: male from ARUBA in ventral view (RMNH 710a; type).

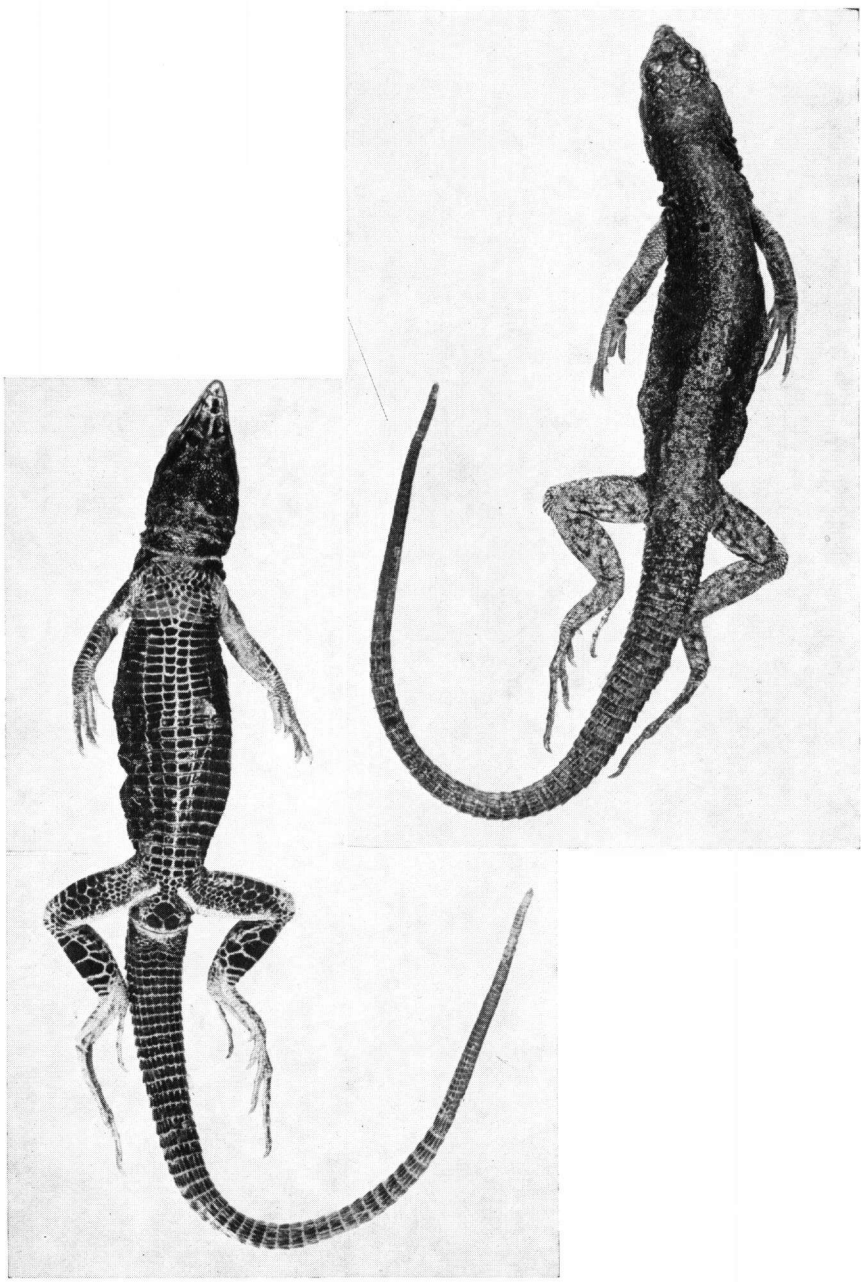
Vb. *Cnemidophorus lemniscatus arubensis*: same specimen, from the left.

PLATE VI



VIa. *Cnemidophorus lemniscatus lemniscatus*: female from a small population of possibly recently introduced specimens at San Nicolas, ARUBA, 16.IV.1953. – Body length 75 mm, tail 142 mm.

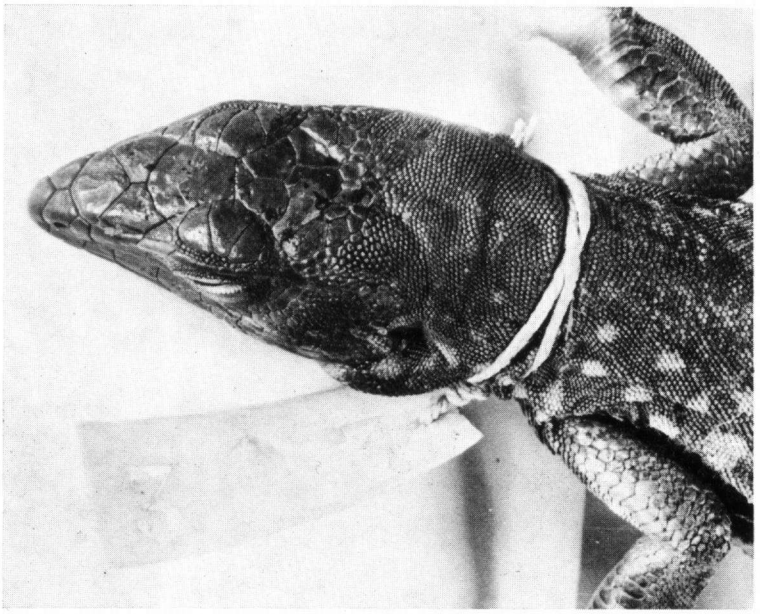
VIb. *Cnemidophorus lemniscatus lemniscatus*: same specimen, ventral view.

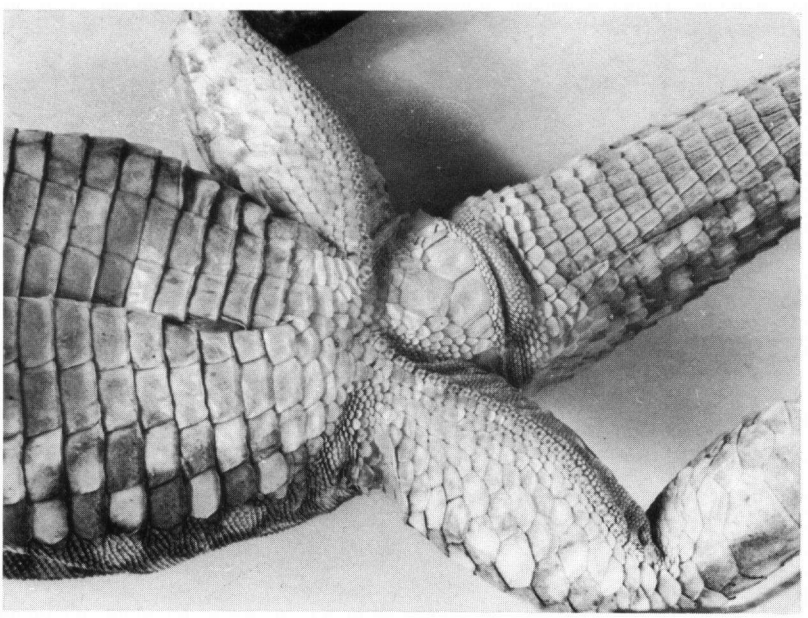


VIIa. *Cnemidophorus lemniscatus nigricolor*: male from Los ROQUES. – Body-length 80 mm (RMNH 5692).

VIIb. *Cnemidophorus lemniscatus nigricolor*: same specimen, ventral view.

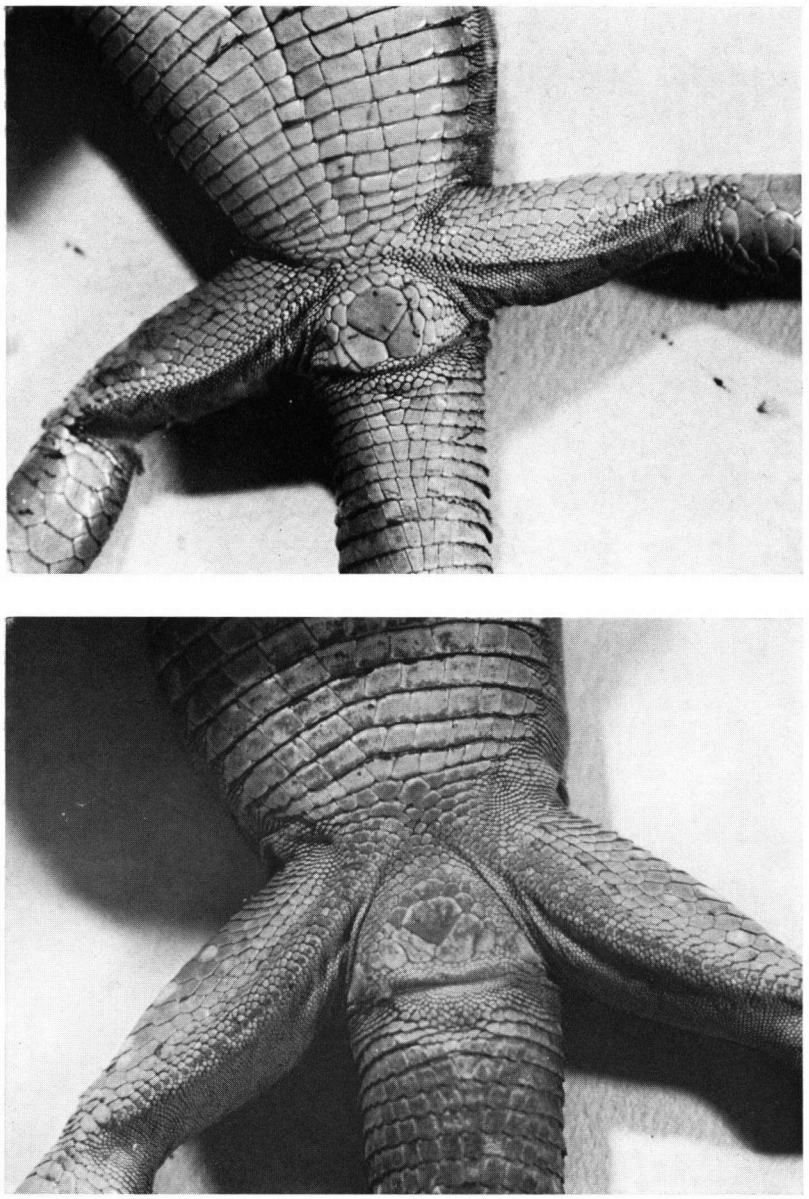
PLATE VIII





VIIIa. *Cnemidophorus lemniscatus arubensis*: head of type-specimen fron ARUBA. – See Pls. IV–V.

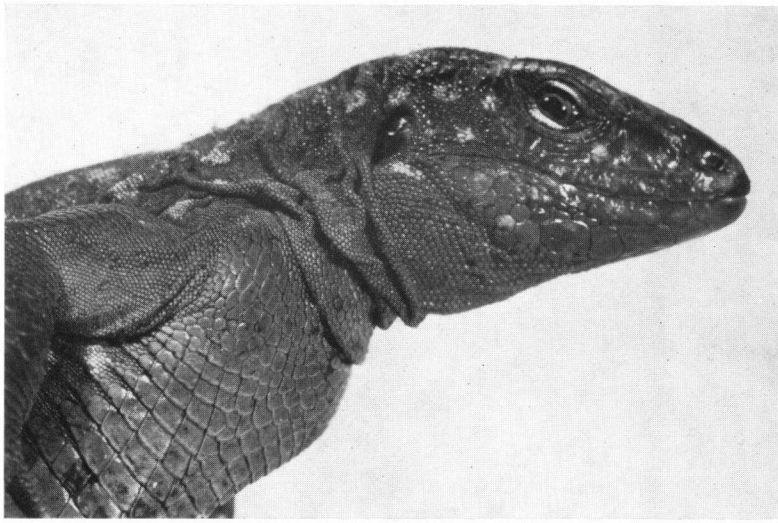
VIIIb. *Cnemidophorus lemniscatus arubensis*: anal region of male type-specimen. – See Pls. IV–V.

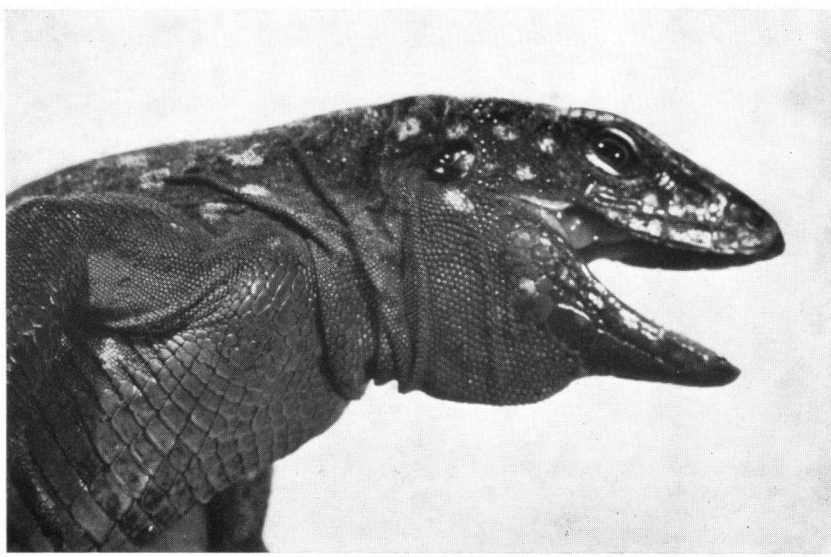


IXa. *Cnemidophorus murinus ruthveni*: anal region of female from BONAIRE [body-length 98 mm].

IXb. *Cnemidophorus murinus ruthveni*: anal region of male from BONAIRE [body-length 126 mm].

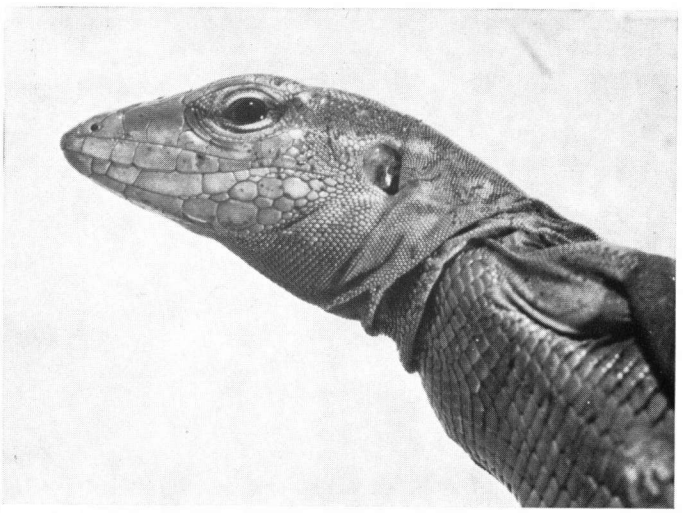
PLATE X

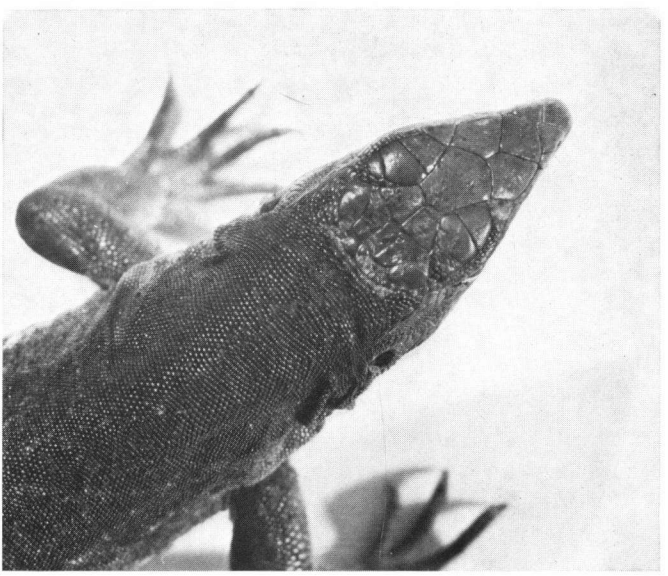




Xa. *Cnemidophorus murinus ruthveni*: head of male from BONAIRE [body-length 126 mm; specimen from Pl. IXb]. – Animal brownish, with light greenish dots; head somewhat bluish; belly with orange; not striped.

Xb. *Cnemidophorus murinus ruthveni*: head of same male from BONAIRE.

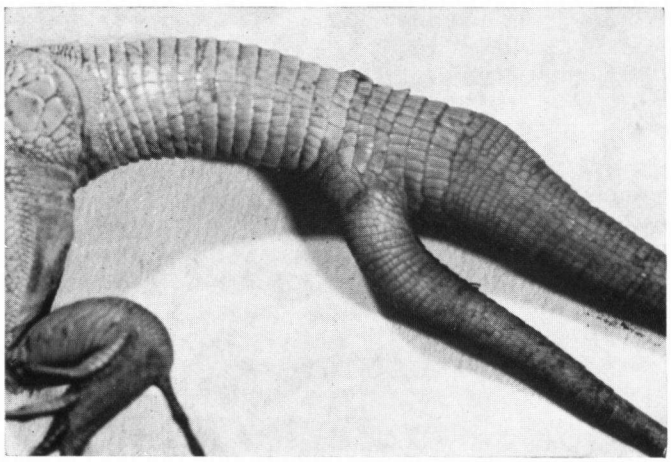


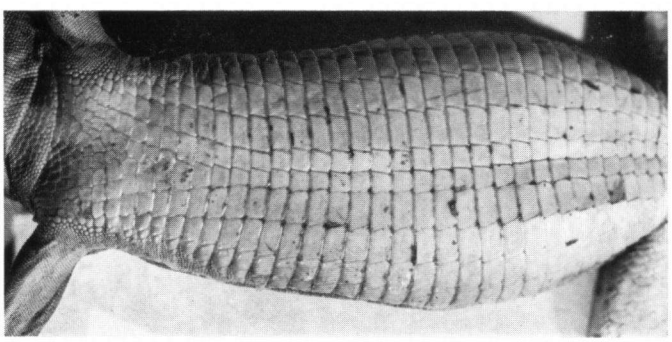


XIa. *Cnemidophorus murinus ruthveni*: head of male from BONAIRE [body-length 81 mm, tail 204 mm]. – Animal brownish, with distinct whitish spots; gular region light orange; sides with vague brown-blackish stripes.

XIb. *Cnemidophorus murinus ruthveni*: head of female from BONAIRE [body length 98 mm; specimen from Pls. IXa and XIIa].

PLATE XII





XIIa. *Cnemidophorus murinus ruthveni*: regenerated and bifurcated tail of female from BONAIRE [length of basal part of original tail, comprising 21 tail-rings, 38 mm; specimen from Pls. IXa and XIb].

XIIb. *Cnemidophorus murinus ruthveni*: ventral side of female from BONAIRE showing longitudinal and transverse rows of ventrals [body-length 106 mm]. – Animal brownish with only a few light dots; striped with black on the sides.