

**A division of the Meso-American lizard genus *Laemanctus* Wiegmann, 1834 as currently recognized, with the formal description of a new genus, new species and a new subspecies.**

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**ABSTRACT**

The genus *Laemanctus* Wiegmann, 1834 has in recent years been treated as including two species, namely *L. longipes* Wiegmann, 1834 and *L. serratus* Cope, 1864.

Various forms similar to each have been treated as both species and subspecies by different authors, although in the absence of molecular data, most recent herpetologists have conservatively treated these as subspecies.

Notwithstanding the obvious similarities between *L. longipes sensu lato* and *L. serratus sensu lato*, indicating an obvious family-level relationship between the two, both taxa as recognized are sufficiently divergent from one another to warrant recognition in different genera.

Furthermore, those forms recognized most recently as subspecies of *L. longipes sensu lato* and *L. serratus sensu lato* by authors such as McCoy (1968), are treated herein as full species, as effectively done by Boulenger (1887) for those previously named forms he had on hand.

This is done on the basis that each are morphologically distinct from one another and geographically isolated from one another as well, thereby satisfying modern species delineation criteria.

In the absence of a pre-existing genus name, the taxon *L. serratus* and those forms associated with it, are herein placed in the new genus *Brunaviridisaurus gen. nov.* in accordance with the International Code of Zoological Nomenclature (Ride *et al.* 1999).

One geographically isolated and distinct form most recently treated as a variant of *L. longipes*, long recognized as distinct by authors including McCoy (1968) is herein formally named as a new species *L. viridis sp. nov.*

This paper therefore recognizes four species of *L. longipes* and three of *L. serratus*, the latter now in the genus *Brunaviridisaurus gen. nov.*

An isolated population until now referred to the species *L. deborrei* (Boulenger, 1887) is defined herein as a newly named subspecies.

**Keywords:** Taxonomy; nomenclature; lizards; Mexico; *Laemanctus*; *longipes*; *deborrei*; *serratus*; new genus; *Brunaviridisaurus*; new species; *viridis*; new subspecies; *tuxtlasensis*.

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**INTRODUCTION**

The iconic genus *Laemanctus* Wiegmann, 1834 has been treated as consisting up to six species by herpetologists, although most recent treatments of the genus as recognized to date have included just two species, namely *L. longipes* Wiegmann, 1834 and *L. serratus* Cope, 1864, with other the other four named and recognized forms relegated to being subspecies of one or other.

An audit of the modern literature and the taxa themselves indicated that the present classification for these lizards is not consistent with other lizards, including those other genera within

the Corytophanidae and the associated Dactyloidae.

As a result, the genus *Laemanctus* Wiegmann, 1834 as presently conceived was reviewed and assessed dispassionately in order to correct the taxonomy and nomenclature that arose from it.

Each of *L. longipes sensu lato* and *L. serratus sensu lato* are clearly very different from one another morphologically and are therefore had to be treated herein as being of different genera.

In the absence of a pre-existing genus name, the taxon *L. serratus* and those forms associated with it, are herein placed in the new genus *Brunaviridisaurus gen. nov.* in accordance with

the International Code of Zoological Nomenclature (Ride *et al.* 1999).

One geographically isolated and distinct form most recently treated as a variant of *L. longipes*, for some time already recognized as distinct by authors including McCoy (1968) is herein formally named as a new species *L. viridis sp. nov.*

This paper therefore recognizes four species of *L. longipes* and three of *L. serratus*, the latter now in the genus *Brunaviridisaurus gen. nov.*, the species divisions within being an effectively expanded form of the key presented by Boulenger (1887) at page 104 (and immediately following species accounts) and incorporating all described and recognized forms to date, including the species *L. viridis sp. nov.* described herein.

#### MATERIALS AND METHODS

The body of literature available in terms of the relevant species, is extensive and formed the primary basis for developing the taxonomy presented within this paper.

While it is not practical for me to list all the published material reviewed, specimens examined or herpetologists consulted in the 30 year period preceding the writing of this paper, some key publications of relevance are listed herein.

I also note that a considerable body of relevant materials was stolen from my property during an illegal armed raid on my facility on 17 August 2011, representing an accumulation of data spanning more than three decades. While the Court of Appeal in Victoria on 5 September 2014 found the raid to be illegal and ordered the government wildlife officers to return the stolen material, pay costs and the like, this has not yet happened and the relevant officers have made it clear that they do not intend returning to me any of my stolen property.

Although I note that as of June 2015, I am engaged in litigation to effect the return of stolen materials, damages, monies owed, etc. Any potential deficiencies in this paper, are a direct result of this unlawful theft of data and materials.

Due to the relative rarity of the relevant taxa involved and potential threats to them posed by the ever expanding human population juggernaut, I have decided to publish this paper now, rather than potentially delay publication for many years in the hope I can re-acquire lost data, by which stage I may be dead and therefore never get to publish the paper.

In terms of the taxonomy and other relevant aspects of the genus *Laemanctus* as recognized to date, relevant publications include: Barbour and Cole (1906), Boulenger (1887, 1885), Canseco-Marquez and Gutierrez-Mayen (1998), Casas-Andreu *et al.* (2004), Cope (1864, 1866a, 1866b), Dathe (1988), Dixon and Lemos-Espinal (2010), Duellman (1963), Duméril and Bibron (1837), Garcia *et al.* (1996), Günther (1885), Hribal and Holanova (2004), Köhler (2000), Lee (1996, 2000), Lemos-Espinal and Smith (2015), Martin (1958), Mata-Silva *et al.* (2015), McCoy (1968), McCranie (2015), McCranie and Köhler (2004a, 2004b), Müller (1880), Perez-Higareda and Vogt (1985), Pyron *et al.* (2013), Schmidt (1933), Smith and Taylor (1950), Solis *et al.* (2014), Stuart (1948), Sunyer (2014), Townsend *et al.* (2014), Vieira *et al.* (2005), Weber (1945), Wiegmann (1834) and sources cited therein.

#### CONSEQUENCES OF THE RESULTS AND TAXONOMIC ACTIONS.

Before engaging in the formal taxonomic actions within this paper, it is trite for me to note that the nomenclature follows the taxonomy and is used in accordance with the rules, recommendations and spirit of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), known as "the code", or "the rules".

In terms of the descriptions below, if and when a name is found by a later author to be in error in terms of formation, gender or similar, it should not be amended in any way, unless totally mandatory under the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

In terms of order of preference for use of new names by a first

revisor, in the event that that they seek to merge defined taxonomic entities as defined herein, then the order should be in page priority order as seen in the text herein. Those entities named first take priority.

#### GENUS *LAEMANCTUS* WIEGMANN, 1834.

**Type species:** *Laemanctus longipes* Wiegmann, 1834.

**Diagnosis:** The diagnosis of Boulenger, 1887 still broadly applies to the genus, although it is modified slightly to separate it from the now associated genus *Brunaviridisaurus gen. nov.*

*Laemanctus* and *Brunaviridisaurus gen. nov.* are both defined as follows: Tympanum distinct. Head plane above, shelving forwards, the occipital region more or less raised and reduced beyond the occiput. Body compressed, covered with imbricate keeled scales; dorsal crest feebly developed or absent. A strong transverse gular fold; no gular pouch. Limbs very long; infradigital lamellae with a median tubercle-like keel. No femoral pores. Tail very long and round. Lateral teeth tricuspid; pterygoid teeth. Clavicle loop-shaped proximally. No sternal fontanelle. No abdominal ribs.

*Laemanctus* is separated from *Brunaviridisaurus gen. nov.* by the following: Anterior dorsal head scales small and irregular; posterior edge of head lacking a fringe of enlarged conical scales; mid-dorsal scales are not enlarged; no free serrate dorsal crest.

By contrast *Brunaviridisaurus gen. nov.* is separated from *Laemanctus* by the following: Anterior dorsal head scales are large and regular; consisting of paired or both paired and azygous scales; posterior edge of the head with a projecting with a series of enlarged flattened conical scales; body scales of mid-dorsal row much enlarged and pointed forming a serrate dorsal crest.

**Distribution:** Mexico (Veracruz, Colima, Oaxaca, Yucatan), Belize, North-west Honduras, Nicaragua and Guatemala at 0-1200 m elevation.

**Content:** *Laemanctus longipes* Wiegmann, 1834 (type species); *L. deborrei* (Boulenger, 1877); *L. viridis sp. nov.*; *L. waltersi* Schmidt, 1933.

#### SPECIES *LAEMANCTUS VIRIDIS SP. NOV.*

**Holotype:** A specimen at the US National Museum (USNM), USNM 48097 collected from near Santa Domingo (= Petapa), Oaxaca, Mexico.

The US National Museum in Washington DC, USA, is a government facility that allows scientists access to specimens.

**Paratype:** A specimen at the US National Museum (USNM), USNM 48099 collected from near Santa Domingo (= Petapa), Oaxaca, Mexico.

**Diagnosis:** The species *L. viridis sp. nov.* is separated from all others in the genus *Laemanctus* Wiegmann, 1834 by the following suite of characters: 42-47 mid-body scale rows and anterior head scales that are intermediate between the very large ones seen in *L. longipes* Wiegmann, 1834 (those being nearly double the size of the posterior casque ones) and the very distinctly small ones (not

distinctly larger than those on occipital region) seen in *L. deborrei* (Boulenger, 1877).

In *L. viridis sp. nov.* anterior head scales are not near double the size of the posterior casque ones, but are noticeably larger than them.

*L. waltersi* Schmidt, 1933 is separated from all others in the genus by its small adult size and large body scales (average of 31 mid-body rows, with a known range of 30-32), gular fold absent or interrupted (versus well defined in the other species) and all dorsal head scales being subequal in size.

*L. longipes* is readily separated from *L. viridis sp. nov.* by having an average of 55 mid body rows and always a number higher than 47.

**Distribution:** Known only from near Santa Domingo (= Petapa) and Santa Maria Chimalapa, Oaxaca and from the vicinity of

Jesus Carranza, Veracruz, Mexico.

**Etymology:** Named in reflection of the dominantly green colour of the species.

**SUBSPECIES LAEMANCTUS DEBORREI TUXTLASENSIS SUBSP. NOV.**

**Holotype:** A juvenile specimen at the Texas Cooperative Wildlife Collectrion (TCWC) at the Texas A and M University, USA, specimen number TCWC 21327 hatched from an egg collected at the Rio Quetzalapan two miles east of Lago Catemato, Mexico. This facility allows access to specimens by scientists.

**Paratypes:** Two juvenile specimens at the Texas Cooperative Wildlife Collectrion (TCWC) at the Texas A and M University, USA, specimen numbers TCWC 21238 and TCWC 21239 hatched from eggs collected at the Rio Quetzalapan two miles east of Lago Catemato, Mexico.

**Diagnosis:** This taxon is most readily separated from the nominate species by having 42-45 mid body scale rows, versus 47 or more in other Mexican specimens and 4 rows of granular gular fold scales, versus 2-3 in Guatemalan specimens, which are otherwise characterised by lower mid-body scale row counts than other Mexican specimens not including this subspecies and in line with this subspecies.

The population is further separated from the nominate form by distribution and habitat partitioning from the main population generally further east or south by at least 250 km in either direction.

**Distribution:** An isolated population from La Venta, Tabasco and west of the mouth of the Rio Coatzacoalcos in the Tuxtlas Range of coastal Veracruz, Mexico.

The nominate form is found from the Yucatan Peninsula south to Honduras.

**Etymology:** Named in recognition of the region it is known from, this being generally near the Tuxtlas Range of coastal Veracruz, Mexico.

**GENUS BRUNAVIRIDISAURUS GEN. NOV.**

**Type species:** *Laemanctus serratus* Cope, 1864.

**Diagnosis:** The diagnosis of Boulenger, 1887 for the genus *Laemanctus* still broadly applies to this associated genus, although it is modified slightly to separate both genera.

*Laemanctus* and *Brunaviridisaurus gen. nov.* are both defined as follows: Tympanum distinct. Head plane above, shelving forwards, the occipital region more or less raised and reduced beyond the occiput. Body compressed, covered with imbricate keeled scales; dorsal crest feebly developed or absent. A strong transverse gular fold; no gular pouch. Limbs very long; infradigital lamellae with a median tubercle-like keel. No femoral pores. Tail very long and round. Lateral teeth tricuspid; pterygoid teeth. Clavicle loop-shaped proximally. No sternal fontanelle. No abdominal ribs.

*Brunaviridisaurus gen. nov.* is separated from *Laemanctus* by the following: Anterior dorsal head scales are large and regular; consisting of paired or both paired and azygous scales; posterior edge of the head with a projecting with a series of enlarged flattened conical scales; body scales of mid-dorsal row much enlarged and pointed forming a serrate dorsal crest.

By contrast *Laemanctus* is separated from *Brunaviridisaurus gen. nov.* by the following: Anterior dorsal head scales small and irregular; posterior edge of head lacking a fringe of enlarged conical scales; mid-dorsal scales are not enlarged; no free serrate dorsal crest.

**Distribution:** Mexico (Yucatan, Oaxaca, Veracruz, Guanajuato, Hidalgo, Campeche, San Luis Potosí, Tamaulipas, Puebla, Quéretaro), Belize, Honduras and Guatemala.

**Etymology:** Named in reflection of the dominant colours of the taxon group and the fact the genus is a lizard.

**Content:** *Brunaviridisaurus serratus* Cope, 1864 (type species); *B. alticoronatus* (Cope, 1866); *B. mccoysi* (Perez-Higareda and Vogt, 1985).

**FIRST REVISOR'S INSTRUCTIONS**

Unless mandatory under the rules of zoological nomenclature of the time, no new scientific names are to have spellings altered in any way. No alteration is to be made for the purposes of gender allocation, correction or the like as all spellings and the like are intentional and designed to accommodate the rules of homonymy and the recommendations that the names be easy to use by others.

If two or more described taxa or taxon groups described herein are to be treated as one and the same and therefore in need to be merged, the name that shall take priority is that which appears first in this paper as a full description.

Unless otherwise indicated in any specific papers, these same rules are to be applied to all previous papers I, Raymond Hoser, have published as sole or senior author.

**CONFLICT OF INTEREST**

None is reported for this paper in any way.

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