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A New Genus of Coral Snake from Japan (Serpentes: Elapidae).

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ABSTRACT
This paper reviews new phylogenetic studies of the Coral Snakes recently placed in the genus Sinomicrurus Slowinski et. al., 2001. The species japonicus is found to be sufficiently divergent from cogeners to warrant being placed in its own genus. As a result, this taxon is placed within the new genus Funkelapidus gen. nov, which is herein formally named and defined in accordance with the Zoological Code.

Keywords: Taxonomic revision; new genus; species; Funkelapidus; Sinomicrurus; japonicus; systematics.

INTRODUCTION
Numerous studies have recently been completed in terms of the so-called Asian Coral snakes. Slowinski et. al. (2001) decided to split them all between three genera, namely Calliophis Gray, 1834, (into which they sub-sumed the genus Maticora Gray, 1834), Hemibungarus Peters, 1862, (which they made monotypic for Hemibungarus calligaster Weimann, 1835) and for five species they created a new genus named Sinomicrurus Slowinski et. al., 2001. The currently recognized species within this now widely recognized genus are, Sinomicrurus macclellandi (Reinhardt, 1844) (the type species), S. hatori (Takahashi, 1930), S. japonicus (Günther, 1868), S. kelloggi (Pope, 1928) and S. sauteri (Steindachner, 1913).

Due to the small size, similar habits and their relatively inoffensive nature, these five species of snake have not come to the attention of taxonomists from the point of view of close studies and investigation of differences at the level between species within the single genus. Ota et. al. (1999) has recently investigated S. japonicus and in 1999 described a subspecies of this taxon.

Studies of the snakes as a group have tended to be in terms of the superficially similar physically similar snakes was highlighted in the results of the molecular phylogenetic analysis of Pyron et. al. 2011. However a revisiting of the mtDNA data by Slowinski et. al. (2001) yielded a similar result (see fig 2. page 236) the relevant data of which seems to have been overlooked by both themselves and other herpetologists. This may in part be due to the conflicting diagram based on certain morphological characters, seen in Fig 1, p. 236 of Slowinski et. al. (above and on the very same page) which showed japonica well inside the cluster of other species placed within their newly erected genus Sinomicrurus.

This view is clearly obvious by the comments made in the published results of studies like Lawson et. al. (2005), Pyron et. al. (2011) and Slowinski et. al. (2001).

However within this genus as currently recognized, there are two clear and phylogenetically distinct groups of snakes. These are the Japanese Coral Snake, currently known as Sinomicrurus japonicus (including subspecies and variants), versus all the others in the group; see Cox, et. al. (1998), Mori (1982), Orlov. et. al. (2003), Ota (2000). Ota et. al. (1999), Pope (1935), Stejneger (1907), Stejneger (1910), Wali (1908a), Wali (1908b), Whitaker and Ashok (2004), Zhao and Adler (1993), Ziegler et. al. (2007).

In terms of distance apart, in Slowinski et. al.’s results they found Micruroides euryxanthus and Micrurus fulvius to be closer together than the taxon japonicus and the other species within Sinomicrurus.

It should also be stressed herein that Micrurus and Micruroides are two widely recognized separate genera, (refer for example to Campbell and Lamar 2004) who’s status is not in dispute among taxonomists.
Pyron et. al’s results of 2011 found the divergences between *Micruroides euryxanthus* and *Micrurus fulvius* to be about the same as that between the species *japonica* and the other taxa within *Sinomicrurus*. Based on the results of Pyron et. al (2011), similar (near identical) earlier published results published in Campbell and Lamar (2004) and obvious physical differences within the relevant snakes (morphology, hemipenes and colouration), the new world genus *Micrurus* has been further split (Hoser 2012). As a result of the compelling differences within *Sinomicrurus sensu lato* as shown by the various relevant studies, it is clear that the genus *Sinomicrurus* as currently recognized needs to be split into two. It would also be inconsistent not to split the genus *Sinomicrurus* as currently recognized. The *macclellandi* group remains within *Sinomicrurus* as it contains the type species, while the species *japonicus* is herein placed in a new genus that is diagnosed and named.

**GENUS FUNKELAPIDUS GEN. NOV.**

**Type species:** *Hemibungarus japonicus* Günther, 1868

(Known currently as *Sinomicrurus japonicus*.)

**Diagnosis:** The snakes of this genus (monotypic for the species *japonicus*) are easily separated from all those remaining in the genus *Sinomicrurus* on the basis of dorsal coloration of the head and neck.

In *Funkelapidus* gen. nov. there is no prominent white or yellowish-white crossband running across the back of the head or nearby neck.

In snakes of the genus *Sinomicrurus*, the white crossband or nape is usually wider than the eye or wider. It usually runs across the head either from about the eye, or slightly further back, depending on both species and local variation.

In *Funkelapidus* gen. nov. the snake usually has an orange body with medium to thick black bands (slightly white etched), and a dark head (especially at front), although this is of medium or mottled colour in some individuals. There is no white bar on the head, and the only light on the head may be some longitudinally spreading from the neck on either side of the spinal column.

Orange parts are at least 3-4 times wider than black and a distinct black vertebral stripe runs down the mid-body.

Some specimens are completely striped with longitudinal stripes running the length of the body, with the stripes commencing in the region of the back of the head or neck, but not possibly able to be confused with the broad crossband or nape seen in snakes remaining in *Sinomicrurus*.

**Adults range between 30-60 cm, with any larger specimens being rare.**

In other words these are small snakes.

The tail ends sharp and this is diagnostic for the genera *Sinomicrurus* and *Funkelapidus*.

**Snakes of the genera *Sinomicrurus* and *Funkelapidus* can be separated from the other locally occurring Asian Coral snakes, known often as either the “Long-glanded Coral Snakes” and/or Slender Coral Snakes (Genus *Calliophis*) by several means.**

Slowinski et. al. 2001 provided a diagnosis to separate the taxon *japonicus* from the other snakes in the genus *Sinomicrurus* and all others in the genera *Calliophis* and *Hemibungarus*. It is paraphrased here as part of this new genus diagnosis to properly identify and separate the taxon *japonicus*.

The diagnosis exclusive for the taxon *japonicus* is: 13 mid-body scale rows, divided anal, pattern is not characterized by small black spots on the dorsum with two black bands or rings on tail, 7 supralabials, maxillary teeth behind the fangs, temporals 1+1, no uninterrupted pale crossband on back of head.

**Another similar (in appearance species) snake from the same general region is the Philippine Coral Snake *Hemibungarus calligaster* (monotypic for that genus, Slowinski et. al. 2001), and it is easily separated by colour pattern.**

Its dominant dorsal colour is black, with numerous thin white rings along the body length, an appearance never seen in *Funkelapidus*. In *Hemibungarus* orange is confined to the front, rear or flanks and usually presents as blotches.

Three subspecies of *F. japonicus* have been described. These are:

*F. japonicus boettgeri* (Fritze, 1894)

*F. japonicus japonicus* (Günther, 1868)

*F. japonicus takarai* (Ota, et. al., 1999).

**Distribution:** This species is endemic to Japan, and is found on the Amami and Okinawa groups of the central Ryuku Islands (Ota 2010). The total land area of the Ryuku Islands is 3,090 km², but the area in which this species is distributed is estimated to be 2,631 km².

**Conservation:** Deforestation is occurring within this species’ relatively restricted known range, causing continuing declines in habitat quality on some of the islands. While, based on its island distribution, the species is likely to occur in more than ten locations, the population should be monitored in the event of decline.

An unexpected decline would be most likely in the event of some form of pest species becoming established in the snake’s habitat as opposed to direct human impact through collecting, killing or even habitat loss.

It would be prudent for captive populations of the snake to be established to protect the species from an unforeseen natural calamity that may affect wild stocks.

**Common name:** Japanese Coral Snake.

**Etymology:** Named in honor of well-known herpetologist and reptile veterinarian, Dr. Richard Funk, who as of March 2012, was aged 67, still in good health and playing with snakes, living and working in Mesa, Arizona, USA.

He is depicted on the front cover of this journal in recognition of his work.

Of note is that he gave expert evidence in a Victorian court tribunal, called VCAT in February 2012. He repeatedly gave evidence as a globally recognised expert witness who had performed over 200 snake devenomizing surgeries (venomoid surgery). His evidence was that Raymond Hoser’s venomoids were totally safe, he had free handled them himself and inspected them prior to the hearing and that it was simply not possible for them to regenerate venom as claimed by Hoser’s business competitors.

Funk’s evidence was backed up by video evidence of the venomoids biting people with no ill effect and various experimental test results, autopsies of snakes that had died some years post surgery and so on.

He also said that all the Hoser snakes were in immaculate health, properly handled and treated, and that they were all properly treated and handled.

The government side who were both competitors of the Snakebusters reptile education business and regulators of Snakebusters, were using their position as regulator to remove a competitor that they could not match in standard.

They had no one with any expertise whatsoever in venomoid surgery, but ran their case that the Hoser venomoids were a major public hazard, even though Snakebusters were alone in their business arena with a perfect safety record.

The corrupt Judge, named Pamela Jenkins, biased against Hoser from the outset and close associate of Felicity Hampel, now a judge and adversely named in several chapters of the book *Victoria Police Corruption* (Volume 2) (Hoser 1999), later issued two corrupt written judgments making bizarre and totally false claims.

Included was that “Mr Fink”, (yes she called him this repeatedly) thought Hoser’s venomoids were dangerous and that he (“Fink”) would never free handle them (the photo on the cover of this journal taken before the hearing proves the second statement to be a lie).
She then went on to say in writing that “No weight could be given to the evidence of Mr Fink” a point she forcefully repeated in both written judgments (Jenkins 2012a, 2012b).

Instead she relied on an anonymous post on the “Snakegetters” website at: http://www.snakegetters.com/demo/vet/venomoid-faq.html, sponsored by “tongs.com”, tendered by Melbourne Zoo reptile keepers (part of the DSE umbrella) to allege that all the Hoser venomoids were a serious public risk and highly dangerous.

That post by an anonymous author claimed that venom glands may regenerate after being removed. However the merit of the claim would be immediately doubted as it was made on a site selling snake tongs, a cruel and brutal device used to handle (and injure) dangerously venomous snakes, the device of which is made redundant if the snakes in question are rendered harmless by venomoid surgery.

In other words, the commercial self-interest in the claims on the site would be obvious to all!

On 9 March 2012, Jenkins summarily shut down the successful Snakebusters business, not only depriving numerous clients of reptile education shows and the like, but also putting Victorians at risk because of the unavailability of alternative reptile educators of the same expertise and standard.

On 26 April 2012, Jenkins repeated her generally false claims in her second written judgment and demanded Raymond Hoser pay $20,000 compensation to the government as punishment for losing the proceedings, even though she had stripped him (myself) of all income and the tribunal (VCAT) is one where the rules are written that each side bears their own costs, making her money demand highly illegal.

For the record, Jenkins has previously been found guilty by the Supreme Court of Victoria for making false statements in a judgment.

The case on the public record was when she attacked a corruption whistleblower, the previous case being where she improperly found solicitor Mark Morgan guilty of contempt of court in September 2007.

The conviction was overturned when the appeal court judges said that “ICZN 1999”).


A revision of the Asian Pitvipers, referred to the genus Cryptelytrops Cope, 1860, with the creation of a new genus Adelynhoserea to accommodate six divergent species (Serpentes:Viperidae:Crotalinae).

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ABSTRACT

The Asian Pitvipers, recently placed in the genus genus Cryptelytrops Cope, 1860, have long been recognized as a distinct group. Recently a number of phylogenetic studies including Pyron et. al. (2011) and Malhorta et. al. (2011) have confirmed simple observations of morphology to show that within this assemblage of about a dozen described species, six species of these snakes differ significantly from other members of the genus Cryptelytrops senso lato.
The type species for the genus Cryptelytrops is the morphologically distinct taxa C. purpureomaculatus.
This paper formalizes the obvious phylogenetic divergence by placing the six divergent species in a new genus according to the current Zoological Code (Ride et. al. 1999).
Placed in Adelynhoserea gen. nov. are the species formerly placed in the genus Cryptelytrops, namely C. cardamomensis, C. Honsonensis, C. kanburiensis, C. macrops, C. rubeus and C. venustus.

Keywords: new genus; Trimeresurus; Adelynhoserea; Cryptelytrops; purpureomaculatus; cardamomensis; honsonensis; kanburiensis; macrops; rubeus; venustus; Viperidae; Crotalinae; Hoser; snake; genus; Asia.

INTRODUCTION

The Pitviper genus Trimeresurus Lacépède, 1804 sensu lato has been subject of intense research in recent years, with numerous new taxa being formally described and proposals made to split the genus as recognized to smaller divisions.
Various other generic names have been proposed for different species within the above group, but have not necessarily come into use for a variety of reasons.
Some of the above cited generic names may even be
questionable under the current and most recently past zoological codes as published by the ICZN.

By way of example, the series of names proposed by Malhorta and Thorpe 2004 (namely Himalayophis Malhotra and Thorpe, 2004, Popeia Malhotra and Thorpe, 2004 and Vindovipera Malhotra and Thorpe, 2004) were not defined in accordance with the current (1999/2000) code (several articles) and therefore unless properly defined since, remain unavailable for the purposes of zoological nomenclature.

It would clearly be prudent for me to properly describe the relevant genus level taxa so that names are in fact “available”. However as a matter of correct ethics, I have instead refrained from doing so and herein provide Anita Malhota the opportunity now to correct the anomaly and retain ‘naming rights’ over the subject genera and to stabilize the nomenclature.

Ceratotermes Liang and Liu, (2003) was synonymised with Protobothrops in 2008 (David et. al. 2008). Ermia Zhang, 1993 is not an available name for snake taxa (already a genus name for something else) and Zhaoermia Gumprecht and Tillack, 2004 was later found to be synonymous with Protobothrops (Guo et. al. 2007).

Within the genus Cryptelytrops as recently resurrected, there is a distinct division between two main groups. About half the described species including the type species, C. purpureomaculatus are clearly very similar. However six species have been known to be divergent, these being the species formally described as “Cryptelytrops cardamomensis Malhotra et. al., 2011”, “Cryptelytrops honsonensis Grismer et al., 2008” “Trimeresurus kanburiensis Smith, 1943”, “Trimeresurus macrops Kramer, 1977”, “Cryptelytrops rubeus Malhotra et. al., 2011”, and “Trimeresurus venustus Vogel, 1991”. A recent phylogenetic study by Pyron et. al. (2011) also showed sufficient division between the two above groups of snakes to warrant generic distinction.

This follows on from a similar finding in the data of Malhota and Thorpe (2004), see figs A and B. Authors of both papers failed to make taxonomic acts in relation to the placement of the divergent species within a different genus.

As no name is currently available for the six divergent species, a new genus, Adelynhoserea gen. nov. is created according to the Zoological Code (Ride et. al. 1999) to accommodate the six species.

The recently described species, namely Cryptelytrops honsonensis (Grismer et al. 2008) from an island off the coast of southern Vietnam, has been provisionally included within the genus Adelynhoserea gen. nov. as described below on the basis of information provided by the authors. The newly described taxon is apparently most closely related to the species venustus.

GENUS ADELYNHOSAREA GEN. NOV.

Type species: Trimeresurus macrops Kramer, 1977.

Diagnosis: Separated from all other Asian Pitviper species which also have the typical “green pitviper” colouration or variation of it (uniform green dorsal colour and a lateral stripe present on the first few dorsal scale rows in one or both sexes), except other species within Cryptelytrops as currently defined, by the presence of a fused first supraocular and nasal scale, these being a trait common to both Cryptelytrops and Adelynhoserea gen. nov.

Adelynhoserea gen. nov. can be distinguished from Cryptelytrops primarily by the relatively larger size of the eye (most obvious in adults), the relatively wider supraoculars, and the shape of the head, which is elongate-oval in Cryptelytrops, but widens quite abruptly behind the eyes in Adelynhoserea gen. nov. to give a characteristically triangular-shaped head.

Distribution: Hillly, rocky parts of Thailand, Laos, Vietnam, Cambodia, including Hon Son Island, Vietnam.

Etymology: Named in honour of my daughter Adelyn Hoser, who has spent the first 13 years of her life teaching many thousands of Australians about snakes and other reptiles. Unfortunately this has included the shattering of lies and false information being peddled by people who have entered the “reptile industry” in recent years, motivated solely by a desire to make vast amounts of money as fast as possible, with no regard for truth, education or public safety.

These people have been backed by corrupt and dishonest friends in senior positions within Australian wildlife departments, in particular the Victorian Department of Sustainability and Environment (DSE).

These people in their total hatred of truth and decency, have subjected Adelyn Hoser to extreme stress and trauma by having her assaulted and impounded for about an hour when attending school on 10 August 2011 and then on 17 August 2011 dragged her out of bed in her own home at the crack of dawn in an illegal armed raid that went for 9 hours and involved 11 wildlife officers and heavily armed gun-toting police.

These people destroyed Adelyn’s possessions and had no remorse for their disgusting mistreatment and abuse of the 13-year-old child.

In reality, Adelyn deserves to have many genera of snakes named in her honor in recognition of the great work she has done in 13 years!

Species within the genus Adelynhoserea gen. nov.

Adelynhoserea macrops (Kramer, 1977) (Type species).

Adelynhoserea honsonensis (Grismer et. al., 2008)

Adelynhoserea cardamomensis (Malhota et. al., 2011)

Adelynhoserea kanburiensis (Smith, 1943)

Adelynhoserea rubeus (Malhota et. al., 2011)

Adelynhoserea venustus (Vogel, 1991)

Species remaining within the genus Cryptelytrops Cope, 1860

Cryptelytrops purpureomaculatus (Gray, 1832) (Type species)

Cryptelytrops albolabris (Gray, 1842)

Cryptelytrops cantori (Blyth, 1846)

Cryptelytrops erythrurus (Cantor, 1839)

Cryptelytrops insularis (Kramer, 1977)

Cryptelytrops septentrionalis (Kramer, 1977)

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A division of the South-east Asian Ratsnake genus *Coelognathus* (Serpentes: Colubridae).

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**ABSTRACT**

A number of recent studies of the ratsnake genus *Elaphe sensu lato* have shown it to be a paraphyletic group. Recent studies published include those of Helfenberger (2001), Utiger et. al. (2002), Utiger et. al. (2005) and Burbin and Lawson (2007).

As a result *Elaphe* has been subdivided into several genera that better reflect that phlogeny of similar species. Notably and relevant here, is that in 2002, Utiger et. al. resurected the genus *Coelognathus* Fitzinger, 1843 to accommodate five superficially similar Asiatic ratsnakes. Further studies since then, including that of Pyron et. al. (2011) have shown that this genus contains a genetically diverse assemblage of snakes of deep historic splits in lineage.

As a result the genus is split three-ways. The type species *radiatus* (*Coluber radiatus* Boie, 1827) remains within the genus *Coelognathus*. The species *helena* (*Coluber helena* Daudin, 1803) is placed in the herein resurrected genus *Cynophis* Gray, 1849. For the remaining three species, namely *erythrurus* (*Plagiodon erythrurus* Duméril, Bibron and Duméril, 1854), *subradiatus* (*Coluber subradiatus* Schlegel, 1837) and *flavolineatus* (*Coluber flavolineatus* Schlegel, 1837) there are no available names. They are therefore herein placed in a new genus, *Euanedwardsserpens* gen. nov, which is formally named and defined in accordance with the Zoological Code.

**Keywords:** Taxonomic revision; new genus; species; *Coelognathus*; *Elaphe*; *Euanedwardsserpens*; systematics; Colubrid; ratsnake; *radiatus*; *helena*; *erythrurus*; *subradiatus*; *flavolineatus*.

**INTRODUCTION**

Ratsnakes have been the subject of taxonomic interest in the period 2000-2012 with several reclassifications being made and most generally accepted. Better-known studies published include those of Helfenberger (2001), Utiger et. al. (2002), Utiger et. al. (2005) and Burbin and Lawson (2007).

As a result, Eurasian species are now classified within the following genera, *Coelognathus*, *Elaphe*, *Euprepiophis*, *Gonyosoma*, *Oocatochus*, *Oreocryptophis*, *Orthriophis* and *Rhadinophis* and *Zamenis*. A recent reclassification by Hoser (2012) has seen the genera *Orthriopsis* Utiger et. al., 2002 and *Zamenis* Wagler, 1830 subdivided.
In terms of the five species within the nominate genus Zamenis, Zamenis retained the species Z. longissimus and Z. lineata, the genus Calliophis Fitzinger, 1834 was resurrected in accordance with the Zoological code (Ride et. al. 1999) for the species Z. sinitula, while a few genus Richardwellsius gen. nov. was formally erected and named to accommodate the species persica and hohenackeri.

For the four species in the genus Orthriophis, O. taeniurus and O. moellendorffi, remained within that genus, while a new genus Martinekea gen. nov. was formally erected and named to accommodate the species O. cantoris and O. hodgsoni.

While the morphological similarities of ratsnakes has resulted in a tendency to lump them within one or a few relatively large genera, an increasing body of published evidence based on studies and even astute captive observations by hobbyists is revealing even more diversity than imagined even a few decades ago.


Molecular studies including the recent study by Pyron et. al. (2011) have continued to consistently show the deep rooted differences between snakes within both Elaphe sensu lato and more relevant here, between the snakes of the genus Coelognathus as defined by Utiger et. al. in 2005 and more fully by Helfenberger 2001, these diagnoses for this group of snakes being relied upon for the purposes of this paper.

As inferred in the abstract, the genus as currently understood fits within three broad groups.

The Radiated Ratsnake Coelognathus radiatus is quite divergent from the rest as is the Trinket Snake Coelognathus helena. Both are sufficiently divergent from one another to be placed in separate genera.

The remaining trio, namely the Yellow-striped Ratsnake Coelognathus flavolineatus, Indonesian Ratsnake Coelognathus subradiatus and the Philippines Ratsnake Coelognathus erythrurus are similar in most respects and form a natural group. I should herein note that the wide-ranging species subradiatus is in my view a composite assemblage composing more than one easily defined species-level taxa and in need of urgent taxonomic revision.

As a result of these facts, the above-named snakes are herein arranged as follows.

The type species radiatus (Coluber radiatus Boie, 1827) remains within the genus Coelognathus. The species helena (Coluber helena Daudin, 1803) is placed in the herein resurrected genus Cynophis Gray, 1849.

For the remaining three species, namely erythrurus (Plagiodon erythrurus Duméril, Bibron and Duméril, 1854), subradiatus (Coluber subradiatus Schlegel, 1837) and flavolineatus (Coluber flavolineatus Schlegel, 1837) there are no available genus names.

They are therefore placed in a new genus, Euanedwardsserpens gen. nov. which is formally named and defined below.

All ratsnakes in the genus Coelognathus sensu lato fit the broad definition of large (usually up to about 2 metres in length), somewhat aggressive, diurnally active ratsnakes with a vertically compressed body. All have an ability to flare the neck with air to a considerable extent as part of their threat display which involves the neck being held off the ground in a characteristic “s”shape” or similar. This enables the neck in particular to flare to (sometimes) more than four times as high as wide and often yields bright coloured skin between the scales.

Snakes typically hold their mouth open when in a threat display. In Orithriophis the post-orbital stripe runs more-or-less parallel with the jawline, whereas in Coelognathus it distinctly points downwards towards the back of the jaw, although this may be either broken, or one of two such lines, the other running in an upward direction, but not parallel to the jawline.

The species C. radiatus (now the entire content of this genus as defined herein) is separated from all other Asian ratsnakes (including those of genera Cynophis and Euanedwardsserpens gen. nov. by having a short interpulmonary bronchus (see plate 1A-D, Fig 4, Tables 1-2 in Utiger et. al. 2005).

Coelognathus radiatus also differs from the other relevant taxa (Cyanophis and Euanedwardsserpens gen. nov.) by the possession of a relatively short and stout hemipenis, versus long-sleender and subcylindrical (sometimes tapering distally) (particularly) in the snakes of the genus Euanedwardsserpens gen. nov.

Snakes of all three genera (Coelognathus, Cynophis and Euanedwardsserpens gen.) are also typified by the following traits: no anterior subocular (rarely present in the species subradiatus), paravertebral reductions of the dorsal scale rows, single anal plate, the hemipenis bears basal spines, the trachea lung is either absent or rudimentary and barely vascularized, and the left lung is often absent or small.

GENUS CYANOPIHS GRAY, 1849

Snakes of the genera Coelognathus and Euanedwardsserpens gen. nov. as defined herein always have three supralabials in contact with the eye.

By contrast Cyanophis helena does not.

GENUS EUANEDWARDSSERPENS GEN. NOV.

Type species: Coluber flavolineatus Schlegel, 1837 (Known in most contemporary texts as either Elaphe flavolineatus or Coelognathus flavolineatus).

Diagnosis: A group large ratsnakes found in the Southeast Asian region, typified by a vertically compressed body and an angled relatively pointed head and snout.

Often defensive (interpreted commonly as “aggressive”) to people when encountered and to a greater degree than most other ratsnake genera, with specimens commonly struggling against the handler if handled.

Helfenberger (2001) separated Coelognathus from the other Eurasian ratsnakes based on anatomical and osteological features as well as electrophoretic loci and used this to diagnose that genus sensu lato, including (in effect) the genera Euanedwardsserpens gen. nov. and Cynophis in terms of their common attributes.

This information is relied upon herein as part of this diagnosis as relevant.

These snakes are medium to large and relatively long and slender, have correspondingly high ventral scale and precaudal vertebra counts and have a distinctly long and slender head, which separates them from all other ratsnake genera except Orthriophis. However these genera are easily separated by
viewing the head colouration. In Orthriophis the post-orbital stripe runs more-or-less parallel with the jawline, whereas in Coelognathus it distinctly points downwards towards the back of the jaw, although this may be either broken, or one of two such lines, the other running in an upward direction.

If in any doubt, Orthriophis is also separated from the genera Coelognathus, Cyanophis and Euanedwardsserpens gen. by having a divided anal plate as opposed to a single one. Snakes of the ratsnake genus Gonyosoma Wagler, 1828 also have a divided anal.

Separation of the three relevant genera (namely Coelognathus, Cyanophis and Euanedwardsserpens gen. nov.) is done as follows:

The species Coelognathus radiatus (now the entire content of that genus as defined herein) is separated from all other Asian ratsnakes (including those of genera Cyanophis and Euanedwardsserpens gen. nov.) by having a short interpulmonary bronchus (see plate 1A-D, Fig 4, Tables 1-2 in Utiger et. al. 2005).

Snakes of the genera Coelognathus and Euanedwardsserpens gen. nov. as defined herein always have three supralabials in contact with the eye.

By contrast Cyanophis helena does not.

Coelognathus radiatus also differs from the other relevant taxa (Cyanophis and Euanedwardsserpens gen. nov.) by the possession of a relatively short and stout hemipenis, versus long-slimber and subcylindrical (sometimes tapering distally) particularly in the snakes of the genus Euanedwardsserpens gen. nov. If the snake does not identify as being within the genera Coelognathus or Cyanophis it will be in the genus Euanedwardsserpens gen. nov.

Common name: Ratsnake.

Etymology: Named in honour of Australian-based herpetologist, Euan Edwards. He has worked behind the scenes for many of the better-known names in contemporary herpetology, often doing the so-called “hard work” for which he may not receive any accolades, but without which, we’d all be far worse off.

SPECIES WITHIN EUANEDWARDSSERPENS GEN. NOV. Euanedwardsserpens flavolineatus (Schlegel, 1837) (Type species).

Common name: Yellow Stripe Ratsnake.

Euanedwardsserpens erythrurus (Duménil, Bibron and Duménil, 1854).

Common name: Philippine Ratsnake.

Euanedwardsserpens subradiatus (Schlegel, 1837).

Common name: Indonesian Ratsnake.

SPECIES WITHIN CYANOPHIS GRAY, 1849.

Cyanophis helena (Daudin, 1803) (Type species).

Common name: Trinket Snake.

SPECIES WITHIN COELOGNATHUS FITZINGER, 1843. Coelognathus radiatus (Boie, 1827) (Type species).

Common name: Radiated Ratsnake.

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ABSTRACT
The family Pareatidae as recognized at start 2012, consisted of three widely recognized genera, namely Aplopeltura (one species), Asthenodipsas (3 species) and Pareas (eleven species).
However numerous studies have shown that nine species within Pareas are widely divergent of the nominate species and another.
This paper recognizes this divergence by formally creating and naming a new genus Katrinahoserserpenea gen. nov. for these species and also assigns a more divergent species to its own subgenus Dannyleeus subgen.nov. within this new genus according to the Zoological Code.

Keywords: Taxonomic revision; new genera; genus; species; Dannyleeus; Katrinahoserserpenea; Pareas; Xenochrophis; Dendrelaphis; Boiga; systematics.

INTRODUCTION
Numerous studies have been completed in terms of the snail eating snakes within the Pareatidae, currently occupying three genera.
At start 2012, these were: Aplopeltura (one species), Asthenodipsas (3 species) and Pareas (eleven species).
However almost without exception the taxonomic studies on these snakes have been mainly preoccupied with delineating species rather than genera.
Alternatively the genera themselves have been scrutinized from the perspective of their positions in higher taxonomic hierarchies at the family level and higher (e.g. Lawson et. al. 2005), rather than whether or not snakes are appropriately placed within given genera which have been previously assigned.
However in the wake of several molecular studies of snakes within these genera, including most notably that of Guo et. al. (2011) it is clear that Pareas in particular is paraphyletic.
The molecular results of Guo et. al. (2011) directly reflected the previously recorded morphological differences between the tested taxa, which composed all or most of the Pareatidae.
The table one (page 61) showed the taxa Pareas carinatus and P. nuchalis, to be more divergent from the rest of Pareas than the other two genera within the Pareatidae.
As a result of these results alone it is clear that the genus Pareas as recognised in early 2012 needed to be divided.
As P. carinatus is the type species for the genus, it is the other eight species that need to be placed in a new genus.

Relevant publications about Pareas, which in combination provide further evidence in support of the division of the genus Pareas as defined to 2012 include those of Angel (1920), Barbour (1912), Boie (1828), Boulenger (1900), Boulenger (1914), Cantor (1839), Chen et. al. (2006), Cox et. al. (1998), das et. al. (2009), de Rooij (1917), Dowling and Jenner (1988), Geissler et. al. (2011), Götz (2001), Götz (2002), Grossmann and Tillack (2003), Guo and Xuejiang (2006), Guo and Xuejiang (2009), Guo and Zhao (2004), Guo et. al. (2011), Hu et. al. (1980), Huang (2004), Inger, et. al. (1990), Jan (1866), Mauksch (1996), Mauksch et. al. (2002), Mell (1922), Mell (1931), Mertens (1930), Nguyen et. al. (2009), Ota et. al. (1997), Pauwels et. al. (2003), Pope (1928), Rao (1992), Schlegel (1837), Schmidt and Kunz (2005), Sclater (1891), Smedley (1931), Smith (1943), Stejneger (1910), Stuebing and Inger (1999), Taylor (1965), Van Denburgh (1909), Vogt (1922), Voris (2006), Wagler (1830), Whittaker and Captain (2004) and Zhao and Adler (1993).

GENUS PAREAS WAGLER, 1830
Diagnosis: The Oriental Slug Eating Snakes family Pareatidae, were for many years considered a subfamily of the Colubridae (Pareinae), although as long ago as 1956 Alfred Romer.
considered them distinct at the family level based on morphology. Molecular evidence has suggested that this small group of snakes is in fact a lineage distinct from the family Colubridae (Vidal et al. 2007). They are smallish (usually under 600 mm as adults), of moderate to thin build, slightly vertically compressed and have a head distinct from a narrow neck, the snout often being blunt.

Members of the family Pareatidae are unique among Southeast Asian snakes and diagnosed in having large scales overlapping on their chins rather than having them separated by a straight groove. These snakes are known to feed mainly on terrestrial molluscs.

They have short skulls; relatively large eyes; a large nasal gland; have a relatively low number of scales at mid body (13-15 rows); the chin shields have no midline groove, and extend across the chin; they are nocturnal; they feed mostly upon gastropods and small vertebrates; and they lay eggs.

Observations on captive snakes eating snails suggests that they rest the upper jaw on a snail (preferred food) and use the mandibles to pull the snail’s body out of its shell. These are thought to represent a basal lineage of the advanced snakes (Caenophidia).

As of early 2012 there were 3 recognized genera and about 15 species currently recognized, all inhabiting Southeast Asia. Genus Aplobeltura is monotypic for the species A. boa. Asthenodipsas consists of three species, namely A. laevis, A. malaccanus and A. vertebralis.

Snakes of the genus Pareas as presently recognized consists of about eleven species and are diagnosed by being small and slender with a blunt snout, no mental groove and no teeth on the anterior part of the maxillae (Caenophidia).

As of early 2012 there were 3 recognized genera and about 15 species currently recognized, all inhabiting Southeast Asia. Genus Aplobeltura is monotypic for the species A. boa. Asthenodipsas consists of three species, namely A. laevis, A. malaccanus and A. vertebralis.

Diagnosis: Snakes of the genus Pareas are from ten species and are diagnosed by being small and slender with a blunt snout, no mental groove and no teeth on the anterior part of the maxillae. This obviously applies to this genus.

Katrinahoserserpenea gen. nov. by cephalic scalation and distribution pattern.

P. carinatus and P. nuchalis share three anterior temporals in contrast to the one or two (rarely three) anterior temporals in Katrinahoserserpenea gen. nov. species.

The frontal scale in P. carinatus and P. nuchalis is hexagonal with the lateral sides parallel to the body axis; this scale in Katrinahoserserpenea gen. nov. is almost diamond-shaped or shield-shaped with the lateral sides converging posteriorly.

The two anterior chin shields are longer than broad in Katrinahoserserpenea gen. nov., whereas in P. carinatus and P. nuchalis they are broader than long; this is a consistent way to separate the two genera.

Another consistent way to separate the genera is by the fact that in Katrinahoserserpenea gen. nov. there is a pre-frontal that enters the eye, whereas in P. carinatus and P. nuchalis there is no prefrontal.

As of early 2012 there were 3 recognized genera and about 15 species currently recognized, all inhabiting Southeast Asia. Genus Aplobeltura is monotypic for the species A. boa. Asthenodipsas consists of three species, namely A. laevis, A. malaccanus and A. vertebralis.

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Another consistent way to separate the genera is by the fact that in Katrinahoserserpenea gen. nov. there is a pre-frontal that enters the eye, whereas in P. carinatus and P. nuchalis there is no prefrontal.

The snakes remaining in the genus Pareas occur mainly throughout the Indochinese Peninsula and Sunda Islands. By contrast most species of Katrinahoserserpenea gen. nov. occur in central and southern China and the northern Indochinese Peninsula, with only two species Katrinahoserserpenea margaritophorus and K. hamptoni being found in the southern Indochinese Peninsula.

Distribution: Asia, with the centre of distribution (most species) being China.

Common name: Asian Snail-eating Snakes.

Etymology: Named in honor of my mother, Katrina Hoser, for services to herpetology over 50 years.

Species within the genus Katrinahoserserpenea gen. nov. Katrinahoserserpenea boulengeri (Angel, 1920) (type species) Katrinahoserserpenea chinensis (Barbour, 1912) Katrinahoserserpenea formosensis (Van Denburgh, 1909) Katrinahoserserpenea hamptoni (Boulenger, 1905) Katrinahoserserpenea wasakii (Maki, 1937) Katrinahoserserpenea margaritophorus (Jan, 1866) Katrinahoserserpenea monticola (Cantor, 1839) Katrinahoserserpenea nigriceps Guo and Deng, 2009 Katrinahoserserpenea stanleyi (Boulenger, 1914) DANNYLEEUS SUBGEN. NOV.

Type species: Dipias monticola Cantor, 1839

Diagnosis: Separated from all other species within the genera Katrinahoserserpenea gen. nov. (subgenus Katrinahoserserpenea subgen. nov.) and Pareas by the following suite of characters: It is of a dark or light-brown dorsal color, many dorsal scales having small black dots forming a transverse line or reticulation, there is a pre-frontal that enters the eye, there’s no preocular and the loreal enters the eye, smooth dorsal scales, vertebral enlarged, the fourth upper labial enters the eye, there are more than 190 ventrals, more than 72 subcaudals and a black “X”-shaped mark behind the parietals.

The subgenus is monotypic for the species Katrinahoserserpenea monticola (Cantor, 1839).

Distribution: West China, including Tibet to India.

Etymology: Named in honor of Danny Lee of Sydney, Australia, a good friend of mine of many decades and for various services to wildlife and conservation over the period 1977-1997.

KATRINAHOSERSERPENEA SUBGEN. NOV.

Type species: Amblycephalus Boulengeri Angel, 1920

Diagnosis: The diagnosis for this subgenus, is effectively a reversal of the diagnosis for the subgenus Dannyleeus subgen. nov..

Dannyleeus (the rest of the genus), is separated from all other species within the genera Katrinahoserserpenea gen. nov. (subgenus Katrinahoserserpenea subgen. nov.) and Pareas by the following suite of characters: It is of a dark or light-brown...
dorsal color, many dorsal scales having small black dots forming a transverse line or reticulation, there is a pre-frontal that enters the eye, there’s no preocular and the loreal enters the eye, smooth dorsal scales, vertebral enlarged, the fourth upper labial enters the eye, there are more than 190 ventrals, more than 72 subcaudals and a black “X”-shaped mark behind the parietals. In Katrinahoserserpenea gen. nov. there is a pre-frontal that enters the eye, whereas in P. carinatus and P. nuchialis (the entirety of the genus Pareas) there is no prefrontal. For further differences, see under the diagnosis for Katrinahoserserpenea gen. nov. above. 

**Distribution:** Asia, centred in the region of China. 

**Content:** All of the genus Katrinahoserserpenea, except the species Katrinahoserserpenea monticola (Cantor, 1839). 

**Etymology:** Named in honor of Katrina Hoser (see for the genus Katrinahoserserpenea gen. nov.).

**SPECIES REMAINING IN THE GENUS PAREAS WAGLER 1830.**

Pareas carinatus (Boie, 1828) (Type species) 

Pareas nuchalis Boulenger, 1900

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The dissolution of the genus

Rhadinophis Vogt, 1922 (Serpentes:Colubrinae).

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ABSTRACT

The genus Rhadinophis Vogt, 1922 as currently recognized consists of two species, namely R. frenatus Gray, 1853 and R. prasinus Blyth, 1854. As a result of recent molecular studies showing that the two species are not closely related, the genus is split two ways. The new genus for the species prasinus is the monotypic genus Katrinahoserea gen. nov. named and diagnosed according to the Zoological Code. The species frenatus is moved into the existing genus Rhynchophis Mocquard, 1897 for reasons explained within this paper.

Keywords: Taxonomic revision; new genus; Rhadinophis; genus; species; Rhynchophis; Katrinahoserea; snake; colubrid.

INTRODUCTION

The green colored snakes of the genus Rhadinophis Vogt, 1922 as currently recognized consists of two south-east Asian species, namely R. frenatus Gray, 1853 and R. prasinus Blyth, 1854. Due to their bright color they are of interest to herpetologists. However their extremely thin build and delicate nature and apparent need for a humid cage environment has led to few being bred in captivity. Added to this is the underlying fact that they occur in regions largely inaccessible to Westerners until recent years, so not many of them have filtered into the pet trade. Morphologically, both species of Rhadinophis as defined to date are similar in size, shape and color and so it made sense that they were classified into the same genus. The two species within Rhadinophis had been placed in other genera previously, but as phylogenetic studies have been done, these genera have been fragmented, leading to the current situation and the placement of the pair in Vogt’s genus Rhadinophis.

A third species of similar color and build, but with a unicorn-like horn on the snout, Rhynchophis boulengeri Mocquard, 1897 was placed in its own monotypic genus when described, no doubt on account of its unique proboscis. The undeniable physical similarities between this species and the species Rhadinophis frenatus was obviously overlooked at the time and until recently.

As part of a global study into the molecular phylogeny of the advanced snakes, Pyron et. al. (2011) compared mtDNA from most known genera of snake, including the three taxa relevant to this paper, which also happened to constitute the total species count for the two genera. The results clearly showed all three species clustering as a broadly monophyletic group. However the results showed Rhadinophis frenatum and Rhynchophis boulengeri together as a related pair, while Rhadinophis prasinus was sufficiently divergent to warrant being placed in a separate monotypic genus. A revisiting of the morphology of the three snakes confirms the molecular position, most easily seen by comparing the heads and head scalation of the three. The type species for the genus Rhadinophis was Rhadinophis melli Vogt, 1922, the species being the same taxon as Herpetodoras frenatus Gray, 1853, giving the currently recognized position for the taxon. Because the molecular studies by Pyron et. al. (2011) have confirmed that this species should be placed in the same genus as Rhynchophis boulengeri Mocquard, 1897, the genus name Rhynchophis having date priority over Rhadinophis, this means that Rhadinophis is subsumed into this genus as a junior synonym. As a result, R. prasinus is in a new and separate monotypic genus for which there is no available name.

Therefore in this paper I formally name and define the new genus for this taxon according to the Zoological Code. The species prasinus is herein placed within the monotypic genus Katrinahoserea gen. nov.

The species Rhynchophis boulengeri Mocquard, 1897 is relatively unknown in terms of published studies and the like, but
some important publications on the taxon include, Brachtel (1998), Orlov et. al. (1999), Mocquard (1897) and Schultz and Schultz (2011) as well as several good accounts in major regional field guide books published.

Important publications on the two species formerly placed in the genus Rhadinophis include Boulenger (1894), Blyth (1855), Gray (1853), Grossmann (2002), Mao et. al. (2003), Pauwels et. al. (2006), Schulz (1996), Schulz and Grossman (2000), Schulz et. al. (2011) and Utiger, et. al. (2005).

**GENUS RHYNCHOPHIS MOQUARD, 1897**

**Type species:** Rhynchophis boulengeri Mocquard, 1897

**Diagnosis:** The Rhinoceros Ratsnake (Rhynchophis boulengeri) formerly monotypic for the genus Rhynchophis, is also known as the Rhinoceros Snake, Rhino Rat Snake, Vietnamese Longnose Snake and Green Unicorn.

It is found from Northern Vietnam to Southern China, has a prominent, distinctive, scaled protrusion on the front of its snout which has led to its common naming after mythical unicorns and some species of rhinoceros which feature a single horn on the front of their snouts. This species of ratsnake is named for Belgian-British biologist George Boulenger.

Rhinoceros Ratsnakes inhabit subtropical rainforests at elevations between 300 and 1100 m, particularly valleys with streams. They are generally arboreal and mostly move at night, hunting small rodents, birds and other vertebrates.

Oviparous, the mating season is from April to May.

5 to 10 eggs in a clutch are recorded. Hatchlings usually measure 30-35 cm total length.

Their color is brownish grey with dark edges on several dorsal scales. As they mature Rhinoceros Ratsnakes change color to steel grey at about 12-14 months, then to a bluish green or green adult hue at about 24 months. However, some individuals maintain their steel grey subadult color and do not pass into the ordinary mature color phase.

The snout alone on the species Rhynchophis boulengeri was sufficient to define the previously monotypic genus until now.

However, the taxon frenatum has been shown to be closely related via molecular studies and so it is added to the diagnosis herein for the genus. As for R. boulengeri this taxon is extremely thin in build and has a head of similar shape, save for the horn-like protrusion on the snout which it lacks.

Separating this taxon (and R. boulengeri) from its former cognate prasinus, now placed in the genus Katrinahoserea gen. nov. is the coloration of the head and neck.

Both boulengeri and frenatum are characterized by a black line that starts just past the nostril, is thin as it runs into the eye, runs through the eye itself fairly thick and then behind the eye runs as a thick black line from half to a third of the width of the temporal scales as it runs along them and into the first two or three scales past the temporal scales before the line ends.

Beneath this line the color of the labials is far lighter than the color above the line and on top of the head. By contrast in Katrinahoserea gen. nov., there are no black temporal stripes or other separation of the top part of the head from the bottom.

While the labials are lighter than the top of the head in Katrinahoserea gen. nov., there is no line separation and the contrast is nowhere near as great as in Rhynchophis.

The body of both species of Rhynchophis is characterized by prominent black flecks either on the scales or interstitial skin, a condition not seen or as prominent in Katrinahoserea gen. nov.

**GENUS KATRINAHOSERE A GEN. NOV.**

**Type species:** Coluber prasinus Blyth 1854

**Diagnosis:** This monotypic genus would normally be identified as similar to snakes within the former genus Rhadinophis or currently recognized genus Rhynchophis, either as diagnosed herein or earlier.

The genus Katrinahoserea gen. nov. is separated from the other closely related genera by a lack of a horn on the snout, and/or the lack of a dark stripe running down each side of the head from just past the nostril to the back of the head and onto the neck, including through the eye.

The genus Katrinahoserea gen. nov. is further separated from the genus Rhynchophis by the considerably shorter and more blunt snout region, easily seen by comparing the sculation between the nostrils and the eye.

In Rhynchophis these scales are huge and the scale between the nasal and the pre-ocular (the prefrontal) is massive and considerably wider (from the side) than the preocular and much bigger than it. By contrast in Katrinahoserea gen. nov. the same scale is the same width as the preocular, but considerably smaller than it.

Katrinahoserea lacks the dark pigment or interstitial skin seen in Rhynchophis on most or all of its body or if present, it is nowhere near as intense or prominent as in the genus Rhynchophis.

**Distribution:** From eastern India and Bangladesh, eastward to southern China and countries between these points.

**Common names:** Green Trinket Snake, Green Bush Rat Snake and Green Ratsnake.

**Etymology:** Named in honor of my mother, Katrina Hoser, for services to herpetology over 50 years.

**REFERENCES CITED**


Three new species of *Stegonotus* from New Guinea (Serpentes: Colubridae).

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**ABSTRACT**

The genus *Stegonotus* Duméril, Bibron and Duméril, 1854 is a genus consisting of ten currently described morphologically similar snakes. Generally known as Ground Snakes, their greatest diversity is within the islands north of Australia, including New Guinea and islands to the west. They only occur in this general region, including Indonesia and northern Australia. As a group, they have been taxonomically neglected, with obviously undescribed species on one or more islands including Timor. Only one species within the genus has been formally named in over 80 years. That was *Stegonotus borneensis* Inger, 1967. This paper revisits the data of McDowell (1972 and 1984) in the light of recent developments in taxonomy to conclude that he presented compelling evidence in favour of describing three regional populations of *Stegonotus* as new species. The new taxa, all from New Guinea are herein described and named according to the Zoological Code as *Stegonotus adelynhoserae* sp. nov., *Stegonotus lenhoseri* sp. nov. and *Stegonotus sammacdowelli* sp. nov.

**Keywords:** Taxonomy; nomenclature; new species; ground snakes; Colubridae, *Stegonotus; lenhoseri; sammacdowelli, adelynhoserae.*

**INTRODUCTION**

The genus *Stegonotus* consists of small to medium-sized inornate colored snakes that are generally crepuscular to nocturnal in habits. Known as “Ground Snakes”, or within Australia as “Slatey-Grey Snakes” in reflection of their local color, they do not attract the attention of lay people or herpetologists in the way that bigger, brighter or more dangerous snakes do. Most species were described in the 1900’s at a time when the first major herpetological collecting expeditions went to the Moluccas, elsewhere in Indonesia and New Guinea. Some species were described several times, as in there are synonyms available for the same species. For many years there was a general confusion in terms of identifying given species due to their overall physical similarities and the use of highly variable diagnostic characters to try to identify them.

Other than two species described early in the 20th century, the only newly named taxa in the second half of the 20th century was a species from Borneo, described by Inger in 1967, namely *Stegonotus borneensis*. McDowell (1972 and 1984), published two excellent papers resolving differences between the several taxa known to inhabit New Guinea, assigning them all to then described species forms. However in defining locally occurring “variants” of given species he identified numerous characters that separated these forms from the nominate races. Since his 1984 paper was published, there have been numerous more recent papers dividing New Guinea “species” up, usually in a north/south manner with those found north of the central cordillera being separated from those to the south. In 1998, and relying solely on morphological data, Hoser divided New Guinea Death Adders (genus *Acanthophis*) four ways, most
notably naming as separate species forms found north and south of the central cordillera (the northern one named for the first time), the two others being a recent immigrant from the Australian side (around Merauke in Irian Jaya) and another east of the Sepik River Valley.

In 2000 Hoser again relied solely upon morphological data to subdivide the (then) species Leioptypython albertisi, naming the southern species as Leiopython hoserae Hoser 2000.

Hoser (2000) deferred doing the same with the Amethystine Pythons (Australiasis) in favor of a paper planned to be published by Harvey et. al. that was to formally name these snakes.

Rellying on mtDNA and morphology Harvey et. al. (2000) subdivided the Amethystine Pythons as Hoser (1998, and 2000) had done with the other taxa, again indicating that those from south of the central cordillera were a different species to those from the north and that any connections between the populations was in recent geological history.

Also of relevance here is that these authors separated populations of phenotypically similar snakes as different species (which they named) from islands west of New Guinea, naming for the first time three new species of python. They identified the northern New Guinea species, the Bar-necked scrub Python as different from those south of the central cordillera, but failed to formally name it. Hoser (2012) formally named this taxon as Australiasis finki.

Harvey et. al. (2000) were among the first in terms of herpetological papers to try to explain their results in geological terms with some detail (pages 170-171), addressing issues such as sea level changes and the formation of the land barriers.

Also relevant in terms of this paper and earlier results published McDowell in 1972 and 1984 in terms of Stegonotus, Harvey et. al. (2000) found that the southern species were able to invade the north from the south-east sector of island New Guinea in recent geological times.

In 2003, 2004 and 2008, Leslie Rawlings and others published a series of papers detailing the phylogeny of the pythons, in particular those of New Guinea, again attempting to explain their results in terms of the geological history of the region.

Of note they found that the populations of the Green Pythons (Chondropython) from north of the central cordillera were a different species to those of the south.

In response to these findings Hoser (2009 and 2012) formally resurrected the species name azureus Meyer, 1874 for the northern taxon.

In 2008, Schleip provided corroboration, via results of DNA analysis for the separation by Hoser in 2000 of southern New Guinea Leioptypython from those of the north, in terms of naming the former as a new and separate species.

For the record I should note that in the same paper, Schleip failed to provide a shred of DNA evidence to support his erection in the same paper of three new (alleged) Leioptypython species within a very small geographical part of northern New Guinea, where no known barriers exist, all of which were effectively indistinguishable “Brown” Leioptypython albertisi which he separated by using overlapping and variable scalation characteristics. As a result, none of his “species” have been recognized generally, except by way of the many aliases he posts under on internet forums and the like (see Hoser 2012 for details).

In 1972 and 1984, Samuel McDowell published two papers detailing New Guinea Stegonotus. Within those papers he clearly showed differences between taxa within what was then identified as given single species. The morphological differences between said snakes ran exactly as mirror images to the divisions as already noted in the relevant python papers above, clearly indicating that the barriers that separated the elapids and the pythons had also acted to separate populations and species of Stegonotus.

In the case of what McDowell identified as Stegonotus modestus, the two known and very distinctive populations corresponded with that of two species of Australiasis identified by Harvey et. al. (2000), one being on the New Guinea mainland (now known as A. funki Hoser 2012) and the other on Islands to the west (A. clastolepis Harvey et. al. 2000).

It should be noted that Harvey et. al. (2000), used the genus name Morelia, to describe their snakes, but the use of Australiasis Wells and Wellington, 1983 as the correct name for the group of snakes was effectively validated, as used by Hoser (2000) with the mtDNA data on the relevant pythons provided by Rawlings et. al. (2008).

In the case of what McDowell identified as the northern and southern forms of Stegonotus diehli, these two forms and populations mirrored the results identified for both Leioptypython as identified by Hoser (2000), confirmed by Schleip (2008) as well as even more exactly those for the Amethystine Pythons as detailed by Harvey et. al. (2000).

In terms of the latter, the zone where southern Australiasis meets northern ones seemed to be east of the Sepik River (see p. 157 Harvey et al. 2000), which is much the same as for the two species identified by McDowell as S. diehli.

Hence in the case of the two pairs of clearly identified taxa that display consistent morphological differences in known distributional regions as indicated by McDowell (1972 and 1984) and again in this paper, there can be no doubt that the species described are valid by any recent and reasonable interpretation of the term.

In the case of the third species described within this paper, it was described by McDowell (1972) as a species with affinities to Stegonotus parvus and on page 18 of his paper he did in effect publish a description of the taxon as a new species, minus the formalities, hence it remained an unnamed taxon.

The speciation of the Stegonotus in that case occurred in a relatively isolated island region known for endemism, including within the genera Leioptypython and Bothrochilus. It is confirmed via the unique hemipenal morphology, noting here that hemipenal morphology is a conservative and useful character for differentiating snake taxa.

Of relevance here also is that in 2004, Hoser formally named several pythons that had been divided or separated by rising seas at some point in the geological past.

In terms of this third taxon, McDowell’s important work is recognized and it is named in his honor.

That Stegonotus has been a neglected genus in terms of taxonomy is clearly obvious in that none of the three taxa named herein for the first time have been named prior.

This is said noting that all have been clearly identified in the literature for decades and left formally unnamed.

Another example of the general disinterest in the taxonomy of the genus at all levels is seen in the omission of specimens from the genus in the global survey of most snake genera around the world in the major study published by Pyron et. al. in 2011. The closest they came to assessing the phylogeny of this genus in terms of the higher taxonomy of snakes was to look at two species within the similar and closely related genus Dinodon Duméril, 1853.

Below I provide a brief diagnosis of the genus Stegonotus, followed by the formal descriptions of the three newly identified species.

GENUS STEGONOTUS DUMÉRIL, BIBRON AND DUMÉRIL, 1854

Diagnosis: These are a group of generally dark colored terrestrial snakes found in parts of Indo-Malaysia through to northern Australia and islands to the north. They are of moderate build, head distinct from the neck and the eye is small
to moderate and somewhat protruding and with a round pupil.

They are non-vomeronasal, solid-toothed, small to medium in size with smooth scales, usually about 15-17 dorsal mid-body rows, and a loreal scale is present. As a rule these snakes are crepuscular to nocturnal. A list of currently recognized species within the genus is provided after the descriptions of three new species. Other taxa have been described, but have been relegated to synonymy with those named (e.g. Bleeker, 1860). As mentioned earlier, there are one or more undescribed species within the genus.


**STEGONOTUS MACDOWELLI** **SP. NOV.**

**Holotype:** A male specimen in the British Museum, specimen number: 93.3.23 from Gazelle Peninsula, northeastern New Britain, Papua New Guinea, at 4°36'S 152°00'E.

The relevant Museum is a government owned public facility that allows researchers access to their collections and the holotype specimen is already lodged with and belongs to this facility.

**Paratypes:** A female specimen in the American Museum of Natural History (AMNH) specimen number: 82316 from Iambon (1,500 feet), Whiteman Range, New Britain, Papua New Guinea. A male specimen in the British Museum, specimen number 77.24.20 from the Duke of York Island, New Britain District, New Guinea. Further details of Stegonotus macdowelli sp. nov. are as follows: Supralabials 8 (fourth and fifth entering eye); infralabials 8-10; precoculars 2; postoculars 2 (1 in a specimen recorded by Werner, 1900: 87); anterior temporals 2, both reaching postoculars except in occasionally where lower excluded; scales 17-17-15; ventrals showing wide variation, males (N=3) 209-218, females 184-196; subcaudals for males 80-90, for a female from the western part of New Britain the count was 73, for female from Duke of York Island 87. Maxillary teeth 12 + 3 to 14 + 3; pterygoid teeth 24-31; dentary teeth 17-19. Hemipenis of the holotype (BM 98.3.3.23) (inverted) to subcaudal 18, with smooth area at tip (presumably representing terminal concavity of everted organ), covered with small spines from subcaudal 4 distad, without indication of calyces. Color of snake is dark brown above, including whole of upper lip, the scales less pigmented marginally than basally, those of first and second rows with whitish margins. In a specimen from western New Britain, all ventrals and subcaudals were brownish grey with pale posterior borders; in specimens from eastern New Britain, throat and ventrals of anterior and middle part of body were white (posterior ventrals and subcaudals as above); in a specimen from Duke of York Island, all ventrals and subcaudals were white (McDowell 1970).

**Distribution:** Known only from New Britain and Duke of York Islands.

**Etymology:** In recognition of the many years of excellent herpetological work by USA-based herpetologist Sam McDowell.

**STEGONOTUS LENHOSERI** **SP. NOV.**

**Holotype:** A female specimen in the American Museum of Natural History (AMNH), specimen number 100037, from Milion (elevation 1,500 feet), West Sepik District, Papua New Guinea. The relevant Museum is a government owned public facility that allows researchers access to their collections and the holotype is already lodged with and belongs to this institution.

**Paratypes:** First paratype is a male specimen in the American Museum of Natural History (AMNH), specimen number 75026, from Wewak, East Sepik District, Papua New Guinea. Second paratype is a female specimen in the American Museum of Natural History (AMNH), specimen number 107190, from Alexishafen, Madang District, Papua New Guinea. Third paratype is a female specimen in the American Museum of Natural History (AMNH), specimen number 107191, from Alexishafen, Madang District, Papua New Guinea. The relevant Museum is a government owned public facility that allows researchers access to their collections and the paratypes are already lodged with and belong to this institution.

**Diagnosis:** Until now, this taxon would formerly have been identified as Stegonotus modestus (Schlegel, 1837), which along with this species is separated from all other Stegonotus by the following suite of characters: Medial (choanal) process of palatine strap-shaped, with broadly rounded or truncated tip extending straight mediad or even curved slightly backward, away from the vomer; scales without pits or a few scattered scales with tiny vestigial pits; head without blotches at any age; fourth maxillary tooth from rear (immediately preceding the conspicuous diastema) similar to the teeth in front and triangular in cross-section, with a posterolateral and a posteromedial keel; an abrupt diminution of the teeth behind the enlarged teeth at the middle of the maxilla; distal half of hemipenis with numerous small spines that may suggest transverse flounces, but not calyces except at margin of terminal concavity; 13-14 maxillary teeth, the enlarged middle teeth equalising or exceeding the enlarged rear teeth, the small teeth following the enlarged middle teeth so reduced that dentition suggests Dinodon; maxillary teeth in the configuration 9 + 2 + 3, 8 + 3 + 3, 8 + 2 + 3, 7 + 3 + 3; palatine teeth 12-16; dentary teeth 14-19; hemipenis to subcaudal 11-14, similar in structure to that of *S. diehli*; adult with sagittal crest formed partly by parietal; subcaudals 85-91 (males), 86-88 (females), all divided; 208-216 ventrals in males, 195-214 ventrals in females, 17 or more dorsal mid-body rows, supraoculars normally 7 (rarely 8), third and fourth entering eye or sometimes fourth and fifth entering eye; infralabials 8-10; preoculars 1 or (usually) 2; postoculars 2; rarely reaching 1 m in length; the color is brown above, almost black vertebrally, fading to pale tan on the first scale row and the ventrals above the angulation and on the upper lip (or upper lip may be nearly white); the edges of the lateral scales slightly paler than the centres; subcaudals tan with white angulation and posterior edge; ventrals white between angulations anteriorly, but showing tan anterior edges posteriorly in most specimens.

**Stegonotus lenhoseri** sp. nov. is separated from *S. modestus* by having 2 anterior temporals, both touching the postoculars, versus the lower being excluded from postoculars in *S. modestus*.

In *S. modestus* there are usually 15-17 dorsal mid-body rows (rarely 18), versus 18-19 in *Stegonotus lenhoseri* sp. nov. *Stegonotus lenhoseri* sp. nov. has 25-27 pterygoid teeth versus...
21-25 in S. modestus.

Stegonotus modestus are further separated from Stegonotus lenhoseri sp. nov. by the fact that
in that taxon the white of the belly extends upward on the side of the
neck behind the jaw articulation, suggesting an incomplete
collar; in all specimens the first scale row and ventrals are pure
white, at least on the anterior half of the body.

Distribution: Stegonotus lenhoseri sp. nov. is known from
northern island New Guinea as far east as Astrolabe Bay;
Manus Island, but not New Britain. Stegonotus modestus is now
restricted to the Moluccan Islands including Ceram, and Misol,
Buru and possibly the Aru Islands and Samao.

Etymology: Named in honor of my (deceased for some years)
father, Len Hoser, in recognition of his valuable and largely
unrecognized contributions to herpetology in Australia.

STEGONOTUS ADELYNHOSERAE SP. NOV.

Holotype: A male specimen in the American Museum of Natural History (AMNH), specimen number 50087, from Kabuna, Central
District, Papua New Guinea.

The relevant Museum is a government owned public facility that
allows researchers access to their collection and the holotype is
already lodged with and belongs to this institution.

Paratypes: First paratype is a male specimen in the American
Museum of Natural History (AMNH), specimen number 82522,
from Port Moresby, Central District, Papua New Guinea.
Second paratype is a female specimen in the British Museum
(BM), specimen number 97.12.10.119, from Haveri, Central
District, Papua New Guinea.

The relevant Museums are government owned public facilities that
allow researchers access to their collections and the
paratypes are already lodged with and belong to these
institutions.

Diagnosis: This taxon would previously have been identified as
Stegonots diehi Lindholm, 1905, both of which would be easily
separated from all other Stegonots by the following characters:
the possession of a well developed pair of apical pits on every
dorsal scale of the body and anterior tail; juveniles have black
blochtes on a pale head. In all other Stegonots apical pits are
absent, or if present, they are only vestigial and scattered;
juveniles are patterned as adults.

Stegonotus adelynhoserae sp. nov. is most easily separated
from S. diehi by having 17 dorsal mid-body rows, versus 15 in the S. diehi.

Stegonotus adelynhoserae sp. nov. have 21-29 pterygoid teeth and
usually 181-208 (males) or 180-196 (females) ventrals, whereas S. diehi have 15-22 pterygoid teeth and 170-181
(males) or 166-176 (females) ventrals. These differences hold
for when the two species are sympatric around the Huon
Peninsula/astrolobe Bay region. Furthermore in Stegonotus adelynhoserae sp. nov. the pigmentation of the subcaudals
forms conspicuous spots, which is a trait not seen in S. diehi.

Distribution: Stegonotus adelynhoserae sp. nov. occurs in the
Morobe District, the central range and southern New Guinea,
including Irian Jaya, not occurring on the north side of New
Guinea anywhere west of the Huon Peninsula/Astrolabe Bay
region.

S. diehi is now restricted to the region north of the central
watershed in the region west of the Huon Peninsula, including
Irian Jaya.

Etymology: Named in honour of my daughter Adelyn Hoser in
recognition of 13 years of educating thousands of people about
reptiles.

STEGONOTUS SPECIES CURRENTLY RECOGNISED.

Stegonotus adelynhoserae sp. nov.
Stegonotus batjanensis (Günther, 1865)
Stegonotus borneensis Inger, 1967
Stegonotus cucullatus (Duméril, Bibron and Duméril, 1854)
Stegonotus diehi Lindholm, 1905
Stegonotus florensis (De Rooij, 1917)
Stegonotus guentheri Bouleguer, 1895
Stegonotus heterurus Bouleguer, 1893
Stegonotus lenhoseri sp. nov.
Stegonotus macdowelli sp. nov.
Stegonotus modestus (Schlegel, 1837)
Stegonotus muelleri Duméril, Bibron and Duméril, 1854
Stegonotus parcus (Meyer, 1874)

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A new genus and new subgenus of snakes from the South African region (Serpentes: Colubridae).

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ABSTRACT
A review of the taxonomy of the Colubroidea from Southern Africa and Madagascar has found inconsistencies in classification at the genus level in various genera including Buhoma, and Leioheterodon.
Relying on recent studies of the relevant species level taxa including phylogenys based on mtDNA it’s clear that some of the snakes are placed within genera even though at that level, their placement would make the relevant genera paraphyletic.
To rectify the anomaly, a new genus and subgenus are designated, named and diagnosed to accommodate relevant species according to the Zoological Code.
These are as follows: Swileserpens gen. nov. for a species level taxon formerly placed in the genus Buhoma, namely depressiceps and Michaelnicholsus subgen. nov. for a species level taxon formerly placed in the genus Leioheterodon, namely geayi.

Keywords: Taxonomic revision; new genus; new subgenus; Swileserpens; Michaelnicholsus; Colineipperus; Leioheterodon; Buhoma; geayi; depressiceps; snakes.

INTRODUCTION
The colubrid snakes of southern Africa and Madagascar have been subject to numerous studies in recent years, the result of which has included the resurrection of old generic names and when needed the creation of new genera to accommodate species that don’t readily place within larger, obviously paraphyletic groups.
Several genera from the South African region have been highlighted in a study by Pyron et. al. 2011 as being potentially paraphyletic.
This paper deals with two of them, namely Buhoma and Leioheterodon, both of which have been found to be paraphyletic as currently recognized by some authors.
The most relevant study on the genus Buhoma as currently recognized was the paper of Ziegler, et. al. (1997), which formally named and separated the genus from inclusion within the Malagasy-centered genus Geodipsas.
Earlier publications of note about species in that genus include those of Broadley and Howell (1991), Chifundera (1990), Chirio and Lebreton (2007), Menegon et. al. (2008), Rasmussen et. al. (1995), Schmidt (1923), Tornier (1902), Werner (1897) and Werner (1899).
Key publications in terms of the genus Leioheterodon as currently understood include, Anonymous (1994), Boulenger (1893), Desguez (1884), Duméril, Bibron and Duméril (1854), Günther (1863), Labanowski and Lowin (2011) and Mocquard (1905).
Notable and relevant published studies involving the taxonomy and nomenclature of another important regional genus Psammophis include those by Boulenger (1902), Broadley (1977), Broadley (2002), Kelly et. al. (2008).
Other relevant studies involving the subject genera in other manner, such as wild habits, captivity and the like, all of which have a bearing on classification issues include: Anonymous (1994), Branch (1992), Broadley (1959), Cadle (1996), Glaw and Vences (1994), Hilgartner and Ravaillon (2005), Marias (2004), Shine et. al. (2006), Spawls, et. al. 2001 and Wright (1995).
As a result of these studies, it is clear that in each of the two genera and Psammophis there are species that are widely divergent of one another.
In the case of the genus Psammophis, there are numerous pre-existing names for the several recently identified genus groupings. However in the case of one major group, no names exist, so a new genus name is assigned in another paper published in this same journal.
In the case of each of the genera Buhoma and Leioheterodon, one species is clearly divergent from the others within the genus and these are herein assigned to new genus and subgenus.
GENUS BUHOMA SENSO LATO

The so-called "Forest Snakes" within the genus Geodipsas Boulenger, 1896 have been problematic for taxonomists for some years. Ziegler et. al. (1997) showed from examination of hemipenal morphology that African snakes assigned to the genus Geodipsas should be removed from that genus, due to their different hemipenal morphology, with Geodipsas being restricted to taxa from Madagascar. This view was confirmed by another paper's findings at about the same time (just prior), namely Cadle (1996).

As a result, Ziegler et. al. erected the genus Buhoma to accommodate the three African species, namely; vaueroceae (Tornier, 1902), procterae (Loveridge, 1922) and depressiceps (Werner, 1897).

More recently Pyron et. al. (2011) published the results of mtDNA analysis of the relevant snakes as part of a global review of snake systematics. This review showed the taxon depressiceps to be widely divergent of the others within the genus Buhoma as created by Ziegler et. al. in 1997.

Morphologically and biologically the species depressiceps is quite different from the rest. These morphological and biological differences between the taxa was also noted by Ziegler et. al. (1997). As a result, a new genus is erected for this taxon.

GENUS SWILESERPENS GEN. NOV.

Type species: Tropidonotus depressiceps Werner, 1897
(Known in most contemporary texts as either Geodipsas depressiceps or Buhoma depressiceps)

Diagnosis: The forest snakes of the genera Buhoma and Swileserpens gen. nov. are small robust species, diagnosed by having two grooved maxillary teeth on each side, slightly larger than others, divided subcaudals, single anal and a round pupil. The tail is relatively short, being less than 20 per cent of the total length.

Above the body is usually a dark velvety brown colour with darker longitudinal lines or striations; below the colour is white; broadly porcelain white beneath the tail. Below the head is yellowish, brighter along the lower labials to the ninth ventral. The head above is a deep brown, with a yellowish nuchal collar of 4-5 scale rows.

According to Laurent (1960), the snake is not aggressive when handled and makes no attempt to bite. They may make an unpleasant cloacal discharge. The species taxon depressiceps is herein treated as being monotypic for the genus. However the subspecies taxon marlieri Laurent 1956, may in fact be a separate species. In spite of this, the diagnosis that separates Swileserpens gen. nov. from Buhoma, applies to both these taxa.

Swileserpens gen. nov. is separated from Buhoma by the following suite of characters: 19 dorsal mid-body scale rows versus 17 in Buhoma; Swileserpens has 1-3 temporals versus 1+2 in Buhoma; Swileserpens gen. nov. has strongly keeled scales whereas Buhoma does not.

Ziegler et. al. (1997), found substantial differences in hemipenal morphology between Swileserpens gen. nov. and the other taxa within their genus Buhoma, the details of which are in the paper. Buhoma species (vaueroceae and procterae) are restricted to mountain ranges in Tanzania (Rasmussen et. al. 1995), whereas Swileserpens gen. nov. inhabits forest regions of western central Africa (Guibe 1958).

Both Buhoma and Swileserpens are separated from Geodipsas by having 7 or 8 supralabials, with the third, fourth and fifth entering the eye. In all Malagasy Geodipsas, there are 7 supralabials in which only the third and fourth enter the eye.

Both Buhoma and Swileserpens are further separated from Geodipsas by having different sublingual scales. In the African taxa, there are three regular pairs of longish sublingual scales, behind which the ventrals start. By contrast in the Malagasy taxa only have two pairs of large sublinguals before the commencement of the regular ventrals.

Common Name: Pale-headed forest snake.

Etymology: Named in honour the Swile family of Mitchell’s Plain and Athlone in South Africa for their amazing hospitality when my family visited South Africa in 2009. This includes, Emie, Verona, Benjamin, Keegan, Jade, Robert (now deceased), Felicia, Gareth and Marlene.

Species in genus Swileserpens gen. nov.

Swileserpens depressiceps (type species)
Species remaining in the genus Buhoma.

Buhoma vaueroceae
Buhoma procterae

GENUS LEIOHETERODON SENSO LATO

The three species of Madagascar Hognose snakes currently placed in the genus Leioheterodon have been in herpetoculture in the USA and Europe for some years and are now commonly captive bred (see Anonymous 1994 and Wright 1995).

While superficially similar, the various idiosyncrasies between the species have become apparent. Of particular note has been the differences between the Speckled Hognose Snake (species geayi) and the other two species, modestus and madagascariensis, which appear to be very similar to one another.

Molecular studies, including that of Pyron et. al. (2011) have confirmed this relative position, indicating that the taxon geayi should be classified apart from the others.

As a result of this situation and the fact that there is no currently available name, a new subgenus is defined and named below to accommodate the species geayi.

SUBGENUS MICHAELNICHOLSUS GEN. NOV.

Type species: Lioheterodon geayi Mocquard, 1905

Diagnosis: In common with the other Madgascar Hognosed snakes, Michaelnicholsus subgen. nov. is immediately recognizable by it’s upturned snout, a feature no other Malagascay snake has. This subgenus Michaelnicholsus subgen. nov. is monotypic for the species geayi.

These snakes are similar in appearance to the North American hognosed snakes. They are native to the island minicontinent of Madagascar and are medium sized to large heavy bodied colubrids. They feed on vertebrates. Though rear-fanged, they are not regarded as dangerous to humans.

Michaelnicholsus subgen. nov. can be readily separated from the other two species remaining within the genus Lioheterodon most readily by colouration. It is the only species of the trio to have a colouration whereby each dorsal and lateral scale is heavily bordered in black, giving the snake the overall dark and heavily speckled or mottled appearance over a tan, yellowish to reddish brown ground colour, therefore giving it an often “braided” appearance. Colouration often becomes a deeper red to reddish brown at about half to two thirds of the way down the snake’s body.

By contrast, the Blond Hognose Snake (Lioheterodon modestus) is of uniform light colour, usually tan, light brown or pale yellowish. The lateral and labial scales in this species are usually lighter whithis to cream than the dorsal scales. The Giant Hognose Snake (Lioheterodon madagascariensis) is the largest in the genus Lioheterodon and is known to reach about 1.5 metres in length. The colour is yellowish to brownish on top, with large darker brown to black dorsal and lateral blotches. The neck and front third of the body are typically darker than the rest.

Etymology: Named in honor of Michael Nichols for services to
herpetology, having done considerable work assisting Snakebusters, Australia’s best reptiles shows, in a “behind the scenes” capacity. Of course Snakebusters and our strong educational messages to the public has been singularly successful in making our home state of Victoria go from being one of the highest “death from snakebite” states in Australia to become the lowest.

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A division of the African Genus *Psammophis* Boie, 1825 into 4 genera and four further subgenera (Serpentes: Psammophiinae).

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**ABSTRACT**

The Colubrid snakes of the subfamily Psammophiinae have been the subject of several phylogenetic studies, including that of Broadley (2002), Kelly et. al. (2008), and most recently as part of a wider study by Pyron et. al. (2011). All showed the genus *Psammophis* as recognized in 2011 to be paraphyletic at the genus level.

Relying on these results and obvious morphological differences between the relevant species, the genus as now known is split into four genera, including the available *Psammophis* Boie, 1825, *Dromophis* Peters, 1869 and *Phayrea* Theobold, 1868 as well as the newly erected genus *Eipperus* gen. nov., defined and named according to the Zoological Code to accommodate species that fit within none of the other genera.

Furthermore, divergent taxa are assigned to three newly named subgenera and one other for which a name is already available, including two within *Psammophis*, namely, *Elliottus* subgen. nov. and *Slatteryus* subgen. nov., one within *Dromophis* namely *Amphiophis* Bocage, 1872 and another within *Phayrea* namely, *Rayhammondus* subgen. nov.

**Keywords:** new genus; subgenus; taxonomy; nomenclature; systematics; Colubridae; *Psammophis*; *Dromophis*; *Phayrea*; *Eipperus*; *Psammophiinae*; *Elliottus*; *Slatteryus*; *Phayrea*; *Rayhammondus*.

**INTRODUCTION**

The morphologically similar, but phenotypically diverse group of about 50 recognized species of snakes known as the Psammophiinae has been the subject of taxonomists attention for many years and in spite of several detailed phylogenetic studies, there has not been stability in the nomenclature of the group.

The approximately 50 species within Psammophiinae were as at end 2011 placed within the following genera, *Dipsina* Jan, 1863 (one species), *Hemiharerrhis* Boettger, 1893 (4 species), *Malpolon* Fitzinger, 1826 (2 species), *Mimophis* Günther, 1868 (1 species), *Rhageris* Peters, 1862 (1 species), *Rhampophis* Peters, 1854 (4 species), *Psammophylax* Fitzinger, 1843 (4 species) and *Psammophis* Boie, 1825 (33 species).

At the genus level, the use of the given names and the component species within each genus has been relatively stable in recent times save for those species within the largest genus (by species number), that being *Psammophis*, which is the subject of this paper.

This Afro/Asian (mainly African) group of snakes has been inspected morphologically by herpetologists for more than a century, including by way of a major monograph by Loveridge in 1940. In recent years, studies by Broadley (2002), Kelly et. al. (2008), and to a lesser degree Pyron et. al. 2011, have looked at sizeable numbers of Psammophine snake species nuclear and mitochondrial DNA including all genera identified above.

All the molecular studies have had similar results. The most recent of these studies, that by Pyron et. al. (2011)
looked at various Psammophis species and these tended to group within the various genera within popular usage in herpetology.

Consistent with an earlier study by Kelly et al. (2008), in Pyron et. al.’s study, the two species formerly placed within the genus Dromophis. Peters, 1869 both showed up within the clades for Psammophis species and not particularly close to one another. This result led Kelly et al. in 2008 to relegate Dromophis to synonymy with the genus Psammophis, a position unchanged by Pyron et. al. (2011), although the latter authors noted that their primary concern was the higher taxonomy of the relevant genera, rather than classification of species at the genus level.

The wide-ranging results of Pyron et. al. (2011) have been calibrated by myself against other similar molecular phylogenetic studies specific to the Snail-eating Snakes (Guo et. al. 2011), True Vipers (Wüster et. al. 2008), Pitvipers (Castoe et. al. 2003, 2005, and 2006), Coral Snakes (da Silva and Sites 2001), various colubrids (Lawson et. al. 2005, Queiroz et. al. 2002) and been shown to be accurate and consistent.

As a result, those results are accepted for the genus Psammophis as accurate, especially when calibrated with the virtually identical results published by Kelly et. al. (2008) and others. Any taxa missed in Pyron et. al.’s analysis can also be readily assigned to the various species groups tested, meaning the results were in effect more-or-less comprehensive for the genus.

While the molecular studies have shown all snakes currently placed within Psammophis to cluster as a group, there are nomenclatural issues that arise from the results.

One group of species, identified herein as the condanarus group, is only marginally closer to other Psammophis than it is to the four species placed within the genus Psammophylax. Because no one in recent times has proposed merging the two genera, there becomes a strong argument to erect a new genus to accommodate this intermediate group.

The argument for this new genus has increased merit when the criteria for defining a genus (as in depth of divisions between clades) is assessed consistently across all snake genera and species. Looking at the molecular results in terms of this potential genus group, I find the argument in favor of placing them in a new genus compelling.

Following the erection of a new genus to accommodate the condanarus group, for which the long forgotten name Phayrea Theobold, 1868 is available, the same argument appears in terms of the next clade, identified herein as the notostictus group, again it fitting within the consistent criteria of being sufficiently divergent to be placed in a new genus, for which in this case there is no pre-existing name available.

Beyond the erection of this next genus, the same argument appears in terms of splitting a third group of snakes, known herein in the praeomatus group into a third genus. The genus name Dromophis Peters, 1869, is already available for the group.

The largest group, while clearly consisting different species groups and clearly paraphyletic at a level deep enough to yield at least four species groups, is not in my view sufficiently differentiated or diverse to warrant being split any further at the genus level. However two lineages with more ancient divergence do warrant recognition as subgenera.

Likewise for the species angolensis in terms of the available genus group Dromophis, as well as the species crucifer within the condanarus group.

Following on from the above result, I hereby subdivide the four obvious groups into four genera and four relevant subgenera. These are Psammophis Boie, 1825, Dromophis Peters, 1869, as well as the newly erected genus Eipperus gen. nov. for the
Diagnosis: Not as common as further south.

Central regions, northwards to Sudan and Libya where they are found in the drier eastern sector of Africa, from the southwestern tip of Ethiopia, southwards to the Kingdom of Eswatini and the Republic of Namibia, and further north to the western and central parts of the Democratic Republic of the Congo, the Republic of the Congo, and the Republic of the Central African Republic. They are arboreal in low vegetation.

2+3, rarely 1+2 or 1+3; 8, 9 or 10 upper labials with 3-5th or 4th to 6th entering the orbit; 10 infralabials 8 (rarely 7 or 9), the fourth and fifth (rarely third and fourth, fourth only or fifth and sixth) entering orbit; infralabials 8 (rarely 7 or 9), the first 4 (rarely 3 or 5) in contact with anterior subcaudals; dorsal scales in 11-11-11 rows (rarely 9 rows); ventrals 133-157; cloacal shield divided; subcaudals 58-80. Head dark brown, three narrow yellow transverse bands posteriorly, supralabials white; neck dark brown with one or two grey crossbands which broaden laterally, a dark brown black-edged dorsal band three scales wide, greyish or yellowish laterally, sometimes with black hairlines through the outer two scale rows. Ventrum and lower half of outer scale row white or yellow, uniform or with an ill defined lateral series of dark flecks, sometimes a mid-ventral pale orange band present. Found in the drier parts of sub-Saharan Africa. The subgenus is monotypic for Dromophis (Amphiophis) angolensis.

GENUS EIPPERUS GEN. NOV.

Type species: Psammophis biseriatus Peters, 1881

Psammophis (Eipperus) biseriatus Peters, 1881

Psammophis (Eipperus) lineatus (Duméril, Bibron and Duméril, 1854)

Subgenus Eipperus subgen. nov. (see below)

Psammophis (Eipperus) lineatus (Duméril, Bibron and Duméril, 1854)

Type diagnosis: Separated from all other Psammophis (senso lato) including genera Dromophis, Eipperus gen. nov. and Amphiophis by the following suite of characters: nostril pierced between 2 nasals; preocular 1, usually widely separated from frontal; postoculars 2; temporals usually 1+2; supralabials 8 (rarely 6, 7 or 9), the fourth and fifth (rarely third and fourth, fourth only or fifth and sixth) entering orbit; infralabials 8 (rarely 7 or 9), the first 4 (rarely 3 or 5) in contact with anterior subcaudals; dorsal scales in 11-11-11 rows (rarely 9 rows); ventrals 133-157; cloacal shield divided; subcaudals 58-80. Head dark brown, three narrow yellow transverse bands posteriorly, supralabials white; neck dark brown with one or two grey crossbands which broaden laterally, a dark brown black-edged dorsal band three scales wide, greyish or yellowish laterally, sometimes with black hairlines through the outer two scale rows. Ventrum and lower half of outer scale row white or yellow, uniform or with an ill defined lateral series of dark flecks, sometimes a mid-ventral pale orange band present. Found in the drier parts of sub-Saharan Africa. The subgenus is monotypic for Dromophis (Amphiophis) angolensis.
and fifth (rarely third and fourth) entering orbit; infralabials 9-12 (usually 10), the first 4 (rarely 3 or 5) in contact with anterior sublinguals; dorsal scales in 17-17-13 (or 17-17-15) rows; ventrals 155-183; cloacal shield entire or divided; subcaudals divided 76-107. Light grey to dark brown above, often paler laterally, uniform or with a pale stripe or series of spots on the vertebral scale row and a pale stripe on row 4, these stripes may be bordered by black flecks. The head shields may have pale margins, with a pair of pale blotches on the parietals. A white ventrolateral stripe covers the lower half of the outer scale row and ends of the ventrals, extending forward onto the labials, pre- and post-oculars. Chin and throat white with grey or black spots and streaks. Venter yellowish, more or less infuscated with grey and with a grey line bordering the white ventrolateral stripe. There are sometimes grey flushes on the venter.

These are long-thin and fast-moving diurnal snakes that actively chase their prey. Diagnostic of the genus is the long tail and high subcaudal count (76 to 107).

The genus is restricted to southern Africa, mainly in the countries to the immediate north of South Africa.

**Etymology:** Named in honor of Scott Eipper, a herpetologist from Queensland, Australia.

**Content of Eipperus gen. nov.**

*Eipperus notostictus* (Peters, 1867) (Type species)

*Eipperus leightoni* (Boulenger, 1902)

*Eipperus namibensis* (Broadley, 1975)

*Eipperus jallae* (Peracca, 1886)

*Eipperus ansorgii* (Boulenger, 1905)

*Eipperus trigrammus* Günther, 1865)

**GENUS PHAYREA THEOBOLD, 1868**

**Type species:** *Coluber condanarus* Merrem, 1820

**Diagnosis:** This genus is herein defined in two parts, firstly the five south-west and south Asian species, namely, *Phayrea condanarus* (type species), *P. lineolatus*, *P. indochinensis*, *P. leithii* and *P. longitrons*, then the remaining taxon, *P. crucifer*, placed in its own subgenus, *Rayhammondus* gen. nov.

The Asiatic species are separated from all other snakes within the genera *Phayrea*, *Psammophis*, *Eipperus* and *Dromophis* by the following suite of characters: The rostral is as deep as broad and easily visible from above; nasal divided or semidivided; internasals rather more than half the length of the prefrontals; frontal very narrow, as long as or longer than its distance from the end of the snout, as long as the parietals; loreal about twice as long as deep; preocular single, not extending to the frontal; two postoculars; temporals 1+2 or 1+3, rarely 2+3; upper labials 8, fourth and fifth (rarely third and fourth) entering orbit; infralabials 9-12, the first 4 (rarely 3) in contact with anterior sublinguals; dorsal scales in 15-15-13 rows; ventrals 155-183; anal plate divided; subcaudals 75-90. Dorsally the coloration varies, but is usually a dark grey-brown lateral stripe covers scale rows 2 and 3 and the upper half of the outer row, the lower half being white. Pre- and post-oculars white, supralabials, chin and throat white, blotched or speckled with black. Venter orange with a broken black lateral line. South African specimens usually have one or two dark crossbars intersecting the vertebral stripe on the nape to form the “cross” from which the species derives its name, these crossbars are missing in specimens from Zimbabwe and KwaZulu-Natal. Some South African species are uniform grey above and pinkish white below.

The first described species from Asia are found in drier parts of south-west Asia, (two species), entering wetter parts in the south, with the single species from *Rayhammondus* subgen. nov. being confined to drier parts of east Africa south of the Sahara latitudes.

**Content of Phayrea Theobold, 1868**

*Phayrea condanarus* (Merrem, 1820) (Type species)

*Phayrea lineolatus* (Brandt, 1836)

*Phayrea indochinensis* (Smith, 1943)

*Phayrea leithii* (Günther, 1869)

*Phayrea longitrons* (Boulenger, 1896)

**Subgenus Rayhammondus subgen. nov. (see below)**

*Phayrea (Rayhammondus) crucifer* (Daudin, 1803)

**SUBGENUS RAYHAMMONDUS SUBGEN. NOV.**

**Type species:** *Coluber crucifer* Daudin, 1803

**Diagnosis:** This subgenus is monotypic for the species *Phayrea crucifer*, known under the common name of Mountain or Cross-marked Grass Snake.

It is separated from all other snakes in the genera *Psammophis*, *Dromophis*, *Eipperus* gen. nov. and *Amphophis* by the following suite of characters: Nasal pierced between 2 nasals; preocular 1 widely separated from frontal; postoculars 2 (very rarely 3); temporals basically 2+2+3, but with frequent fusions; supralabials 8 (rarely 7 or 9), the fourth and fifth (rarely third and fourth or fifth and sixth) entering orbit; infralabials 9 (rarely 10), the first 4 (rarely 5) in contact with anterior sublinguals; dorsal scales in 15-15-13 rows; ventrals 134-165; anal plate divided; subcaudals 68-91, though there is an isolated record of a specimen with a substantially lower ventral and subcaudal count, being an aberrant female from the Nyanga highlands, Zimbabwe, which had only 117 ventrals and 47 subcaudals (Broadley 2002). Head grey, with a dark red-black-edged stripe extending from the snout, dividing on the frontal and again on the parietals, in each case enclosing a grey centre, continuing on the body as a black-bordered three scale wide dorsal stripe, this is separated by a thin white line from a grey dorso-lateral stripe on scale rows 4, 5 and 6. A dark grey-brown lateral stripe covers scale rows 2 and 3 and the upper half of the outer row, the lower half being white. Pre- and post-oculars white, supralabials, chin and throat white, blotched or speckled with black. Venter orange with a broken black lateral line. South African specimens usually have one or two dark crossbars intersecting the vertebral stripe on the nape to form the “cross” from which the species derives its name, these crossbars are missing in specimens from Zimbabwe and KwaZulu-Natal. Some South African species are uniform grey above and pinkish white below.

Found in drier parts of eastern southern Africa.

**Etymology:** Named in honor of Raymond (Ray) Hammond of Hamilton, Victoria, for services to governance in Australia, including his assistance to those who blew the whistle on corruption in the Victoria Police and also the Victorian Department of Sustainability and Environment.
NEW ARRANGEMENT OF GENERA AND SPECIES
FORMERLY PLACED WITHIN *PSAMMOPHIS*

**Genus: Psammophis** Fitzinger, 1843  
*Psammophis sibilans* (Linnaeus, 1758) (Type species)  
*Psammophis brevirostris* Peters, 1881  
*Psammophis mossambicus* Peters, 1882  
*Psammophis phillipsi* (Hallowell, 1844)  
*Psammophis leopardinus* Bocage, 1887  
*Psammophis rukwae* Broadley, 1966  
*Psammophis sudanensis* Werner, 1919  
*Psammophis orientalis* Broadley, 1977  
*Psammophis subtaeniatus* Peters, 1882  
*Psammophis trinasalis* Werner, 1902

**Subgenus Elliottus subgen. nov.**  
*Psammophis (Elliottus) lineatus* (Duméril, Bibron and Duméril, 1854)

**Subgenus Slatteryus subgen. nov.**  
*Psammophis (Slatteryus) biseriatus* Peters, 1881 (Type species)  
*Psammophis (Slatteryus) tanganicus* Loveridge, 1940

**Genus: Dromophis** Peters, 1869  
*Dromophis praeornatus* (Schlegel, 1837) (Type species)  
*Dromophis aegyptius* (Marx, 1958)  
*Dromophis elegans* (Shaw, 1802)  
*Dromophis pulcher* (Boulenger, 1895)  
*Dromophis punctulatus* (Duméril, Bibron and Duméril, 1854)  
*Dromophis schokari* (Forskal, 1775)

**Subgenus Amphiophis** Bocage, 1872  
*Dromophis (Amphiophis) angolensis* (Bocage, 1872)

**Genus: Eipperus** gen. nov.  
*Eipperus notostictus* (Peters, 1867) (Type species)  
*Eipperus leightoni* (Boulenger, 1902)  
*Eipperus namibensis* (Broadley, 1975)  
*Eipperus jallae* (Peracca, 1896)  
*Eipperus ansorgii* (Boulenger, 1905)  
*Eipperus trigrammus* Günther, 1865

**Genus: Phayrea** Theobold, 1868  
*Phayrea condanarus* (Merrem, 1820) (Type species)  
*Phayrea lineolatus* (Brandt, 1836)  
*Phayrea indochinensis* (Smith, 1943)  
*Phayrea leithii* (Günther, 1869)  
*Phayrea longifrons* (Boulenger, 1896)

**Subgenus Rayhammondus subgen. nov.**  
*Phayrea (Rayhammondus) crucifer* (Daudin, 1803)
A division of the African Tree Viper genus *Atheris* Cope, 1860 into four subgenera *(Serpentes:Viperidae).*

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**ABSTRACT**

The African Tree Viper genus *Atheris* has been of interest to taxonomists in recent years. Significant was the removal of the species *superciliaris* to the newly created monotypic genus *Proatheris* and the species *hindii* to the monotypic genus *Montatheris* both by Broadley in 1996 gaining widespread acceptance.

Marx and Rabb (1965), erected a monotypic genus *Adenorhinos* for the species *barbouri,* but this designation has not gained widespread support from other herpetologists, with a number of recent classifications continuing to place the taxon within *Atheris* (e.g. Menegon et. al. 2011).

Phylogenetic studies of the genus *Atheris senso lato* using molecular methods (e.g. Pyron et. al. 2011) have upheld the validity of the creation of the monotypic genera *Proatheris* and *Montatheris* by Broadley.

These studies have also shown there to be at least four well-defined groups of species within the genus *Atheris* as recognized in early 2012, though not as divergent as seen for the snakes placed within *Proatheris* and *Montatheris.*

As a result, the genus is now subdivided into subgenera using available names for three, with the fourth one being named *Woolfvipera* subgen. nov. 

**Keywords:** new genus; Viper; Africa; *Atheris; Poecilostolus; Adenorhinos; Woolfviper; Proatheris; Montatheris.*

**INTRODUCTION**

African Tree Vipers represent a significant case of convergent evolution when compared with Asian Pitvipers (*Trimeresurus* and related genera) and South American Pitvipers (*Bothrops* and related genera).

The majority of species have a derived body form superbly suited to an arboreal existence as a predator of other vertebrates.

African Tree Vipers as a group are fairly small snakes ranging in adult size from *Montatheris hindii* (20-36 cm total length) to *Atheris nitschei* and *A. squamigera* (some specimens may exceed 76 cm). They are characterized by having broad heads, relatively large eyes, vertical pupils and narrow necks. Their bodies are usually slender and have strongly keeled and overlapping scales. These snakes come in a range of colours and patterns, sometimes within a single species. *Atheris ceratophora* and *A. squamigera* are particularly variable species. Most *Atheris* species are primarily arboreal, but may be frequently found on or near the ground. Snakes placed in the genera *Proatheris* and *Montatheris* are by notable contrast primarily terrestrial.

All *Atheris* (senso lato) are characterized by normal slow and deliberate movements, relying on their cryptic coloration to avoid detection.
All these snakes are easily separated from the stout, heavily bodied terrestrial species of viper within the genus *Bitis senso lato*.

African Tree Vipers are endemic to Africa. Many species have very limited ranges and it seems only exist in isolated populations, making them particularly vulnerable to human induced habitat modification. They range across equatorial Africa as far west as the rainforests of Guinea (*Atheris chlorechis*) and as far southeast as coastal Mozambique (*Proatheris superciliaris*). They occur at a wide range of elevations from lowland swamps (*P. superciliaris*) to high altitude montane moorland (*Montatheris hindii*). Rainforest, evergreen forest, montane forest, upland swamp, and lowland swamp bordering grassland are among the habitats utilized by African Tree Vipers.


As mentioned in the abstract, recent studies of the phylogeny of these and related snakes have shown clearly that the monotypic genera *Proatheris* and *Montatheris* are more than sufficiently divergent to be valid.

The results of a molecular study published by Pyron et al. (2011) were somewhat ambiguous in terms of any further divisions within *Atheris* as currently known.

The species placed in the monotypic genus *Adenorhinus* by Marx and Rabb in 1965, namely *A. barbouri*, was found by Pyron et al. to be closest to *Atheris ceratophora*. In fact both species were found to be closer to one another than any other of the remaining four *Atheris* species tested by Pyron et al.

Because these two species formed a well defined group separate from other *Atheris* tested and by a significant amount, there is a strong argument that could be mounted for not only retaining the genus *Adenorhinus*, but furthermore it's expansion to include those species closely related to the type species *A. barbouri*.
green. Western bush vipers are light green with a pale green or bluish ventral and pale yellowish paired dorsal spots. The 15-19 cm (6-7 1/2 inch) babies may be tan or light brown and change to yellowish green with dark green markings within 24 hours (Freed, 1986; Spawls and Branch, 1995).

The snakes in the subgenus Poecilostolus are separated from other Atheris by the following suite of characters: prehensile tail, shaggy or spinose head, alternatively not such, but with heavily ridged neck and body scales dark, mottled or patterned venter. Montatheris is separated from all other Atheris and Proatheris by the following suite of characters: It is a very small viper only 20-36 cm (8-14 inches) in total length. Greyish or brown with pairs of broad triangles with light edges on the dorsum. Head is brownish with a dark brown 'V' or arrow mark. Venter is greyish with darker speckling.

Proatheris is separated from all other Atheris and Montatheris by a pair of large supraocular shields, that none of the others have. It is a heavy bodied viper with a greyish brown dorsum with three rows of dark spots separated by yellowish bars that form a broken lateral line on either side of the body. The unusually elongated head has three blackish chevrons. Venter is whitish with dark blotches, underside of tail is orange or yellow. Adult size is usually 42-60 cm (16-24 inches).

**Distribution:** Woolfvipera gen. nov. is found in Central Africa.

**Etymology:** Woolfvipera subgen. nov. is named in honour of Australian herpetologist, Paul Woolf, in recognition of his many decades valuable contribution to Australian herpetology, including as founder president of the Herpetological Society of Queensland.

**Content of Subgenus Woolfvipera subgen. nov.**

Atheris (Woolfvipera) nitschei Tornier, 1902 (Type species)

Atheris (Woolfvipera) desauali Ashe, 1968

Atheris (Woolfvipera) rungwenesis Bogert, 1940

**Content of Subgenus Atheris Cope, 1860**

Atheris (Atheris) chlorocephs (designated type species)

**Content of Subgenus Adenorhinus Marx and Rabb, 1965**

Atheris (Adenorhinus) barbouri Loveridge, 1930 (Type species)

Atheris (Adenorhinus) ceratophora Werner, 1895

Atheris (Adenorhinus) katangensis Witte, 1953

Atheris (Adenorhinus) mabuenisi Branch and Bayliss, 2009

Atheris (Adenorhinus) matildae Menegon et al., 2011

**Content of Subgenus Poecilostolus Günther, 1863**

Atheris (Poecilostolus) squamigera (Hallowell, 1854) (Type species)

Atheris (Poecilostolus) acuminata Broadley, 1998

Atheris (Poecilostolus) broadleyi Lawson, 1999

Atheris (Poecilostolus) hirsuta Ernst and Rödel, 2002

Atheris (Poecilostolus) hispida Laurent, 1955

Atheris (Poecilostolus) subocularis Fischer, 1888


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A new Subgenus of Giant Snakes (Anaconda) from South America (Serpentes: Boidae).

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ABSTRACT
A review of the taxonomy of the New World boids finds several genera as currently recognized to be paraphyletic.
There are available genus names for those species within genera that have been found to be composite, should they be split to ensure monophyletic genera.
The only potential exception to this is within the genus Eunectes Wagler, 1830 as currently recognized.
There is a strong argument in favor of splitting the so-called Yellow Anacondas away from the so-called Green Anacondas, at the genus level as a result of clear and consistent differences between the relevant taxa.
This paper formalizes this division by taking a conservative position and naming and defining a new subgenus, Maxhoserboa subgen. nov. for the Yellow Anaconda and related species.
Keywords: Taxonomic revision; new subgenus; Eunectes; Maxhoserboa; murinus; deschauenseei; notaeus; beniensis; snakes.

INTRODUCTION
The large and giant South American Boa species known as “Anaconda” have fascinated people ever since they first became known to Europeans and no doubt prior.
Allegedly reaching lengths up to 10 metres (33 feet), although none accurately recorded have ever come close to this, the Green Anaconda, averaging about five metres in length is still by far (on average) the heaviest living snake on the planet, even if not the longest.
The longest recorded living snake to date is the far thinner Asiatic Reticulated Python (Broghammerus reticulatus).
Almost every kid’s book about “dangerous” animals features the Green Anaconda (Eunectes murinus) as part of the script.
In 1997 a so-called adventure film titled “Anaconda” was made to highlight the size and ferocity of these particularly large snakes. It was complete with all the embellishment and hype that a blockbuster film would be expected to have.
Native to most of the northern half of South America east of the Andes, these snakes are reasonably common where they occur and therefore well-known to science.
The larger and better-known Green Anaconda (Eunectes murinus) has been a staple of major public zoos for decades, while the somewhat smaller and more even tempered Yellow Anaconda (E. notaeus) has been popular with herpetoculturists since at least the late 1970’s when numbers of live specimens were imported to Europe and the USA to satisfy the burgeoning reptile pet trade (see Fig 9.4 Reed and Rodda 2009).
The taxonomy at the genus level has been fairly stable since Wagler first created the genus Eunectes in 1830.
At the species level, the two most widespread and common
forms have been consistently recognized, namely Green (Eunectes murinus) and Yellow (E. notaeus), with most authors not recognizing other described variants until the period post-dating year 2000 (see McDiamid et. al. 1999).

In recent years a number of described variants have been given full species status, mainly as a result of five studies published by Dirksen and Böhme, namely Dirksen (2001), Dirksen (2002), Dirksen and Böhme (1998a), Dirksen and Böhme (1998b) and Dirksen and Böhme (2005) and others similar publications by Dirksen in particular.

Dirksen has also promoted the “new” species that he described in 2002 via his own personal website (http://www.anakondas.de) that is dedicated to Anacondas.

Broadly speaking there are two main clades within the genus as currently recognized.

First is the larger Green Anacondas (Eunectes murinus), the currently recognized. Broadly speaking there are two main clades within the genus as currently recognized.

Secondly are the distributionally disjunct and considerably smaller, Yellow Anacondas, (E. notaeus), described by Cope in 1862, and the lesser-known species E. deschauensee, described by Dunn and Conant in 1936, a taxon regarded by many for some years as merely a variant of notaeus.

Phylogenies of these two main lineages relying on morphological and molecular evidence have been done and show that each lineage is effectively monophyletic.

Furthermore, fossil evidence from the region shows Eunectes to have ancient origins dating as far back as the middle Miocene (16-11.6 MYA) of Columbia for the now extinct taxon E. stirtoni (Hsiou and Albino 2009) or perhaps even earlier (same authors). On that basis it seems obvious that the snakes should be split into two genera or at least subgenera, as has been proposed for other South American and Caribbean boa genera as indicated by Noonan and Cippindale (2006), see in particular for the genera Epicrates and Eny as currently recognized.

However until the post 2000 period, Eunectes as recognized only contained two recognized and superficially similar species, so there was a strong and compelling argument by taxonomists against the creation of two monotypic genera for these snakes even though differences were obvious.

However, noting that there are now four recognized species within Eunectes senso lat (Dirksen and Böhme 2005) and they fall into two distinct and mutually exclusive groups, the argument against the creation of two monotypic genera has been effectively removed.

This argument in favor of division becomes more compelling in the knowledge that other regionally isolated forms of E. notaeus in particular have been assessed as being highly distinct and are likely to be formally described and named as full species in the near future (Mendez, et. al. 2007, Reed and Rodda 2009).

Reed and Rodda (2009) also note that matings between E. murinus and E. notaeus have failed to produce viable offspring, which accords with the sympatry of the two species in the wild through wide areas.

This is significant as results of cross-generic matings between pythons have been widely posted on the internet (see for example www.kingsnake.com hybrid forum and Hoser 1989) with these offspring apparently being viable.

There are other significant facts that point to Eunectes as currently recognized, long consisting of two distinct lineages and this includes an overlay of present distributions of the “Yellow” Anacondas versus that of the “Green” when reconciled with the known climatic history of the South American continent over the past 20 million or more years (see Noonan and Cippindale 2006).

This evidence that the two lineages of “Green” and “Yellow” Anacondas is in fact confirmed by the current distributions of the two forms.

The Green Anaconda (murinus) is distributed throughout most of the Amazon basin and nearby areas. By contrast the Yellow Anacondas (E. notaeus and E. deschauensee) are in effect split into two widely separated areas, generally north and south of the centre of distribution, indicating that the population has been split by the more wide-ranging species, which as noted don’t cross-breed, further noting that reproductively at least, most boids and pythons are conservative and maintain an ability to breed with cogeners both in captivity and in the wild even when phenotypically very different.

As a result of the above facts, the genus Eunectes Wagler, 1830 is herein divided into two, with a new subgenus, Maxhoserboa subgen. nov. being formally named and described according to the Zoological Code (Ride 1999) herein.

The genus Eunectes is herein defined herein as a nominate subgenus to only include the so-called Green Anacondas.

If one seeks to get a definition of the genus Eunectes in total, including both listed subgenera below, then one only needs to combine the diagnoses for both.

SUBGENUS EUNECTES WAGLER, 1830
Type species: Boa marina Linnaeus, 1758.

Diagnosis: Large to extremely large bold snakes from central and South America.

In this genus as defined herein, the ground color is typically olive green upon which are scattered dark (black to blackish brown) usually ovoid blotches of varying size; these blotches can be single, paired, joined or alternating down the midline, depending on the individual. There are typically no saddles or other types of dorsal patterns, making for a very clean appearance of black blotches on a solid background. A second lateral series of irregular dark markings is typically present, sometimes presenting as small circles with centers that are lighter, usually yellow, than the ground color. Southern specimens have more and smaller darker blotches.

Notable of the Green Anacondas (E. murinus and E. beniensis) is their massive thick build, with large individuals having midbody diameters in excess of 0.3 metre (Coburn, 1991).

In comparison to all other pythons and boas, the eyes and nostrils of Eunectes (senso lato) are positioned more dorsally, as is typical of many semi-aquatic vertebrates.

Dirksen and Böhme (2005) defined the Green Anaconda (E. murinus) as having 239-269 ventrals, 53-81 dorsal mid body rows, 4 black head stripes, suborbital between the oculars and supralabial, black dorsal blotches usually half as long as the dorsal width when one looks at the whole animal, and black lateral spots with yellowish centres that are lighter than the ground color.

In contrast all other species of Anaconda have five head stripes, no scales between the oculars and labials and lower dorsal mid body scale row counts.

The Beni Anaconda is similar in appearance to the Green Anaconda, although the blotches are not as ovoid. It’s blotches are darker and more numerous and the size attained is only about 2/3 the length of the species E. murinus.

The genus (and subgenus) is found in suitable wetter and swampy habitats throughout most parts of Northern South America, except for the west coast and colder high-altitude areas.

SUBGENUS MAXHOSERBOA GEN. NOV.
Type species: Eunectes notaeus Cope, 1862

Diagnosis: Snakes in this subgenus are easily separated from those species remaining within the genus Eunectes (the nominate subgenus) by the following suite of characters (see entire diagnosis): the coloration is strongly “yellow” as opposed to “green” seen in the subgenus Eunectes. In DeSchauensee’s Anaconda (E. deschauensee), the yellowish ground color is somewhat muted to a yellowish green or light brown and tends
to be most prominent in the lateral surfaces. These snakes are separated from similar looking pythons by the absence of the prominent labial pits seen in the pythons. After noticing the yellowish ground cover, an obvious identifying feature of this genus is the many black dorsal blotches and smaller lateral blotches present. The number and size of blotches is generally sufficient to differentiate the Yellow Anacondas from the Green (Eunectes).

DeSchauensee’s Anaconda has fewer (87-126) and larger dorsal oval blotches (usually solid) separated by two or three scales, as well as small lateral irregular blotches. The Yellow Anaconda has 101-175 dorsal blotches, separated by only one or two scales, the dorsal blotches tend to have lighter centres. The Yellow Anaconda also has numerous irregular lateral blotches which tend to form complete or incomplete ocelli on the upper flanks below the dorsal blotches, below which are numerous black flecks.

The two Yellow Anaconda species exhibit very similar scale counts, including 43-54 dorsal mid body rows, 213-237 ventrals (Dirksen, 2002).

The two species of Yellow Anaconda can be easily separated by distribution. The DeSchauensee’s Anaconda is found only in the region of the Brazilian island of Marajo, nearby areas of the mouth of the Amazon and several drainages in French Guiana. The area between the two known distributional centres for this species may also have specimens, but has not been properly searched for the taxon to date. The Yellow Anaconda is widespread in the region it occurs in. This includes the Pantanal in Bolivia and Brazil, from 15 Deg South Latitude, through aquatic habitats of the Paraguay and Parana River basins below 250 metres elevation in Paraguay and Argentina reaching 32 deg south latitude in the Paraná basin. While the Yellow Anaconda has a species range in excess of 400,000 square kilometres, the snakes are only found where suitable aquatic habitats exist (see Dirksen 2002, and Dirksen and Henderson 2002).

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A review of the South American snake genera Leptodeira and Imantodes including three new genera and two new subgenera (Serpentes: Dipsadidae: Imantodini).

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ABSTRACT

A review of the phylogeny and taxonomy of the snake genera Leptodeira and Imantodes finds both genera as currently recognized to be paraphyletic. There are no available genus names for those species substantially different to the type species groups. This paper formalizes the obvious intra-generic divisions. Leptodeira is subdivided into three genera, with two new genera, Lukefabaserpens gen. nov. and Ginafabaserpenae gen. nov. being formally named and diagnosed according to the Zoological Code. Similarly, a subgenus Crossmanus subgen. nov. is erected, diagnosed and named to accommodate divergent taxa from within the remainder of Leptodeira. Imantodes is divided into two genera, with a new genus Maclachlanus gen. nov. and a subgenus from the remainder of Imantodes identified as Neilsimpsonus subgen. nov., both being formally named and diagnosed according to the Zoological Code.

Keywords: Taxonomic revision; new genus; Leptodeira; Lukefabaserpens; Ginafabaserpenae; Crossmanus; Imantodes; Maclachlanus; Neilsimpsonus; snakes.

INTRODUCTION

The closely related genera Leptodeira (the Cat-eyed Snakes) and Imantodes (Vine snakes) have been the subject of numerous studies in terms of their phylogeny. Included are those of Cadle and Greene (1993), Daza et. al. (2009), Duellman (1958a), Mulcahy (2007), Mulcahy et. al. (2011), Myers (1982), Pyron et. al. (2011), Reyes-Velasco and Mulcahy (2010), Taub (1967), Taylor (1938), Zaher (1999) and Zaher, et. al. (2009).


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et. al. (1979), Zug, et. al. (1979), Zweifel (1959a) and Zweifel (1959b).

This has led a number of authors to surmise the relationships of snakes within the two genera, including what were assumed to be the most basal and the most derived members of the genera. The more recent studies involving nuclear and mitochondrial DNA have broadly upheld the general conclusions to the effect that the two genera are monophyletic to one another and also closely related to one another, with Imantodes as currently recognized being basal to Leptodeira.

However the divisions within each genus in terms of the component species are so deep that a number of studies have found the genera to be in effect paraphyletic when assessed in a manner consistent with other colubrid snakes and where generic distinctions are drawn.

The results of Pyron et. al. (2011) mirrors that of Mulcahy, et. al. (2011) and Myers (2011), which in turn (in the main) mirrors the results of the very comprehensive morphology-based analysis of Duellman (1958a).

In conjunction with other more recent studies relating to the morphology and biology of the component species, the totality is a compelling argument in favor of dividing both genera as indicated in the abstract.

One species in particular, that currently known as Leptodeira nigrofasciata consistently sits between the two genera Leptodeira and Imantodes as currently recognized and was recognized as far back as 1958 as being widely divergent from the rest (Duellman 1958a). As no one has recently proposed the merger of these two genera (a view not supported by the molecular data) the only viable option is the removal of Leptodeira nigrofasciata from Leptodeira and the placement within its own (new genus).

This is done below where the taxon is placed in the genus Lukefabaserpens gen. nov.

A similar situation exists for the species currently known as Leptodeira frenata, which although not as basal as L. nigrofasciata also warrants being placed in its own monotypic genus and so is assigned to Ginafabaserpenea gen. nov.

A similar situation to that just described also exists for the species taxon currently known as Imantodes inornatus, which sits basal to both Imantodes and Leptodeira according to the phylogeny presented by Pyron et. al. (2011) and due to its strong divergence, cannot possibly be placed in either genus and so is assigned to Ginafabaserpenea gen. nov.

So far as is known, all species are oviparous and may lay as many as 13 eggs.

As inferred already colours and patterns are variable and dorsally may consist of any of dark spots, blotches or bands on a lighter ground colour, or sometimes relatively plain in colour, the hemipenes has an unforked or only slightly forked sulcus spermaticus and hypapophyses are absent from the body vertebrae.

The genus Leptodeira is characterized by maxillary teeth that increase in size posteriorly followed by a diastema and two enlarged, grooved fangs. The total scale row is wider than 20 per cent of the body length, neck narrow, head distinct; maximum length usually slightly exceeds a metre.

What were described by Duellman (1958a) as the species groups, were separated on the nature of the hemipenes, the dentition and certain skull elements, particularly the quadrates, vomers, and maxillaries.

Analysis of the characters shows that the most useful in a systematic study of the snakes are the numbers of ventrals, subcaudals, and dorsal scale rows, the number, shape, and size of the body blotches, and the nature of the dorsal head pattern and hemipene morphology. Analysis of numerous character clines shows that parallel clines may exist in two or more species in certain characters, but that in others the clines may diverge. Discontinuous clines are common. In some cases these are correlated with striking morphological changes between populations and become incorporated in the characteristics of subspecies, which are ignored in this paper.

Studies of the skull of Leptodeira (senso latu) indicate that the skull is a normal colubrid type without striking specializations. Certain skeletal elements readily identify it from related genera. The poison glands (modified posterior portions of parotid glands) are large and produce a venom of sufficient strength to kill small frogs and lizards. The distribution of the genus is essentially throughout the American tropics to elevations of about 2000 meters. Some forms are restricted to semi-arid habitats; others live in tropical rain forest. Two species range from semi-arid to wet forest environments; each has a subspecies adapted to arboreal life in the forest by having a reduced number of dorsal scale rows, enlarged vertebral and paravertebral scale rows, and a laterally compressed body. Snakes of this genus feed primarily on frogs and toads; some lizards are included in the diet. The snakes are nocturnal and appear to reach their greatest abundance at times of congregations of breeding frogs and toads, which appear to be their main diet. These snakes are also known to feed on lizards.

The Genus Leptodeira was diagnosed by Duellman (1958a).

The key elements are adapted and republished here with some additions and modifications arising from other sources cited above:

The genus is placed within the Colubridae, because the
while the ventral surfaces are usually immaculate cream, white or with only scattered darker flecks.

The genus *Leptodeira* (sensu lato) is found from the far south of the United States, through central America and into the northern half of South America, generally including the region north of the tropic of Cancer, excluding the Andes and west and the far east of the continent.

For the record, the similar and monotypic False Cat Eyed Snake *Pseudolepoteira latifasciata*, is separated from this genus by the fact that the loreal scale is not wider than high, it does not have immaculate ventral scales and does not have sublateral scale row reduction.

The species *unbei*, sometimes in the past placed within the genera *Pseudoleptodeira* and more recently within *Leptodeira* is herein placed in the genus *Ginabasaperinae* gen. nov. with the species *frenata*, the species *frenata* being the type for the genus.

The genus *Imantodes* is separated from *Leptodeira*, *Lukelaarbaspernos* gen. nov. and *Ginabasaperinae* gen. nov. by the loss of bifurcation of the sulcus spermaticus versus a reduction to a small terminal fork or expanded flat area in the genus *Leptodeira*.

The entire monograph of Duellman (1958a) is available for download from the internet as a giant pdf file for free as of early 2012 and therefore it is not my intention to repeat its contents here.

Instead this paper’s focus is to complete the formalities of the divisions of the relevant genera in light of the most recent molecular findings.

The separation of the taxa within the newly described subgenus and two separate genera of *Leptodeira* is done within the diagnoses of each below.

In contrast to Duellman (1958a), the monotypic False Cat Eyed Snake *Pseudolepoteira latifasciata* is not treated as being within *Leptodeira* and is ignored for the purposes of diagnoses and the like, having been separated from the relevant taxa above.

In terms of the two new genera *Lukelaarbaspernos* gen. nov. and *Ginabasaperinae* gen. nov. both can be separated from *Leptodeira* by dentition. *Leptodeira* has 13 or more maxillary teeth anterior to the diastema whereas for the other genera, the number is 12 or less (see Duellman (1958a) table 1, p. 17).

*Lukelaarbaspernos* gen. nov. and *Ginabasaperinae* gen. nov. are characterized and separated from all other *Leptodeira* by a hemipenis with many spines and without a deep fold around the base of the capitulum and a high number of maxillary teeth.

The species *punctata* (type for the subgenus) is unusual among all other *Leptodeira* in having a different general body pattern and appearance, but also in the reduced number of ventrals, subcaudals, labials and teeth, giving it appearance similar to snakes of the genus *Hypsiglena*.

*Crossmanus punctata* is characterised by 150-167 ventrals, 54-69 subcaudals, 19 dorsal mid body rows (15 posteriorly); the hemipenis *in situ* extends for six caudals; there is a median row of three large spines, the distal spine being the largest; on each side there are two rows of smaller spines; four or five spines in each row, which converge distally; the distal spine is common to both rows; the sulcus is opposite the primary row of spines and extends to the middle of the capitulum, the capitulum is disc-shaped, finely crenulated, and set off from the rest of the organ by a deep fold.

The coloration of *Crossmanus punctata* is a ground color of yellowish brown to light tan dorsally. There are five or six longitudinal rows of black or dark spots on the dorsum. The largest spots are on rows 7 and 8, in some individuals these are fused across the vertebral scale row to form a series of transverse bars. The second row of spots is on scale rows 3 and 4; these spots are smaller than the dorsal ones and are often indistinct. The lowermost row of spots is on scale rows 1 and 2. These are often reduced to a dark area on the edges of the scales. There is a black nuchal blotch, four or six scales in length and extending laterally to the third scale row. This blotch may be divided along the midline. The tail is marked dorsally with three to five rows of small dark spots. The belly is an immaculate cream color.

The top of the head is cream-yellow to tan and may have an ornate head pattern consisting of an 8-shaped mark on the front and paretials with an anterior Y-shaped projection on the frontal and prefrontals and a nape stripe extending posteriorly from the paretials from the length of three or four dorsal scales. This pattern is often fragmented.

*Crossmanus punctata* is the only species within all *Leptodeira*, *Lukelaarbaspernos* and *Ginabasaperinae* that does not have a longitudinal series of dorsal body blotches of varying size and colour.

*Crossmanus* subgen. nov. ranges from Mexico into South America.

**Etymology:** Named in honor of Bradley Crossman, born and
raised in Sydney Australia and since having spent time at various locations including Airlie Beach, Queensland, where for many years he conducted wildlife and reptile rescues and the like and essential public education about reptiles.

In a story repeated across Australia many times, his successful business enterprise at Airlie Beach was lighted down by corrupt government wildlife officers who wanted to monopolize the “wildlife space” and used their position as both regulator and competitor to close down a business rival that they couldn’t match on the basis of standards.

Species within Crossmanus subgen. nov.
Leptodeira (Crossmanus) punctata (Peters, 1866) (Western Cat-eyed Snake)
Leptodeira (Crossmanus) splendida ( Günther, 1895) (Splendid Cat-eyed Snake)
Leptodeira (Crossmanus) septentrionalis (Kennicott, 1859) (Northern Cat-eyed Snake)

Other species remaining within Genus Leptodeira as defined within this paper.
Leptodeira (Leptodeira) annulata (Linnaeus, 1758) (Type species for the genus; Banded Cat-eyed Snake)
Leptodeira (Leptodeira) bakeri Ruthven, 1936 (Baker’s Cat-eyed Snake)
Leptodeira (Leptodeira) maculata (Hallowell, 1861) (Southwestern Cat-eyed Snake)
Leptodeira (Leptodeira) rubicata (Cope, 1893) (Boca Mala Cat-eyed Snake)

Total of seven species within this genus.

GENUS LUKEFABASERPENS GEN. NOV.

Type species: Leptodeira nigrofasciata Günther, 1868

Diagnosis: Separated from all (other) Leptodeira by the following suite of characters:

In terms of the two new genera Lukefabaserpens gen. nov. and Ginaserpenae gen. nov. both can be separated from Leptodeira by dentition. Leptodeira has 13 or more maxillary teeth anterior to the diastema whereas for the other genera, the number is 12 or less (see Duellman (1958a) table 1, p. 17). Lukefabaserpens gen. nov. and Ginaserpenae gen. nov. both can be separated from Leptodeira by the lower number of dentary teeth, 17 or less, versus 19 or more in Leptodeira.

The relevant three species within the new monotypic genus Lukefabaserpens gen. nov. and Ginaserpenae gen. nov. can be separated from one another by the number of pterygoid teeth. Lukefabaserpens gen. nov. usually has 18 or less, versus usually 20 or more in Ginaserpenae gen. nov.

For the species nigrofasciata (Lukefabaserpens gen. nov.) there are 10-12 maxillary teeth anterior to the diastema and for the species frenata and uribeii (Ginaserpenae gen. nov.) there are 8-10 maxillary teeth anterior to the diastema.

Lukefabaserpens gen. nov. is easily separated from Ginaserpenae gen. nov. on the basis of mid-body scale row count. For Lukefabaserpens gen. nov. there are 17-19 dorsal mid body scale rows, versus more than 19 in Ginaserpenae gen. nov.

Lukefabaserpens gen. nov. is further recognizable by having 10-21 large dorsal body blotches, extending to, or nearly the ventrals, forming long body bands with straight edges with no lateral intercalary spots, no ornate head pattern on the frontals or parietals, two precoculars and usually 17 mid-body scale rows.

Pseudooleptodeira is separated from all other snakes in the genera Lukefabaserpens gen. nov. Ginaserpenae gen. nov. and Leptodeira by having more than 19 mid body rows, seven to ten long dark bands on the body and a light occipital region.

Lukefabaserpens gen. nov. ranges from Central America, Costa Rica, Honduras, Nicaragua northward through arid and semi-arid habitats to Mexico.

They are a smaller taxon than species of Ginaserpenae gen. nov. and Leptodeira.

In common with the genus Pseudooleptodeira, this genus is separated from Ginaserpenae gen. nov. and Leptodeira by long dark bands on the body, hemipenis with spinus capitulum, somewhat elongated and flattened head and reduced numbers of teeth on all dentigerous bones.

The Mexican snakes assigned to the genus Lukefabaserpens gen. nov. have been referred to the species mystacina (Cope 1869), but Duellman (1848a) found it to be merely a regional variant of nigrofasciata, for which the key diagnostic characters varied clinal across the distributional range of the species nigrofasciata.

As already mentioned, in the species nigrofasciata, there is distinct clinal variation from southern Mexico through to Costa Rica. As one moves south there is an increase in body bands and a decrease in the number of ventrals and subcaudals.

The subgenus Lukefabaserpens gen. nov. is monotypic for the type species nigrofasciata.

Etymology: Named in honour of Melbourne Australia based lawyer, Luke Faba, who in 2011-2012 worked extremely hard in a series of legal battles against corrupt government wildlife officials working for the Victorian Government Wildlife Department (known as DSE) to fight for the rights of ordinary Victorians to be safely and properly educated about reptiles by Snakebusters reptile shows and displays.

The corrupt wildlife officers, Ron Waters, Glen Sharp, Emily Gibson and others (see definitions of terms in Hoser (1999)) were working on behalf of rival business operators with whom they had an improper relationship and protected from prosecution when they committed wildlife and safety offences on a regular basis.

Furthermore they fabricated charges and false allegations against company Snakebusters, whom none of the other newly licenced enterprises could match by standard, in order to remove Snakebusters from a “market” they could not otherwise compete in on the basis of standard.

The DSE officers also breached competitive neutrality laws in that they were part of the same government umbrella organization in control of the dysfunctional government-owned Melbourne Zoo, the main business competitor of Snakebusters for “in school” educational incursions and excursions and breached their statutory role.

As they were simultaneously in the role of regulator of their main commercial competitor, namely Snakebusters, they should not have illegally used their power to shut down a business competitor who had never breached any written rules.

The Zoo and DSE officials illegally abused this position to corruptly fabricate criminal charges against Snakebusters and then ram through criminal convictions with a combination of legal firepower that only the taxpayer funded government department could afford (at a total cost of several million dollars!) and by ‘judge shopping’ to ensure that they got friendly judgments in their favor in a manner by which it simply wasn’t financially viable or possible for Snakebusters to pursue the matter through the higher courts.

There were countless false claims and allegations made by these people against Snakebusters, many of which put public safety at risk.

Such false claims included that the Snakebusters venomoid snakes (see Hoser 2004a and Hoser 2004b), had all regenerated venom and were dangerous (they weren’t) and that the venomoid bites shown on video of myself and others in the period 2006 to 2011, including my daughter taking venomoid bites, and all showing no ill effects, were routine for dangerous snakes as they falsely claimed that so-called dry bites are extremely common from species such as Taipans, Death Adders and the like.

As a result of this false advice from DSE people and other business competitors, at least two people who heeded this
wrong advice died from Snakebite in the period from 2009-2011. These DSE officials are also the very same people responsible for bushfire prevention and management. These are the same officials responsible in part for the 172 Victorians needlessly killed in the Black Saturday bushfires of 7 Feb 2009. Instead of dealing with the impending bushfire disaster in the period leading up to the fires at end 2008 and early 2009, DSE officers were raiding Snakebusters shows at Shopping Malls and elsewhere, creating public alarm at these events and pumping money into legal teams to bog Snakebusters down at extended VCAT (tribunal) hearings and the like in late 2008, where they repeatedly claimed I, Raymond Hoser was delusional to believe that dozens of people could die in a bushfire event in Victoria.

As a result of the vast amount of money, manpower and resources the DSE devoted to unlawfully attacking Snakebusters in January 2009 and earlier in the period 2006 to 2008, the DSE were totally unprepared for the bushfires that happened on 7 February 2009, leading to the totally preventable deaths of 172 people and huge (avoidable) property losses. Lawyers such as Luke Faba, who worked for the unfairly matched underdog (Snakebusters) against hateful cowards hiding behind the shield of an over-powerful government and totally corrupt bureaucracy deserve to be honored by having a genus of snake named after them.

Species within Lukefabaserpens gen. nov.

Lukefabaserpens nigrolaxigi (Günther, 1886) (The genus is monotypic for the species)

Common name: Black-banded Cat-eyed Snake

GENUS GINAFABASERPENAE GEN. NOV.

Type species: Sibon frenatum Cope, 1886 (Known in most contemporary texts as Leptodeira frenata)

Diagnosis: Separated from all (other) Leptodeira and Lukefabaserpens gen. nov. by the following suite of characters: The snakes of this genus have a dark post-orbital stripe, usually in contact with the first body blotch, whereas those of the genera Leptodeira and Lukefabaserpens gen. nov. do not.

In terms of the two new genera Ginafabaserpennae gen. nov. and Lukefabaserpens gen. nov. both can be separated from Leptodeira by dentition. Leptodeira has 13 or more maxillary teeth anterior to the diastema whereas for the other genera, the number is 12 or less (see Duellman (1958a) table 1, p. 17). Ginafabaserpennae gen. nov. and Lukefabaserpens gen. nov. both can be separated from Leptodeira by the lower number of dentary teeth, 17 or less, versus 19 or more in Leptodeira.

The relevant three species within the new genera Ginafabaserpennae gen. nov. and Lukefabaserpens gen. nov. both can be separated from one another by the number of pterygoid teeth. Lukefabaserpens gen. nov. usually has 18 or less, versus usually 20 or more in Ginafabaserpennae gen. nov..

For the species nigrolaxigi (Lukefabaserpens gen. nov.) there are 10-12 maxillary teeth anterior to the diastema and for the species frenata and uribeii (Ginafabaserpennae gen. nov.) there are 8-10 maxillary teeth anterior to the diastema.

Lukefabaserpens gen. nov. is easily separated from Ginafabaserpennae gen. nov. on the basis of mid-body scale row count. For Lukefabaserpens gen. nov. there are 17-19 dorsal mid body scale rows, versus more than 19 in Ginafabaserpennae gen. nov.

Ginafabaserpennae gen. nov. is separated from all Leptodeira, Lukefabaserpens gen. nov. and Pseudoleptodeira by hemipenal morphology.

In all species except Ginafabaserpennae gen. nov. there is a small to large cup in the capitulum, whereas this is absent in Ginafabaserpennae gen. nov.

Furthermore in Ginafabaserpennae gen. nov. the capitulum is set off by a deep fold and the distal spines are larger than the proximal ones.

Pseudoleptodeira is separated from all other snakes in the genera Lukefabaserpennae gen. nov. Ginafabaserpennae gen. nov. and Leptodeira by having more than 19 mid body rows, seven to ten long dark bands on the body and a light occliptal region.

The genus Ginafabaserpennae gen. nov. occurs from central Veracruz southwards and eastards through southern Mexico in the states of Tabasco and Chiapas, throughout the Yucatan Peninsula in El Peten in Guatemala and British Honduras and offshore islands as well as the Pacific Coast of Mexico.

Etymology: Named in honour of Melbourne Australia based lawyer, Gina Faba, who in 2011-2012 worked extremely hard in a series of legal battles against corrupt government wildlife officials working for the Victorian Government Wildlife Department (known as DSE) to fight for the rights of ordinary Victorians to be safely and properly educated about reptiles by Snakebusters reptile shows and displays. See also for etymology of Lukefabaserpens gen. nov. (Luke Faba) above.

Species within Ginafabaserpennae gen. nov.

Ginafabaserpennae frenata (Cope, 1886) (Rainforest Cat-eyed Snake)

Ginafabaserpennae uribeii (Bautista and Smith, 1992) (Uribe’s False Cat-eyed Snake)

THE GENUS IMANTODES DUMÉRIL, 1853

Known as the Vine Snakes, Tree Snakes or Chunk-headed snakes, these are smallish (rarely more than a metre long), very thin and delicate snakes with a relatively large head and bulging eyes with elliptical pupils. These snakes are so light that they can often crawl over leaves at night, without moving them and disturbing the sleeping prey lizards that they sometimes eat.

They occur in Middle America from Mexico southwards to the north of South America.

Myers (1982) summed up his view of the phylogeny and taxonomy of the group in the abstract of his paper. In it he wrote:

“The widespread Neotropical genus Imantodes (Colubridae) is partially revised in order to determine the relationships of a distinctive new snake discovered on an isolated ridge in eastern Panama. The six species of blunt-headed vine snakes now recognized are equally divided between two monophyletic assemblages - the cenchoa and lentiferus groups - based on hemipenal characters, maxillary dentition, relative tongue (fork) length, and coloration (reduction of pigmentation in the primitive blotched markings) ... From examination of type specimens of old names currently in the synonymy of Imantodes cenchoa, it is concluded that (1) the placement of Himantodes anisolepis and H. platycephalus is correct, (2) Himantodes hemisterus is a junior synonym of I. gemmistratus, and (3) the name Himantodes semifasciatus is a composite of I. cenchoa and I. gemmistratus. A lectotype is designated to keep semifasciatus with cenchoa, but the nominal subspecies Imantodes cenchoa semifasciatus is nonetheless considered invalid. A lectotype also is designated for Imantodes lentiferus.”

As of then and as recently as early 2012, the six recognized species within the genus Imantodes are as follows: Imantodes cenchoa (Linnaeus, 1758) (the type species for the genus) (Blunt-headed Treesnake), Imantodes gemmistratus (Cope, 1861) (Central American Treesnake), Imantodes inornatus (Boulenger, 1896) (Speckled Blunt-headed Treesnake), Imantodes lentiferus (Cope, 1894) (Amazon basin Treesnake), Imantodes phantasma Myers, 1982 (Phantasma Tree Snake), Imantodes tenuissimus Cope, 1867 (Yucatan Bluntheaded Snake). The division of the genus as done by Myers is in broad
Genus Imantodes (Known in most contemporary texts as Imantodes inornatus)
Type species: Himantodes inornatus Boulenger, 1896

Diagnosis: The genus Maconchieus gen. nov. is separated from all Imantodes species by the fact that the hemipenis has a free overhanging edge of the capitulum which is a common condition in colubrids having unicapitate hemipenes. In contrast to the condition in Maconchieus gen. nov. the asulcate edge of the capitulum is variously scalloped or emarginated in the taxa lentiferus and phantasma. Despite minor variation in this part of the hemipenis, the taxa lentiferus and phantasma share an unusual tendency for the overhanging edge of the capitulum to be proximally connected by a slightly oblique, elongated cluster of small spines. In those two species, the hemipenes are asymmetrical in that this small cluster of spines extends to the capitulum in a slightly dextral direction (when the hemipenes are appressed posteriad with the sulci spermatici against the tail), on both the right and left organs.

Species within Maconchieus gen. nov.
Maconchieus inornata (the genus is monotypic for this species)

Important first reviser notes:
Due to the fact that a number of phylogenies have been produced that robustly test the conclusions and outcomes of this paper, I’d anticipate the various generic placements to come into general usage fairly quickly. However, there may be inertia by some herpetologists to place...
the species _Lukelabasperns nigrofasciata_ in a monotypic genus apart from the taxa _Ginafabaspernens frenata_ and _Ginafabaspernena unbei_.

If any subsequent worker chooses to merge these genera for any reason, then the name _Lukelabasperns_ should take precedence over _Ginafabaspernens_.

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A review of the North American Garter Snakes
Genus Thamnophis Fitzinger, 1843
(Serpentes: Colubridae).

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ABSTRACT
The Garter Snakes, Thamnophis Fitzinger, 1843 are familiar to most American herpetologists. The taxonomy of this and related Colubrid genera has been unstable as modern molecular methodology has shown that at times morphological convergence between species has hidden actual phylogenetic relationships between wider groups of taxa.
Alternatively, morphologically distinct snakes have been shown to be closely related. As a result, genera have been named, later relegated to synonymy and at times resurrected to accommodate species subsequently found to be divergent as earlier believed.
Most recently Hoser (2012) divided the related genera Regina Baird and Girard, 1853 and Nerodia Baird and Girard, 1853, to place component species within the resurrected genus Liodytes Cope, 1892 and to create the new genera Funkus Hoser, 2012 and Mariolisus Hoser, 2012 to accommodate species.
Phylogentic studies by Pyron et. a. (2011) confirmed the obviously paraphyletic nature of Thamnophis as generally defined at the time, leading the authors to specifically note the paraphyletic nature of the genus.
This paper subdivides the four obvious groups into the genera Thamnophis Fitzinger, 1843, Chilopoma Cope, 1875, and two new genera, Gregswedoshus gen. nov. and Brucerogersus gen. nov. for the unnamed groups.
The genus Adelophis Dugès, 1879 includes the two species currently placed within the genus, namely copei and foxi, herein relegated to subgenus status within Chilopoma Cope, 1875, and has several related taxa added.
The taxon sirtalis is placed in the new monotypic subgenus Pughus subgen. nov., within Thamnophis. The species cyrtopsis is placed in a new subgenus Whybrowus subgen. nov. within Gregswedoshus gen. nov.. The so-called eques group is placed in a subgenus Neilsonnemanus subgen. nov. also within Gregswedoshus gen. nov..
Keywords: new genus; subgenus; taxonomy; nomenclature; Garter Snake; Thamnophis; Adelophis; Gregswedoshus; Brucerogersus; Pughus; Chilopoma; Whybrowus; Neilsonnemanus.
INTRODUCTION

Garter Snakes of the genus Thamnophis Fitzinger, 1843 are familiar to many people in North America, being the most widely distributed genus on the continent and the only snake native to Alaska. Named Garter Snakes, because most are longitudinally lined, like the fancy garters that men used to use to hold up socks, these snakes are smallish, usually averaging about 60 cm as adults in total length and of thin build.

In Canada in particular, large breeding aggregations occur in spring and at times become draw cards for tourists. In the 1950’s and 1960’s when herpetoculture was in its infancy, they were commonly kept as pets. While still popular as a pet snake species, Garter Snakes have declined in relative popularity in favor of larger species, in particular Corn Snakes, Boas, Pythons and other species. While most of the “True” Garter Snakes have been placed within the broad genus Thamnophis Fitzinger, 1843 for many years, some taxa have been moved between this and other genera including the closely related “Water Snake” genera Nerodia and Regina.

Modern phylogenetic studies have confirmed the relationships between the various species and seen the genus Thamnophis as broadly recognized in early 2012 to in fact consist of four monophyletic groups which should be separated at the genus level. Of relevance is that recently Hoser (2012) divided the related genera Regina Baird and Girard, 1853 and Nerodia Baird and Girard, 1853, to place component species within the resurrected genus Lioydtes Cope, 1892 and to create the new genera Funkus Hoser, 2012 and Marioliusus Hoser, 2012 to accommodate species, thereby in effect dividing two paraphyletic genera into five. Phylogenetic studies by Pyron et. a. (2011) confirmed the obviously paraphyletic nature of Thamnophis as generally defined at the time (see fig 2, p. 337), leading the authors to specifically note the paraphyletic nature of the genus (p. 340).

The wide-ranging results of Pyron et. al. (2011) have been calibrated by myself against other similar molecular phylogenetic studies specific to the Snail-eating Snakes (Guo et. al. 2011), among others as well as to redefine the other similarly defined groups. In summary, Thamnophis is defined herein as the Common Garter Snake and nearest relatives, otherwise known as the sirtalis group, diagnosed below.

The Garter Snakes of the genus Thamnophis (Thamnophis senso lato) are characterized and diagnosed herein by the following suite of characters: single anal, lateral stripe involving the fourth dorsal scale row anteriorly, 3 or more maxillary teeth, 19 or less mid-body rows, no vertical bars on any supralabials; or if 17 dorsal scale rows anteriorly, the body rows, single anal plate, keeled dorsal scales and no odor. Diet is varied and is known to include vertebrates and other small animals. While these snakes live in all kinds of habitats, in drier areas they are generally found in proximity to water.

GENUS THAMNOPHIS FITZINGER, 1843

Type species: Coluber saurita Linnaeus, 1766.

Diagnosis: This group of Garter Snakes are separated from all other relevant genera (defined herein), formerly placed in Thamnophis by the following suite of characters: single anal, lateral stripe involving the fourth dorsal scale row anteriorly, 3 or more maxillary teeth, 19 or less mid-body rows, no vertical bars on any supralabials; or if 17 dorsal scale rows anteriorly, the lateral stripe involves most of the second dorsal scale row at midbody.

Content of Thamnophis Fitzinger, 1843

Thamnophis sauritus (Linnaeus, 1766)

Thamnophis sirtalis (Linnaeus, 1758)

Thamnophis proximus (Say, 1823)

SUBGENUS PUGHUS SUBGEN. NOV.

Type species: Coluber sirtalis Linnaeus, 1758.

Diagnosis: This monotypic subgenus is separated from all others within the genus Thamnophis by the fact that this taxon has a lateral stripe including most of the second dorsal scale row at midbody. It also has 17 or 19 mid-body scale rows. Other snakes within the genus Thamnophis (subgenus Thamnophis) are characterized and diagnosed herein by the following suite of characters: lateral stripe involving the fourth dorsal scale row anteriorly, 3 or more maxillary teeth, 19 or less mid-body rows, single anal plate, keeled dorsal scales and no vertical bars on any supralabials.
Etyology: Named in honour of the long-term President of the Victorian Association of Amateur Herpetologists, Mick Pugh, of Geelong, Victoria, Australia for an enormous amount of largely unrecognized work in terms of Australian herpetology and reptile conservation.

GENUS CHILOPOMA COPE, 1875

**Type species:** Chilopoma rufipunctatum Cope, 1875

**Diagnosis:** The group of snakes within the genus Thamnophis as defined within this paper (above) are separated from the snakes of the genus Chilopoma by the following suite of characters: That group of Garter Snakes are separated from all other relevant genera (defined herein), formerly placed within Thamnophis by the following suite of characters: Single anal, lateral stripe involving the fourth dorsal scale row anteriorly, 3 or more maxillary teeth, 19 or less mid-body rows, no vertical bars on any supralabials; or if 17 dorsal scale rows anteriorly, the lateral stripe involves most of the second dorsal scale row at midbody.

The two species of snakes formerly placed in the genus Adelophis Dugès, 1879, but now placed in the genus Chilopoma Cope, 1875, namely foxi and copei, share several morphological characteristics not seen in any Thamnophis (sensu lato) as in all genera defined in this paper, including all others in Chilopoma Cope, 1875, and this includes the presence of only five supralabial scales (vs six or more in all other species formerly placed within Thamnophis) and a lack of reduction in dorsal scale row numbers posteriorly. In addition, both foxi and copei have stripe patterns unlike those of any Thamnophis (sensu lato), although they also differ from each other in this respect (Rossman and Blaney, 1968).

The species rufipunctatum Cope, 1875, the type species for the nominate subgenus Chilopoma subgen. nov. identified in this paper, is separated from all other snakes in the genera identified and defined within this paper by the following suite of characters: The presence of two moderately small, separate nuchal blotches, broad supralabial bars, black-edged brown wedges on each side of the belly, a dorsum olive or brown with conspicuous dark brown spots that fade on the tail. There are no well-defined or developed stripes or pale crescent behind the corner of the mouth. Vestiges of the dorsal and lateral stripes are sometimes present on the neck. Venter is grayish-brown, lightening on the throat, the head is long, the snout is blunt and there are 8 supralabials and 21 dorsal mid-body rows.

The other snakes within the genus Chilopoma are diagnosed and separated from others within the relevant genera identified in this paper (Thamnophis, Gregswedoshus gen. nov. and Brucerogersus gen. nov.) by the following suite of characters: maximum number of dorsal mid-body rows usually 17; maxillary teeth 16-20; top of head usually unpatterned; two rows of relatively small black spots between the light vertebral and lateral stripes; nuchal blotches predominantly brown; there may or may not be a prominence of black bar along posterior suture of SL 5 equal to, or less than, bar along SL 6 and 7 suture; ventrals averaging 135-155 in males, 130-150 in females; subcaudals averaging 60-75 in males, 50-85 in females; tail of moderate length, prefrontal suture usually slightly longer than the internasal suture (mean FPL/INL 105-106%); muzzle tip usually moderately broad (mean INR/FR 105-120%); anterior nasal usually shorter than posterior nasal (mean AN/PN 75-78%); parietals usually of moderate length (mean FPL/PL 70-85%); and frontal usually of moderate width posteriorly (mean FWP/PWA 70-90%); the dorsal color typically including longitudinal vertebral stripes may or may not be obscured by speckling.

One species within Chilopoma, namely Chilopoma valida (Kennicott, 1860) is unusual in that it has a divided anal. All others within this genus have a single anal plate. All have keeled scales.

The center of distribution for the genus is Mexico.

**Content of Genus Chilopoma Cope, 1875**

- Chilopoma rufipunctatum Cope, 1875 (Type species)
- Chilopoma angustirostris (Kennicott, 1860)
- Chilopoma copei (Dugès, 1879)
- Chilopoma bogerti (Rossman and Burbink, 2005)
- Chilopoma conanti (Rossman and Burbink, 2005)
- Chilopoma exsul (Rossman, 1969)
- Chilopoma foxi (Rossman and Blaney, 1968)
- Chilopoma godmani (Günther, 1894)
- Chilopoma lineri (Rossman and Burbink, 2005)
- Chilopoma melanogaster (Weigmann, 1830)
- Chilopoma mendax (Walker, 1955)
- Chilopoma scalaris (Cope, 1861)
- Chilopoma scaliger (Jan, 1863)
- Chilopoma sumichrasti (Cope, 1866)
- Chilopoma valida (Kennicott, 1860)

**SUBGENUS ADELOPHIS DUGÈS, 1879**

**Type species:** Adelophis copei Dugès, 1879

**Diagnosis:** The subgenus Adelophis now includes all species within the genus Chilopoma except for the single taxon placed within the subgenus Chilopoma, namely C. rufipunctatum Cope, 1875. This obviously means Adelophis now includes species formerly referred to the genus Thamnophis. The diagnosis for this subgenus (Adelophis) is most easily done by diagnosing the species C. rufipunctatum Cope, 1875, thereby eliminating it from the genus Chilopoma, as a result leaving all other species within this subgenus.

The type species for the nominate subgenus Chilopoma subgen. nov. identified in this paper, is C. rufipunctatum Cope, 1875 and separated from all other snakes in the genera identified and defined within this paper as well as all Chilopoma placed in the subgenus Adelophis by the following suite of characters: the presence of two moderately small, separate nuchal blotches, broad supralabial bars, black-edged brown wedges on each side of the belly, a dorsum olive or brown with conspicuous dark brown spots that fade on the tail. There are no well-defined or developed stripes or pale crescent behind the corner of the mouth. Vestiges of the dorsal and lateral stripes are sometimes present on the neck. Venter is grayish-brown, lightening on the throat, the head is long, the snout is blunt and there are 8 supralabials and 21 dorsal mid-body rows.

**Content of subgenus Adelophis Dugès, 1879**

- Chilopoma (Adelophis) copei (Dugès, 1879)
- Chilopoma (Adelophis) bogerti (Rossman and Burbink, 2005)
- Chilopoma (Adelophis) conanti (Rossman and Burbink, 2005)
- Chilopoma (Adelophis) exsul (Rossman, 1969)
- Chilopoma (Adelophis) foxi (Rossman and Blaney, 1968)
- Chilopoma (Adelophis) godmani (Günther, 1894)
- Chilopoma (Adelophis) lineri (Rossman and Burbink, 2005)
- Chilopoma (Adelophis) melanogaster (Weigmann, 1830)
- Chilopoma (Adelophis) mendax (Walker, 1955)
- Chilopoma (Adelophis) scalaris (Cope, 1861)
- Chilopoma (Adelophis) scaliger (Jan, 1863)
- Chilopoma (Adelophis) sumichrasti (Cope, 1866)
- Chilopoma (Adelophis) valida (Kennicott, 1860)

**GENUS BRUCEROGERUS GEN. NOV.**

**Type species:** Eutaenia chrysocephala Cope, 1865

**Diagnosis:** The genus is separated from the genus Thamnophis, Chilopomao and Gregswedoshus by the following suite of characters: A slender body, and a wide, flat head, with a large eye. Brucerogersus gen. nov. has a head more triangular in shape than seen in other Garter Snakes in the genera Thamnophis, Chilopomao and Gregswedoshus gen. nov.
The side of the eye contracts the frontal plate, so that it is not wider than the superciliaries posteriorly. Superior labials eight, none higher than long, fourth and fifth below orbit. The inferior surfaces are dark which causes a good definition of the lateral line. There are representations of two rows of lateral black spots, but they are merely black scale-borders, those of the inferior row the more distinct, although these may vary and sometimes appear bar or zig-zag like, sometimes interspersed with white. A similar row of black edges on the first row of scales. All of these spots become distinct on the sides of the neck. Nuchal spot large, black, conspicuous and without a shallow notch behind; no occipital or other spots on the head. The gastrosteges often have black bases. Keeled dorsal scales and a single anal plate. This genus is known from two described species only. These occur in Mexico, Honduras, El Salvador, and Guatemala.

Etymology: Named in honor of Bruce Rogers, of Kangaroo Ground, Victoria, Australia for services to Australian culture and environment.

Content of Genus Brucerogersus gen. nov.

Type species: Eutainia elegans Baird and Girard, 1853

Diagnosis: In the first instance, this genus can be diagnosed and separated from Thamnophis, Chilopoma and Brucerogersus gen. nov. by the following suite of characters: keeled or unkeeled dorsal scales, single anal, 17-21 dorsal mid-body rows, usually reducing by two near the vent, 120-170 ventrals, less than 27 maxillary teeth, nasal usually shorter than posterior nasal (mean AN/PN 75-78%); parietals usually of moderate length (mean FL/PL 70-85%); and frontal usually of moderate width posteriorly (mean FWP/FWA 70-90%); the dorsal color typically including longitudinal vertebral stripes may or may not be obscured by speckling.

One species within Chilopoma, namely Chilopoma valida (Kennicott, 1860) is unusual in that it has a divided anal. All others within the genus Chilopoma have a single anal plate and keeled scales.

The center of distribution for the genus Chilopoma is Mexico. The genus Brucerogersus gen. nov. is separated from the genera Thamnophis, Chilopoma and Gregswedoshus by the following suite of characters: A slender body, and a wide, flat head, with a large eye. Brucerogersus gen. nov. has a more triangular in shape than seen in other Garter Snakes in the genera Thamnophis, Chilopoma and Gregswedoshus gen. nov.

As this paper goes to print in 2012, those rights are again under governments were forced to repeal draconian laws banning consequence of the publication of these books that Australian governments were forced to repeal draconian laws banning private ownership of reptiles and other native species as pets. Those laws had been in place for over 20 years when this happened. As this paper goes to print in 2012, those rights are again under threat.
SUBGENUS WHYBWROWSUBGEN. NOV.

Type Species: Eutaenia cyrtopsis Kennicott, 1860

Diagnosis: Whybwrows subgen. nov. is separated from all other species in the genus Gregswedoshus gen. nov. (Thamnophis, Coluber, Chilopoma, and Brachydrasgen. nov.) by the following suite of characters: A whitish or pale yellow vertebral zigzag line. The spots fade on the tail. Belly is greenish white, 19 third scale rows, often wavy or irregular because it may be partly invaded by black spots from above and below. Sausily the ground color is usually olive brown with two alternating rows of elongate spots between the stripes which often present as a zigzag line. The spots fade on the tail. Belly is greenish white, 19 mid-body dorsal rows. While easily confused with subgenus Neilsonnemanus subgen. nov. That subgenus normally has 21 mid-body dorsal rows (rarely 19), the lateral stripe is on the third or fourth rows and any dorsal pattern extends well out onto the tail (as opposed to fading at the anterior part of the tail). As for all Gregswedoshus gen. nov., in Whybwrows subgen. nov., dorsal scales are keeled and the anal single.

This monotypic subgenus is found from southwestern USA to El Salvador and Guatemala.

First or subsequent reviser note: In the event that a decision is made at any stage to merge the subgenera Whybwrows subgen. nov. with Neilsonnemanus subgen. nov., then Whybwrows subgen. nov. should be the name used.

Etymology: Named in honor of Pete Whybrow of Taggerty, Victoria, Australia for numerous services to herpetology spanning a number of decades.

Content of subgenus Neilsonnemanus subgen. nov.

Gregswedoshus (Neilsonnemanus) equestris (Reuss, 1834) (Type species)

Gregswedoshus (Neilsonnemanus) eques (Cope, 1885)

Gregswedoshus (Neilsonnemanus) rossmani (Conant, 2000)

Gregswedoshus (Neilsonnemanus) pulchrilatus (Cope, 1885)

Gregswedoshus (Neilsonnemanus) radix (Baird and Girard, 1853)

As for all Gregswedoshus gen. nov., dorsal scales are keeled and the anal single.

This subgenus is distributed in North and Central America.

Etymology: Named in honour of Neil Sonneman of Murmungee, near Myrtleford, Victoria, Australia in recognition for his services to herpetology spanning a number of decades.

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INTRODUCTION
The King and Milk Snakes, Lampropeltis Fitzinger, 1843 are abundant across a wide area in the United States. Consisting about 14 described species and another 30 recognised subspecies, they are popular pets in the reptile-keeping hobby. The snakes are reasonably active, docile and generally only bite when feeding. Kingsnakes are regularly seen in pet shops across the United States, Europe and South Africa. Notwithstanding their familiarity and general abundance in the region stretching from southern Canada, through most of the United States, Central America and to Equador in northern South America, the taxonomy of the genus has remained unstable to the present time. Confusion and dispute remains in terms of the exact number of species. Even the generic placement of members has been unstable in recent years. In 2009, Pyron and Burbink placed the short-tailed snake, known widely as Stilosoma extenuatum within the synonymy of Lampropeltis. Other available genus names for subgroups and species groups have generally not been used. Most recently the detailed evidence published by Pyron et. al. (2011) led the authors to note that they viewed the genus Lampropeltis to be paraphyletic at the genus level as currently defined. Viewing this evidence and the obvious morphological and behavioral differences between the species groups, this paper divides the genus as currently accepted in three ways. Lampropeltis retains the type species getula and several others, including Stilosoma which remains subsumed as does Ophibolus Baird and Girard, 1853. Oreophis Dugès, 1897 is resurrected to contain the type species mexicana and several others. Finally the divergent taxon, calligaster is placed within its own monotypic genus Eksteinus gen. nov.

Keywords: new genus; Kingsnake; Milksnake; Lampropeltis; Stilosoma; Ophibolus; Oreophis; Eksteinus; calligaster; Prairie Kingsnake; Mole Snake; Florida Mole Snake.

ABSTRACT
The King and Milk Snakes, Lampropeltis Fitzinger, 1843 are familiar to most American herpetologists. Notwithstanding their familiarity and general abundance, the taxonomy of the genus has remained unstable to the present time. Confusion and dispute remains in terms of the exact number of species. Even the generic placement of members has been unstable in recent years. In 2009, Pyron and Burbink placed the short-tailed snake, known widely as Stilosoma extenuatum within the synonymy of Lampropeltis. Other available genus names for subgroups and species groups have generally not been used. Most recently the detailed evidence published by Pyron et. al. (2011) led the authors to note that they viewed the genus Lampropeltis to be paraphyletic at the genus level as currently defined. Viewing this evidence and the obvious morphological and behavioral differences between the species groups, this paper divides the genus as currently accepted in three ways. Lampropeltis retains the type species getula and several others, including Stilosoma which remains subsumed as does Ophibolus Baird and Girard, 1853. Oreophis Dugès, 1897 is resurrected to contain the type species mexicana and several others. Finally the divergent taxon, calligaster is placed within its own monotypic genus Eksteinus gen. nov. Keywords: new genus; Kingsnake; Milksnake; Lampropeltis; Stilosoma; Ophibolus; Oreophis; Eksteinus; calligaster, Prairie Kingsnake; Mole Snake; Florida Mole Snake.
Most recently the detailed evidence published by Pyron et. al. (2011) led the authors to note that they viewed the genus Lampropeltis to be paraptychic at the genus level. However, the authors made no taxonomic decisions at the time, save for their continued placement of the species *extenuatum* within Lampropeltis.

Viewing the evidence published by Pyron et. al. 2011 and the obvious morphological and behavioral differences between the species groups, this paper divides the genus as currently accepted three ways.

Lampropeltis retains the type species *getula* and several others, including Silisoma which remains subsumed as does Ophibolus Baird and Girard, 1853. The holotype for the genus Ophibolus is sayi, a synonym for *L. getula*.

Oreophis Dugès, 1897 is resurrected to contain the type species *calligaster* is huge and includes field guides, captive notes that these snakes milk cows and has been perpetuated by this being are usually somewhat more pugnacious with specimens commonly kinds there are rows of blotches instead of rings, but in all cases the black and white or yellow in the form of transverse rings. In someWhen encountered in the wild these snakes often hiss and strike, In the normal course of events, other vertebrates such as lizards watched at all times.

Both Lampropeltis and Oreophis consist of the so-called Kingsnakes and Milksnakes, which are small to medium-sized snakes usually from 30-90 cm in total adult length, although some species exceed a metre. They are powerful constrictors with other serpents featuring in (usually about 23) dorsal mid-body scale rows and a single anal plate. They are powerful constrictors with other serpents featuring in

**GENERA LAMPROPeltIS FITZINGER, 1843 AND OREOPHIs DUGES, 1897**

**Diagnosis:** Herein the two similar genera are diagnosed as one, in that they are both subject to diagnoses in other publications and this diagnosis is only for the purposes of setting out the diagnosis of the new genus Eksteinus gen. nov. defined below according to the Zoological Code (Ride et. al. 1999) in terms of separating it from these snakes.

The joint diagnosis of these genera is also made from the perspective that the genus Eksteinus gen. nov. is divergent from all members of both physically and phylogenetically and so can be differentiated against both other genera at the same time, as well as the fact that most readers in 2012 will probably still treat both Lampropeltis and Oreophis as a single group.

It should also be noted that the most recent phylogeny of these three groups of snakes placed calligaster as basal to the rest (Pyron et al. 2011).

Both Lampropeltis and Oreophis consist of the so-called Kingsnakes and Milksnakes, which are small to medium-sized snakes usually from 30-90 cm in total adult length, although some species exceed a metre. They are powerful constrictors with other serpents featuring in

**Diagnosis:** The nominate form is known in most contemporary texts as the Prairie Kingsnake Lampropeltis calligaster. This taxon (including subspecies), monotypic for Eksteinus gen. nov. is easily separated from all other Lampropeltis and Oreophis by the following suite of characters: It is a distinctly blotched snake, relatively uncommon among Kingsnakes and Milksnakes; in this taxon the back and tail are patterned with about 60 brown reddish or greenish black-edged markings or alternatively about 55 or 52 small well-separated spots in the subspecies *rhombomaculata* and *opocinoloeata*. Occasionally these are split in two down the back. There are two alternating rows of dark markings on each side, but pairs of these may fuse together. The ground colour is brownish grey or tan. Older specimens with faded pattern are commonly known as the “dark phase” often characterized by longitudinal dusky stripes. These snakes are characterized by a distinctive *V*-shaped arrow-head marking on the crown of the head. The venter is yellowish with squarish brown blotches. The young are strongly spotted, sometimes with lengthwise dark streaks on the neck and 23-28 cm in total length when hatched.

These snakes are similar in appearance to some Milksnakes (Lampropeltis spp.), which they are separated from by the fact that in Milksnakes the reddish blotches or rings are very boldly surrounded by black, and there are black markings on the belly. These snakes are most commonly confused with Ratsnakes (Elaphe), and Cornsnakes (Pantherophis), which differ in having a divided anal, keeled scales and with the underside of tail often surrounded by thick, but otherwise similar in appearance.
Etymology: Named in honor of Bob Ekstein of Belrose in Sydney, Australia for various services to herpetology.

**SPECIES REMAINING IN LAMPROPELTI**

Lampropeltis getula (Linnaeus, 1766) (type species)
Lampropeltis alternata (Brown, 1901)
Lampropeltis californiae (Blainville, 1835)
Lampropeltis extenuata (Brown, 1890)
Lampropeltis holbrooki (Stejneger, 1902)
Lampropeltis nigra (Yarrow, 1882)
Lampropeltis splendidula (Baird and Girard, 1853)
Lampropeltis triangulum (Lacepède, 1789)

**SPECIES WITHIN OROPHIS**

Oreophis mexicana (Type species)
Oreophis elapsoides (Allen, 1932)
Oreophis pyromelana (Cope, 1866)
Oreophis ruthveni (Blanchard, 1920)
Oreophis webbi (Bryson, Dixon and Lazcano)
Oreophis zonata (Lockington, 1895)

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A review of the taxonomy of the European Colubrid snake genera *Natrix* and *Coronella*, with the creation of three new monotypic genera (Serpentes:Colubridae).

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ABSTRACT

There have been several phylogenetic studies involving the Keeled Snakes of genus *Natrix* and Smooth Snakes of genus *Coronella* as recognized at start 2012.

The exact status of each genus in terms of species composition has been the subject of argument among taxonomists, including whether or not well-recognized species such as *N. tessellata*, *N. natrix* and *C. girondica* are actually composites of several similar species.

Within the last decade, several studies have shown the divergence between the three members of the genus *Natrix* to be from 12 to 27 million years ago (Guicking et al. 2006), and probably further back for the three extant members of the genus *Coronella* (see comparative results in Pyron et al. 2011).

As a result each genus is subdivided three ways.

*Natrix natrix* remains as the sole taxon in that genus. *N. maura* is placed within a new genus *Jackyhosernatrix* gen. nov. and *N. tessellata* is placed in the new genus *Guystebbinsus* gen. nov.

*Coronella austriaca* remains as the sole taxon in that genus, while *C. brachyura* is placed in the genus *Wallophis* Werner, 1929, and *C. girondica* is placed in the genus *Sharonhoserea* gen. nov.

Keywords: Taxonomic revision; new genera; genus; species; *Coronella*; *Natrix*; *Wallophis*; *Jackyhosernatrix*; *Sharonhoserea*; *Guystebbinsus*; *tessellata*; *maura*; *girondica*; *austriaca*; *brachyura*.

INTRODUCTION

Numerous studies have been completed in terms of the Keeled Snakes currently placed in the genus *Natrix*, and the Smooth Snakes, currently placed in the genus *Coronella*.

The three species remaining within each genus as of 2012. have had a fairly stable taxonomic history in recent years, following the partitioning of the relevant genera (e.g., Rossman and Eberle 1977) and the placement of component species in various other genera including those identified by Rossman and Eberle (1977).

While the remaining snakes in each genus are physically very similar, recent phylogenetic studies have shown them to have histories far more divergent than their obvious morphologies would suggest.

Most recent taxonomic studies on these snakes have concentrated on the divergences of scattered European populations in the recent geological past, with a view to managing ongoing conservation issues caused by human overpopulation.

Alternatively they have been conducted with a view to the resolution of disputes in terms of alleged species and subspecies.

As another alternative, the genera themselves have been scrutinized from the perspective of their positions in higher taxonomic hierarchies at the family level or even higher (e.g., Lawson et al. 2005, Pyron et al. 2011).
However no recent authors have investigated the possibility that in the light of this new molecular data, whether or not snakes are appropriately placed within given genera which have been previously assigned.

The results published by Pyron et al. (2011) in terms of a global review of the Colubridae in particular shows that the continued treatment of snake species within each genus (Natrix and Coronella) as monotypic is inconsistent when compared to other colubrid genera as recognized, including for example Pitophis and Pantherophis being divided into two genera when the more divergent members of Coronella are not.

Recent papers dealing with the phylogeny and taxonomy of Natrix and/or Coronella include: Bagherian and Kami (2009), Gruicking et al. (2006), Gruicking et al. (2009), Guicking and Gjoer (2011) and Pyron et al. (2011).


Studies and publications dealing with relevant aspects in terms of Coronella include: Bombet al. (2009), Bouleger (1889), Daudin (1802), Duse (1993), Najjar (2006), Perrettia and Reading (2009), Santos et al. (2008), Schlüter (2004, 2009, 2012), Sharma (2004), Smith (1943) and Vyas and Patel (2007).

As composites, these studies also yield a compelling argument for the division of the relevant genera as currently recognized. Therefore the two genera are herein subdivided as follows:

The genus Natrix (species natrix) is herein separated

Diagnosis:

Type species: Coluber natrix Linnaeus, 1758

Diagnosis: The genus as recognized as of early 2012 consisted of three species of medium to large snakes with clearly keeled body scales, large scales on the head and round pupils. The belly pattern is often chequered. There are 19-23 dorsal mid body rows, 7-8 upper labials, 1-2 pre-oculars, 2 internasals, 2-4 postoculars, nostrils pointing laterally.

In terms of this paper, the genus Natrix (species natrix) is herein separated from the other two species formerly placed in the genus by having seven supralabials and three postoculars, versus two postoculars in the species maura (this genus Jackyhosernatrix gen. nov.) or 8 upper labials in the species tessellata (genus Guystebbinsus gen. nov.).

They are usually found in moist places or in or near water.

The DIVISION OF NATRIX

Evidence and reasons for the division of the genus Natrix as known in early 2012 have come from several sources.

One was Guicking et al. (2005). They wrote in their abstract:

“The division of the natural history of snakes of the colubrid genus Natrix have been well studied. With their extensive European distribution and relative abundance, their ecology, reproduction and behaviour are well known. Yet other facets of their biology remain poorly understood. This includes knowledge of Natrix phylogeny, hypotheses explaining the current distribution of the three extant members of the genus, and their evolution and relationships. In this study we used molecular data, the nucleotide sequences of four protein-coding mitochondrial genes (3806 bp total), to provide a well-supported phylogeny for the genus Natrix. With these molecular data, evidence from the fossil record, and knowledge of palaeoecological events, we used two approaches in designing a time scale which we used to date the major events in Natrix speciation and intraspecific variation. Our data strongly support a phylogeny for the genus in which N. maura is basal with N. natrix and N. tessellata being sister species. The calibrated molecular clock suggests that N. maura diverged from the common ancestor of the three species 16-27 mya and that N. natrix and N. tessellata diverged 13-22 mya. Although the ranges of these estimates are large they support an early Miocene to late Oligocene origin for the three species. Intraspecific divergence is estimated to have commenced 5.3, 6.0 and 6.7 mya with evolutionary rates of 1 : 1.25 : 1.35% per million years for N. maura, N. natrix and N. tessellata, respectively.”

The time frame for divergence puts all three species sufficiently apart to be reasonably placed in separate genera.

Furthermore the so-called intra-specific divergences within the three named taxa supports the likelihood that one or more of these is in fact composite.

Notwithstanding this, the species described as Natrix megalolechepta Orlov and Tuniyev, 1987, has been questioned by several authors, including Venchi and Sindaco 2006 and Bohme 2009, who have treated it as synonymous with N. natrix scutatus. However other authors including, Engelmann et al. 1993 and Ananjeva et al. 2006 have regarded megalolechepta as a valid species.

Notable is that the published results of Pyron et al. (2011) showed the three species of Natrix as recognized in early 2012 to have diverged at a point comparable to that where other taxa are placed in separate genera.

The species maura was found to have diverged from the common ancestor prior to natrix and tessellata, which concurs with the results of Guicking et al. 2005, who also found this taxon as the first to diverge.

With obvious morphological differences between the taxa as well as clear and defined habitat partitioning between species when they are sympatric, it is clear that generic division between the taxa is warranted and hence this is done according to the Zoological Code (Ride et al. 1999), below.

GENUS JACKYHOSERNATRIX GEN. NOV.

Type species: Coluber maurus Linnaeus, 1758

Diagnosis: The genus Natrix (species natrix) is herein separated from the other two species formerly placed in the genus by having seven supralabials and three postoculars, versus two postoculars in the species maura (this genus Jackyhosernatrix gen. nov.) or 8 upper labials in the species tessellata (genus Guystebbinsus gen. nov.).

Snakes in this genus have seven supralabials, with numbers 3 and 4 entering the eye and two postoculars. In snakes of both genus Guystebbinsus gen. nov. and Natrix there are three postoculars.

The species within this genus (Jackyhosernatrix gen. nov.) are medium to large snakes with clearly keeled body scales, large scales on the head and round pupils. The belly pattern is often chequered. There are 19-23 (usually 21) dorsal mid body rows, 7 upper labials, 2 pre-oculars, 2 internasals, 2 postoculars, nostrils pointing laterally.

These snakes grow up to 100 cm in total length, but most adults are less than 70 cm.

Females are the larger sex. Coleration varies, but dorsally is usually brown or grayish but may be tinged with yellow, red or olive. Typically there are two rows of staggered dark blotches running down the mid-back that may merge to produce bars or a well-defined zig-zag stripe. Flanks have dark blotches or more commonly large light-centered ocelli. Some specimens have two narrow, light yellow or reddish stripes running along the back. Usually the head is boldly marked often with one or two “A”-shaped marks on the crown and neck that may be joined by a central blotch. The light supralabials have conspicuous dark borders. The belly is whitish, yellow, red or brown chequered with dark brown.
While these snakes are often confused with vipers (Viperidae), they are readily separated by the fact that vipers have elliptical pupils, smaller head shields and obvious hollow fangs that fold up when the mouth closes.

These snakes are more thick-set than *Natrix* and *Guystebbinsus* gen. nov. (see below). In this genus the head is also usually broader and the snout is more rounded.

**Distribution:** Iberia, most of France except the far north, South-west Switzerland, North-west Italy, Balearic Islands, Iles d’Hyères, Mallorca, Menorca and Sicily and north-west Africa, including Morocco, Algeria, Tunisia and Galita Island.

**Common name:** Viperine Water Snake.

**Etymology:** Named in honor of my daughter Jacky Hoser for more than ten years of valuable service to reptile education.

**GENUS GUYSTEBBINSUS GEN. NOV.**

**Type species:** *Coronella tessellata* Laurenti, 1768.

**Diagnosis:** Snakes within this genus, *Guystebbinsus* gen. nov. are separated from *Natrix* and *Jackyhosernatrix* gen. nov. by having 8 supralabials and only the fourth upper labial entering the eye. In genera *Natrix* and *Jackyhosernatrix* gen. nov. there are 7 labials and the third and fourth both enter the eye.

Snakes within *Guystebbinsus* gen. nov. have three or more postoculars, versus just two in *Jackyhosernatrix* gen. nov. The species within this genus (*Guystebbinsus* gen. nov.) are medium to large snakes with clearly keeled body scales, large scales on the head and round pupils. The belly is whitish, yellowish, pink or red, with a chequered pattern or with one or two irregular dark stripes or almost entirely black. There are 19-23 (usually 21) dorsal mid body rows, 8 upper labials, 3 or more pre-oculars, 2 internasals, 2 postoculars, nostrils pointing laterally.

These snakes grow up to 100 cm in total length, but most adults are less than 70 cm.

Females are the larger sex.

Coloration varies, but dorsally is usually brown or grayish but may be yellowish or greenish often with a pattern of regular dark spots evenly dispersed over the body. These spots may be large, small or sometimes completely absent, or they may fuse to form dark bars on the back and flanks. Those on flanks often alternate with narrower light bars. Sometimes there is an “A”-shaped mark on the nape, but often head markings are obscure.

These snakes are even more aquatic than *Jackyhosernatrix* gen. nov., often spending considerable time in the water and able to remain submerged for considerable periods. The diet is dominantly fish.

**Distribution:** Most of the Balkans, Italy (except the extreme south), north to South Switzerland, East Austria, Czechoslovakia and south Russia. Isolated populations are known from West Austria, North-east Switzerland, on mid-Rhine and Elbe, the islands of Crete and Kithera and eastwards to south-west and central Asia.

**Common name:** Dice Snake.

**Etymology:** Named in honour of Guy Stebbins of Ascot Vale, Melbourne, Australia, for services to herpetology, including many hours of unpaid work building reptile cages and the like for Snakebusters - Australia’s best reptiles shows.

**GENUS CORONELLA LAURENTI, 1768**

**Type species:** *Coronella australica* Laurenti, 1768.

**Diagnosis:** As recognized up to the beginning of 2012 snakes of this genus are relatively small species, rarely growing to more than 60 cm in total length. The head is only slightly distinct from the neck and the pupils round. The teeth of the upper jaw increase in size towards the back. The body is almost cylindrical and covered with smooth scales. The subcaudals are paired. They are terrestrial and rather secretive, spending much of their time under cover.

The only species remaining within the genus *Coronella* as defined herein is *C. australica*. It is separated from the species *girondica* (now placed in the genus *Sharonhoserea* gen. nov.) and the species *brachyura* (now placed in the genus *Wallophis* Werner, 1929) by having 19 dorsal mid body rows.

The number is 21 in *Sharonhoserea* gen. nov. and 23 in *Wallophis*. *Coronella* as defined herein is further separated from the genera *Sharonhoserea* gen. nov. and *Wallophis* by having 7 supralabials, versus 8 in the other two genera.

Snakes in *Coronella* as defined herein are small (up about 60 cm in total length), rarely over 80 cm. The color is usually variable, but usually grayish or brownish, pinkish or even reddish, sometimes more intense on each side of the midline giving the effect of two often vague streaks. Usually small dark blotches are present on the back and usually clearest on the neck where there are often two dark stripes, and often form irregular transverse bars or are arranged in two lines. There is nearly always a dark stripe from the side of the neck to the nostril and sometimes a vague “brindle” on the snout as well. The venter is usually darkish red, orange, grey or blackish, generally with some mottling or fine spotting.

These snakes feed mainly on other reptiles, which are held in coils when attacked.

They are live-bearing.

**Distribution:** Found in isolated pockets in southern England, France, North Iberia, east to South Scandinavia and Russia and south to Italy, Sicily and Greece. Also found in north Asia Minor to North Iran.

**GENUS WALLOPHIS WERNER, 1929**

**Type species:** *Zamenis brachyura* Güntther, 1866.

**Diagnosis:** *Wallophis* is a monotypic genus containing the species *brachyura*. The genus name *Wallophis* has not been used widely in recent years, with the relevant taxon being placed in the genus *Coronella*.

The morphology and habits of the species *brachyura* are sufficiently different to warrant it’s placement in a separate genus, for which the name *Wallophis* is available and herein used.

The diagnosis for the monotypic genus follows: It is separated from all other species recently referred to in the genus *Coronella*, namely *austrica* and *girondica*, now placed in the genus *Sharonhoserea* gen. nov. (see below), by having 23 dorsal mid body scale rows. In *Sharonhoserea* gen. nov. it is 21 mid body rows, whereas in *Coronella* it is 19 mid body rows.

*Wallophis* is also separated from the genera *Coronella* and *Sharonhoserea* gen. nov. by the fact that it’s frontal shield is triangular in shape, which is not the case in the other genera.

*Wallophis* is best specifically diagnosed referring to the following suite of characters: Nostril large, between two nasals; internasals 0.3 to 0.5 as long as the prefrontals; frontal nearly as broad as long, in contact with a large precocular; loreal longer than high; 2 postoculars; temporals 2+2; 8 supralabials, 4th and 5th touching the eye; anterior genials larger than the posterior, the latter separated by two or three series of small scales. Scales in 23:23:19 rows; ventrals large, rounded; tail rather short. Ventrals 200-224; subcaudals 46-53; Anal is single.

*Hemipenis* extends to the 13th caudal plate, is not forked. The distal half is calculcate, the cups being large and with scalloped edges; the proximal half is spinose, two or three spines at the base being much larger than the others.

The dorsal color is olive-brown, with indistinct light variegations on the upper parts and usually grayish or brownish, pinkish or even reddish, sometimes more intense on each side of the midline giving the effect of two often vague streaks. Usually small dark blotches are present on the back and usually clearest on the neck where there are often two dark stripes, and often form irregular transverse bars or are arranged in two lines. There is nearly always a dark stripe from the side of the neck to the nostril and sometimes a vague “brindle” on the snout as well. The venter is usually darkish red, orange, grey or blackish, generally with some mottling or fine spotting.

These snakes feed mainly on other reptiles, which are held in coils when attacked.

They are live-bearing.

**Distribution:** Found in Northern India, namely the Poona district and Visapur, near Bombay and South-east Berar. Distribution alone separates this genus from *Coronella* and *Sharonhoserea* gen. nov.

**GENUS SHARONHOSEREA GEN. NOV.**

**Type species:** *Coluber girondicus* Daudin, 1803.

**Diagnosis:** *Sharonhoserea* gen. nov. is a monotypic genus containing the species *girondicus*.

It is separated from all species formerly placed in *Coronella* by the fact that it has 21 mid body scale rows, versus 19 in *Coronella australica* and 23 in *Wallophis* *brachyura* (formerly *Coronella brachyura*).

*Wallophis* is also separated from the genera *Coronella* and *Sharonhoserea* gen. nov. by the fact that it’s frontal shield is triangular in shape, which is not the case in the other genera.

*Wallophis* is most easily separated from the genera *Coronella* and *Sharonhoserea* gen. nov. by distribution, being the only species known from India. The other two genera have their distributions centered on Europe and adjacent regions.

*Sharonhoserea* gen. nov. in particular is found mainly in Western
Europe and nearby parts of Africa, some thousands of kilometers from where Walloliphis is found. See also the diagnosis for Walloliphis above.
This genus Sharonhoserea gen. nov. is similar in appearance to Coronella, but is differentiated by it’s slightly smaller average adult size of 50 cm total length, versus 60 cm in Coronella. Snakes in this genus, Sharonhoserea gen. nov. are also noticeably more slender in build and with a more rounded snout.

Separated from Coronella by the belly coloration, in that it is often yellow, orange, or red overlaid with black in a bold diced pattern.
Sometimes forming two lines, but not more-or-less uniform as seen in Coronella australica. The belly of Walloliphis separates this genus from the other two. In Walloliphis the belly is brownish, each scale with a yellowish posterior edge, while near the tail, the venter is immaculate.
In Sharonhoserea gen. nov. the rostral scale is not as large as in Coronella and does not extend between the supranasals.
In Coronella and Walloliphis, when viewed from above the head, part the rostral scale is clearly visible dorsally as a triangle shape. This is not the case in Sharonhoserea gen. nov. where the rostral is barely visible and presents only as an elongate stripe on the margin of the snout.
Sharonhoserea gen. nov. differs from Coronella australica in habits. Compared to Coronella, Sharonhoserea gen. nov. is generally more a lowland species, although sometimes being found in hilly areas up to about 1,500 metres. In contrast to Coronella which is dominantly diurnal, Sharonhoserea gen. nov. is often crepuscular.
Sharonhoserea gen. nov. is noticeably more docile than Coronella and rarely bites when handled.

Distribution: Iberia, South France, Italy, Sicily and North-west Africa, including Morocco, Algeria and Tunisia.

Etymology: Named in honor of my cousin, Sharon Hoser for various services to herpetology.

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A New Genus and new species and new subspecies of skink from Victoria.

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ABSTRACT

This paper describes a new taxon from near Shepparton, Victoria, closely related to the species formerly known as “Lampropholis delicata”. At the same time, the entire group of skinks in the “delicata” group formerly placed in the genus Lampropholis Fitzinger, 1843, are hereby placed into a new genus, namely Allengreerus gen. nov.

The new species is herein described as Allengreerus ronhoseri sp. nov.

Furthermore a subspecies of the taxon, delicata from the environs of Melbourne, Victoria is also described herein as Allengreerus delicata jackyhoserae subsp. nov.

Keywords: Skink; Lizard; Allengreerus; Lampropholis; ronhoseri; jackyhoserae; species; genus; subspecies; taxonomy.

INTRODUCTION

The genus Lampropholis as defined to date, contains a number of small skinks and may ultimately be split into several genera. The “Delicate Skink” to date known as “Lampropholis delicata”, as presently defined in most texts (e.g. Cogger 2000), is common and well-known in Eastern Australia. Most texts, including Wilson and Swan 2003, report on the taxon as being found throughout south-east Australia. Their distribution map does not include large parts of Victoria, but another text, Swan and Watharow 2005, gives added distribution for the “taxon” as including a disjunct population from Little Desert Victoria. Those specimens are quite different in appearance to both the type race and the taxa described below and quite likely also is an undescribed taxon. While numerous similar species have been described from the northern part of the range from specimens that would otherwise have previously keyed out as L. delicata, (e.g. L. colossus and L. couperi), this has not been the case in the south.

In July 2008, I caught a number of specimens that keyed to the taxon, L. delicata as per Cogger 2000, but were clearly different to specimens attributable to that taxon from Sydney, Melbourne and Brisbane, with which I have been familiar with for decades.

As a result, it is herein described as a new species. Furthermore, it has long been known that the “delicata” from Melbourne environs (Victoria) are substantially different from those further north in NSW and Queensland, where the holotype for the species came from. The Melbourne taxon previously referred to that species is herein described as a new subspecies, Allengreerus delicata jackyhoserae subsp. nov. The taxon L. guichenoti as described in most texts (including Cogger 2000) includes a number of well-defined regional races, that will ultimately be identified either at the subspecies or species level.

Broadly sympatric with this taxon is the “delicata” group, readily separated from the “guichenoti” group by a suite of characters, most notably being a usual lack of a defined mid-vertebral stripe in the “delicata” group as seen in the “guichenoti” group.

There are numerous other features that separate the two groups.

While Greer and others have established the relationships of the taxa within both groups as being reasonably closely related based on anatomy, it is my considered opinion that they are however sufficiently differentiated to be placed in separate genera. Hence the erection of a new genus to cover the “delicata” group.

ALLENGREERUS GEN. NOV.

MOCCOA DELICATA DE VIS, C. W. 1888

DIAGNOSIS

Separated from Lampropholis (type species guichenoti), to which it/they would otherwise be identified as, by the general lack of a distinct mid-vertebral stripe as seen in adult specimens.

All species lacking the mid-vertebral stripe as seen in guichenoti are hereby transferred to this new genus.

Occasional specimens of Allengreerus gen. nov. that may have a partial or broken mid-dorsal stripe or line can be separated from Lampropholis by the presence of dark flecks (on whitish background) on the underside of the neck, usually forming a somewhat stipled appearance.

The genus “Lampropholis” as known to this date is defined and diagnosed on pages 380-381 and 505 of Cogger 2000.

ETYMOLOGY

In honor of Allen E Greer, herpetologist of many years at the Australian Museum, Sydney, who perhaps more than anyone else has resolved taxonomic questions in relation to Australasian skinks, including issues arising from controversial work by Richard Wells and his friend Ross Wellington in the 1980’s.

ALLENGREERUS DELICATA JACKYHOSERAE SUBSP. NOV.

HOLOTYPE

An adult specimen in the National Museum of Victoria, specimen number, D 76838, from Pakenham, Victoria, Australia. (38 04 S, 145 28 E). It is recorded on their database as: “D 76838, Lampropholis delicata (De Vis, 1888) : Scincidae : Squamata : Reptilia : Chordata, Australia, Victoria, Pakenham (38 04 S, 145 28 E)”
**DIAGNOSIS**

While in the past this taxon would have keyed as *A. delicata*, it is easily separated from that species (Holotype from Warro, Old) by the following suite of characters: The nominate race has a very distinct white stripe along each side of the lower flanks commencing behind the ear and before the front leg and running to the hind leg. The same stripe in this subspecies is indistinct and only runs between the limbs in most specimens. The type race of *A. delicata* has a distinct bronze sheen, whereas *A. delicata* jackyhoserae lacks this sheen and presents as a greyish black color instead.

Physically the taxon *A. delicata* jackyhoserae is smaller in adult size to the nominate form (35 mm S-V versus 40 mm S-V in the nominate form) and also more gracile in build.

*A. delicata* jackyhoserae has a tiny white spot behind the eye (sometimes faded) which is not seen in *A. delicata* from northern NSW and Queensland.

*A. delicata* jackyhoserae like *A. delicata* elsewhere is an invasive species that does well in human modified environments, where it is often found in larger numbers than would be the case in unaltered bushland. They are common in Melbourne’s inner, middle and outer suburbs, more so in the south-east and east rather than the west, south-west or northwest.

**ETYMOLOGY**

Named in honor of my daughter, Jacky Hosier for valuable work she did with the family reptile education company, Snakebusters, over a period of 8 years.

**ALLENGREERUS RONHOSERI SP. NOV.**

**HOLOTYPE**

A specimen in the Museum Victoria, D 737112 Caught at 7.45 AM on 22 July 2008, from a site 20 km south-east of Shepparton (the site being 146 km by road from the Melbourne CBD) adjacent to the main Goulburn Valley Highway between Arcadia and Murchison East (Lat 145° 20' E, Long 36°40' S), the exact location about 20 meters west-south-west of the road.

**PARATYPE**

Five other specimens in the Museum Victoria, numbers D737112-D737116 inclusive, caught at the same time and place as the holotype.

**DIAGNOSIS**

Similar in most respects to *Allengreerus delicata*, to which it would key to in Cogger 2000. Separated from *A. delicata* by the following suite of characters. Midlateral stripes are absent in *A. ronhoseri* sp. nov., as opposed to strongly visible in *A. delicata*. Lightening of colour around the labial scales as seen in typical *A. delicata* and all other described and named *Allengreerus* is either absent or not very pronounced in *A. ronhoseri* sp. nov.

*A. ronhoseri* sp. nov. is separated from all others in this genus and *Lampropholis* by a distinct peppering colouration on the lower parts of the upper labials, a colour trait only seen in this taxon. This colouration is best seen by looking at photos of adult specimens in life.

Average adult size is slightly smaller in *A. ronhoseri* in terms of specimens seen as compared to *A. delicata*. Scalation of the head varied in the original series of specimens seen, so no diagnostic characters for these are given.

Colouration of the taxon is generally brownish dorsally. For detail either refer to the specimens or photos of them in life. In terms of known distribution, the taxon is presently known only from the type location.

However it is reasonable to assume that it may occur in a wide area throughout the lower Goulburn River and Murray basins and perhaps elsewhere.

It is fair to assume that as a small innocuous skink, specimens caught previously have either been overlooked, or misidentified as other taxa, most notably *A. delicata*.

**ECOLOGICAL NOTES**

Details of the location of the type series is given below.

At 7.45 AM on the morning of 22 July 2008, I stopped on the side of the main Goulburn Valley Highway to Shepparton (adjacent to the Melbourne 146 km signpost) and headed to a paddock immediately west of the road and abutting a watercourse with a view to lift scattered rubbish and debris in search of insects and worms to feed frogs (held under DSE permit for demonstrations).

The “habitat” was typical of the agricultural landscape in the area, with trees generally absent, except along the watercourse and periphery. In other words the area was degraded and primarily agricultural.

The search and collection of insects took all of about 15 minutes and yielded 17 lizards, including 15 *A. ronhoseri* sp. nov under a single piece of wood, as well as 2 *Morethia boulengeri*, both found separately under pieces of tin. The aggregating lizards, rested in a clump, save for a single "outlier" resting about 6 cm away under the same piece of wood.

The aggregation consisted of lizards of all ages, ranging from last season’s juveniles up. The weather at the time was cool, with a moderately severe frost on the ground and an ambient air temperature of 1 Degree Celsius.

In previous days the weather in the area had been cool (max temps in low teens), with steady rain two days prior. Furthermore, based on the time of year, it is therefore reasonable to assume that the lizards were “hibernating” as in a sustained period of inactivity.

While sheets of metal are regarded as good cover for reptiles, experience has shown that in frosty conditions, such are avoided due to the conductivity of the tin, with reptiles and other small animals showing a preference for cover away from frosts.

In terms of surface cover, wood is preferred, especially if of sufficient thickness to afford protection from frosts.

This was seen in this very area, where sheets of tin were also devoid of insects.

The aggregation of skinks was found under a disused wood post, being an outlier of a pile, seen between the paddock fence and the roadway. In that pile of wood and outliers there were no other skinks and in terms of that species, no others were found in the vicinity, even though there were similar (in appearance) bits of wood in the immediate and nearby area.

This indicates that the aggregation was deliberate on the part of the lizards, as opposed to a chance gathering of individual lizards seeking a piece of shelter.

The lizards while very torpid when seen (they didn’t move at all in the period between my going to the car to get a camera and my return some minutes later), they were not frozen, having been insulated by the wood from the frost.

It appears that the group hibernation was deliberate. That no *Morethia boulengeri* were found in the aggregation is significant, as this may indicate a lack of tolerance for one species over the other, bearing in mind the other species was evident in the area.

That two *Morethia boulengeri* were found separately under other bits of wood may indicate that this species is less likely to hibernate in aggregations.

While lizards are regarded as “cold-blooded” their limited biological activity does generate some heat and as a group may afford added protection or insulation against particularly cold and freezing conditions. This was probably the reason for the lizards seeking to hibernate in an aggregation.

To bypass the need to aggregate the lizards could have chosen a deeper refuge or one less exposed to the frosts.

The downside of this is that when the weather warms, the lizards must wait longer, before they can enjoy the benefits of heating where they hibernate, be that earlier feeding or mating.

Hence as a trade-off the lizards are able to aggregate over-winter nearer outside heat sources, enabling a slightly earlier emergence from hibernation, or perhaps earlier warning from under cover.

In summary this new taxon appears to be highly adaptable to human altered habitats and is presumably an invasive species.

**ETYMOLOGY**

Named in honour of the now deceased Ron Hosier, who happened to be my uncle. In the 1960’s he encouraged my early interest in reptiles, when in 1967 he gave me my first ever pair of Bearded Dragons (Pogona barbata), that he’d caught in the general vicinity of “The Crossroads”, just west of Liverpool, NSW.

That was back in the days when one could legally trap and keep common reptiles without running the risk of imprisonment as is the case now in Australia, where to “interfere with wildlife” of any kind and in any way is an offence punishable by heavy fines and/or jail and/or seizure of property.

**REFERENCES**


INTRODUCTION
Numerous studies have been completed in terms of Asian Colubrid genera Xenochrophis, Dendrelaphis and Boiga. However almost without exception the taxonomic studies have been mainly preoccupied with delineating species rather than genera.
Alternatively the genera themselves have been scrutinized from the perspective of their positions in higher taxonomic hierarchies at the family level and beyond (e.g. Lawson et. al. 2005, Pyron et. al. 2011, Vidal et. al. 2007), rather than whether or not snakes are appropriately placed within given genera which have been previously assigned.
However in the wake of several molecular studies of snakes within these genera, including Pyron et. al. (2011), it’s clear that they are paraphyletic at the genus level.
The genetic evidence is also confirmed by a view of the morphology of component species as well as the somewhat different habits of the member species.
Each of the three above-named genera has been assessed in terms of placement of component species. For the genus Xenochrophis the molecular data is conclusive and indicates the split as indicated in this paper. For the large and obvious composite genera Dendrelaphis and Boiga, molecular data is somewhat incomplete, but when combined with morphological data, shows that these genera should also be split.
For these genera, I have taken a conservative position and only named the most obviously divergent taxa.
In each genus, there may be other species that should be either removed from the nominate genus, or at least placed in a separate subgenus.

GENUS XENOCHROPHIS GÜNTHER, 1864
Most snakes within the Keelback genus Xenochrophis have been shuffled between several genera until 1960.
In that year, Malnate (1960) divided the former genus Natrix Laurenti, 1768 into five genera and revalidated the name Fowlea Theobold, 1868 for the species, F. piscator, F. punctulata and F. vittata. For this placement he relied on hemipenal structure, form of the maxillary teeth and position of the nostrils.
In 1965, Malmate and Minton (1965), discarded Fowlea in favor of the earlier named genus Xenochrophis Günther, 1864, by including the type species Psammophis cerasogaster Cantor, 1839, and placing it in the same genus as the other three species.
Vogel and David (2006) worked on morphological variation in the genus, subdividing the group into several species. As of early 2012, there are thirteen widely recognized species within the genus.
Important published studies on the snakes within Xenochrophis include, Blake (1995), Blyth (1863), Boie (1827), Boulenger (1890, 1891, 1893), Captain and Patel (1998), Chanard et. al. (1999), Cox et. al. (1998), Das and De Silva (2005), David and

Phylogenetic and molecular studies on the genus have been limited, but Pyron et al. (2011) found that the species vittatus to be widely divergent of the others in the genus, being more closely related to Keeelback snakes of the genus Rhadophis Fitzinger, 1843 than to other Xenochoephis. Both genera are separated from Amphipesma by their larger eye.

However the species vittatus is significantly divergent from both genera (Rhadophis and Xenochoephis), both groups of snake being considerably more stout in build than vittatus. As it is not tenable to merge the two genera and also include the divergent taxon vittatus, the most sensible course of action is to create a new genus for the species vittatus.

The molecular data is also in accordance with observations of the morphology and behavior of vittatus as compared to other species within Xenochoephis. Typical Xenochoephis species such as X. piscator are moderately thick-set and pugnacious in behavior. The same applies for Rhadophis species.

By contrast vittatus is of thin build and rarely inclined to bite when handled. With most of Xenochoephis being found in the region to the west and north of where vittatus occurs and most Rhadophis species found to the north, it is clear that vittatus is part of a separate apparently monophyletic clade.

On that basis, the taxon vittatus is placed in a (presently) monotypic genus defined according to the Zoological Code (Ride et al. 1999), below.

**GENUS RENTONUS GEN. NOV.**

**Type species:** Coluber vittatus Linnaeus, 1758

(Known in most contemporary texts as Xenochoephis vittatus)

**Diagnosis:** This snake is easily separated from all other species within the genus Xenochoephis.

All snakes within what’s left of the genus Xenochoephis are easily separated from Rentonus gen. nov. by the presence of a distinctive nuchal marking that is one of the following four, A/ An inverted “V”-shape, where the marking opens anteriorly on the nape, B/ A direct “V”-shape where the marking opens on the nape, C/ A straight, broad, often subrectangular crossbar, D/ A widely open “U”-shape or even double “YY”-shape present in populations from Indonesia and the Andaman Islands, or as an alternative to the preceding the snakes lack such markings as part of a patternless body in specimens of two species from the Indian Subcontinent.

By contrast to the preceding, Rentonus gen. nov. are characterized by a lack of nuchal markings conforming to the previous description, with a head and neck generally consisting of a dark colour with large white flecks, but not with any well-defined obvious shape or pattern, although in the nuchal region these tend to join to form the beginnings of the lines that run down the dorsum of the body.

Rentonus is further separated from Xenochoephis by the presence of two distinct thick white bars running from the lip to the top of the head, one in front of the eye and one behind. A third half-length bar is behind the second bar. No Xenochoephis have this configuration of white bars on the head.

As mentioned already, Rentonus gen. nov. differs from snakes remaining in Xenochoephis by their slender build and more even temperament.

The genus is oviparous usually having 9-12 eggs per clutch. Hatching measurements about 13 cm in total length, with adult males averaging about 50 cm and females 70 cm. The diet is dominantly fish and frogs.

Colouration of Rentonus gen. nov. is distinctive. On the dorsal surface are four pale yellow-brown stripes against a black background: these persist along the entire length of the body and tail. The chin, lips, neck and all ventral scales are distinctly barred black and white, including the diagnostic bars mentioned above.

The venter of this taxon is also distinctive (from all Xenochoephis) in that it is white with each plate very thickly marginated with black, versus at best only thinly marginated black on subcaudals seen in some Xenochoephis piscator.

The taxon has 9 supralabials and 19 mid-body rows, both traits common to other species of Xenochoephis.

Important publications relevant to this taxon include, Blake (1995), Bouleger (1893), De Haas (1949), de Lang and Vogel (2005), Glässer-Trobiisch and Trobiisch (2011), Kopstein (1938), Linnaeus (1758) and Manthey and Grossmann (1997).

**Distribution:** The single species within the genus is believed to occur in Sumatra, Java and Borneo. It has been found in grassy areas of Singapore, where it’s locally common, but is considered an introduced species (Lim and Lim 1992).

It is common in Java.

**Common name:** Striped Keelback.

**Etymology:** Named in honour of Ian Renton of Paradise, South Australia. For more than 20 years he has performed an invaluable public service with his company “Snake-away Services” in the form of emergency snake rescue and removals in Adelaide, as well as reptile education in a country (Australia) that desperately needs accurate information on venomous snakes to be disseminated.

**Species within the genus Rentonus gen. nov.**

**Rentonus** is monotypic for the type species _R. vittatus._

**Species now within the genus Xenochoephis Günter, 1864**

_Xenochoephis cerasogaster_ (Cantor, 1839) (Type species)

_Xenochoephis asperrimus_ (Boulenger, 1891)

_Xenochoephis bellula_ (Stoliczka, 1871)

_Xenochoephis flaviguntleri_ (Hallowell, 1860)

_Xenochoephis maculatus_ (Edelung, 1864)

_Xenochoephis melanostus_ (Gravenhorst, 1807)

_Xenochoephis piscator_ (Schneider, 1799)

_Xenochoephis punctulatus_ (Günter, 1858)

_Xenochoephis sanctijohannis_ (Boulenger, 1890)

_Xenochoephis schnurrenbergeri_ Kramer, 1977

_Xenochoephis triangularis_ (Boie, 1827)

_Xenochoephis thyleri_ (Blyth, 1863)

**GENUS DENDRELAPHIS BOULEGER, 1890**

The so-called tree snakes or bronzebacks are a group of over 20 moderate-to-large diurnal species found in the region from India across Southern Asia into Australia. Most described species come from south-east Asia. As a group, they have been of taxonomic interest in the last two decades with numerous new species described by Vogel and others.

All are similar in build and habits, being generally slender, slightly laterally compressed with long-whip-like tails, head barely distinct from the neck, large eye with a round pupil. The ventrals exhibit a sharp ridge running down either side presenting an “arch-shape” in cross section which enables

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**GENUS CHARLESPSIERSONSERPENS GEN. NOV.**

**Type Species:** Leptophis punctulatus Gray, 1826

**Diagnosis:** A group of snakes separated from other Dendrelaphis by their generally heavier build (like-for-like) and slightly less glossy dorsal body shields (at same point of shedding cycle).

The following suite of characters identifies this genus: Variable dorsal colour, slightly lighter laterally, but all lack longitudinal black stripes on all or most of their body, labials and throat pale, 13 dorsal mid-body rows, all smooth and arranged obliquely, 156-221 ventrals, divided anal, 118-160 divided subcaudals, loreal present, 8-9 supralabials, with fourth and fifth or sixth in contact with the eye, 1 pre-ocular, 2 or 3 postoculors and have a medium or short hemipenis that doesn’t extend past the fifteenth subcaudal.

Snakes within the genus *Dendrelaphis* have a higher average ventral count than seen in this genus *Charlespsionserpens* gen. nov.

Furthermore for snakes within the genus *Dendrelaphis* only the fourth supralabial makes contact with the eye, with numbers 5 and 6 merely coming close, as opposed to the configuration given above for *Charlespsionserpens* gen. nov.

Noteworthy is that two species within this genus, namely *papuensis* (Boulenger 1895) and *salomonis* (Günther, 1872) were in 1984 resurrected from synonymy with *punctulatus* and/or *calligaster* by McDowell in 1984, and again by Wells and Wellington in 1985, which has been upheld by later studies.

**Distribution:** The Australian/Papuan region of the Sahul Shelf.

**Etyology:** Americans historically have cherished the freedom of the individual.

Included here is the freedom of individuals to keep and study snakes and other wildlife. In recent years this right has come under threat from a raft of ridiculous bureaucratic impediments. In Australia in the early 1970’s these rights were removed from most Australians. It was only as a result of the publication of two different books, *Smuggled* and *Smuggled-2* (Hoser 1993 and 1996) that led to these rights being restored to most Australians.

The success in Australia in terms of these books and their legislative outcomes reverberated around the world and in the case of the United States, meant that a major push to outlaw private ownership of reptiles in 1993 was also stopped in its tracks.

Charles Pierson as publisher of the first book, took an incredibly courageous step in publishing it. For North Americans reading this, it should be noted that the Australian government (at all levels) has considerably more powers than their North American counterparts, including control of media and information flow to the public. Persons publishing material critical of government, even when totally true and correct, run the risk of immense fines, jail or similar. I have suffered both!

The book *Smuggled: The Underground Trade in Australia’s Wildlife* (Hoser 1993) was (as totally expected), illegally banned by the NSW National Parks and Wildlife Service, ( NPWS NSW) in May 1993. Only as a result of a supreme effort by Pierson and an extremely brave and courageous journalist Fia Cumming, the ban was lifted.

(Cumming subsequently lost her job as a result of this, but the book became a best-seller).

Fighting the ban ultimately cost Pierson his home in the expensive Sydney suburb of Mosman and he lost his business. However this huge life-altering sacrifice against the tyranny of a corrupt and oversized government wildlife control bureaucracy should be permanently recognized. This is especially so in the context of reptiles, those who choose to study them and their conservation, including those many people who have the right to keep live reptiles as pets, solely as a consequence of Pierson’s selfless actions.

Pierson also put wildlife conservation on the global agenda, with the publication of the seminal works *Endangered Animals of Australia*, (Hoser 1991) and *Australian Reptiles and Frogs* (Hoser 1989), the latter used extensively by the late Steve Irwin.
and other television “personailities”, including Bruce George, Mark O’Shea, Chris Humfrey and others as a reference source to bring Australian animals to TV viewers globally.

Unfortunately as this paper goes to press in 2012 there are new assaults on the rights of reptile keepers and herpetologists both in the USA and Australia with new restrictions either passed or to be passed in both jurisdictions.

**Species within Charlespiersonserpens gen. nov.**

*Charlespiersonserpens punctulatus* (Gray, 1826)

*Charlespiersonserpens calligrastra* (Günther, 1867)

*Charlespiersonserpens gastrosticus* (Boulenger, 1894)

*Charlespiersonserpens jackyhoserae* sp. nov.

*Charlespiersonserpens lorentzi* (Lidith De Jeude, 1911)

*Charlespiersonserpens papuensis* (Boulenger, 1895)

*Charlespiersonserpens salomonis* (Günther, 1872)

**CHARLESPRIERSONSERPENS GASTROSTICUS TYEIPPERAE SUBSP. NOV.**

**Holotype:** Specimen number 95570 at the American Museum of Natural History (AMNH). The snake is a male from Masba Creek, Papua New Guinea, (elevation 2,100 feet) with 36 left maxillary teeth and 170 ventrals.

The relevant Museum is a government owned public facility that allows researchers access to their collections and the holotype specimen is already lodged with and belongs to this facility.

**Paratypes:** Specimen number 95569 at the American Museum of Natural History (AMNH). The snake is a juvenile from Kabwum, Papua New Guinea, (elevation 4,500 feet) with 37 left maxillary teeth and 164 ventrals.

Specimen number 66669 at the American Museum of Natural History (AMNH). The snake is a juvenile male from Gusiko, Papua New Guinea, with 34 left maxillary teeth and 170 ventrals.

The relevant Museum is a government owned public facility that allows researchers access to their collections and the paratype specimens are already lodged with and belongs to this facility.

**Diagnosis:** *Charlespiersonserpens gastrosticus tyeipperae* subsp. nov. is separated from the nominate form *Charlespiersonserpens gastrosticus* by having dark interstitial skin on the neck, without vertical white bars.

This feature is not seen in *Charlespiersonserpens gastrosticus* gastrosticus by having dark interstitial skin on the neck, without vertical white bars.

This subgenus is also separated from all other *Charlespiersonserpens* and *Dendrelaphis* on the basis of unique hemipenal morphology.

In this subgenus the hemipenis organ is of moderate length (ending at subcaudal 8-13), with a strictly terminal attachment of the retractor longus, so that there is no suggestion of terminal awn; distally the organ has numerous shallow calyces of many small spines on their borders; proximally there are one to five transverse whorls of large spines, some of which are at least equal to one subcaudal in length. With the exception of specimens from Woodlark Island, specimens have a distinct transverse fold between the calcyle and spinose zones, an obvious homologue of the fold between the (smooth) calyces and small proximal spines seen in some other *Charlespiersonserpens* gen. nov. No such fold is evident in Woodlark Island specimens or those from Bougainville. These are herein described as a new subspecies.

**Type Species:** *Dendrelaphis papuensis* Boulenger, 1895

**Diagnosis:** Separated from all other similar species, including all other six members of the genus *Charlespiersonserpens* gen. nov. by the following suite of characters: There is a dark stripe present along the upper edge of the lip scales, separating light labial scales from darker pigment of dorsum of head; scales of dorsum of head lack pits, total average body length of .7 to 1 metre and never exceeding 1.3 metres.; fewer than 140 subcaudals, 183-203 ventrals; pale vertebral stripe is absent or present, a small nostril, the nasal scale is not completely divided; black interstitial skin on the neck and 19-27 maxillary teeth.

**Subgenus Downieea gen. nov.**

**Diagnosis:** The ventral count of 160-180 is diagnostically lower than for *C. punctulatus*. *C. salomonis* is separated from *C. gastrosticus* by its higher ventral and subcaudal counts.

These are 173-191 ventrals and 124-166 subcaudals in *C. salomonis*, versus 160-180 ventrals and 147-164 subcaudals in *C. gastrosticus*.

*C. gastrosticus* is found in highland and montane habitats and Milne Bay (Normanby and Fergusson Islands), versus lowland island habitats of the North Solomons and Milne Bay (Misia Island) in *C. salomonis*.

**Etymology:** Named in honour of Ty Eipper, wife of herpetologist Scott Eipper, now both based in Brisbane, Queensland who for many years has worked in the reptile education industry and for her other services to herpetology.

**Subgenus Downieea gen. nov.**

**Type Species:** *Dendrelaphis papuensis* Boulenger, 1895

**Diagnosis:** Separated from all other similar species, including all other six members of the genus *Charlespiersonserpens* gen. nov. by the following suite of characters: There is a dark stripe present along the upper edge of the lip scales, separating light labial scales from darker pigment of dorsum of head; scales of dorsum of head lack pits, average total body length of .7 to 1 metre and never exceeding 1.3 metres.; fewer than 140 subcaudals, 183-203 ventrals; pale vertebral stripe is absent or present, a small nostril, the nasal scale is not completely divided; black interstitial skin on the neck and 19-27 maxillary teeth.

This subgenus is also separated from all other *Charlespiersonserpens* and *Dendrelaphis* on the basis of unique hemipenal morphology.

In this subgenus the hemipenis organ is of moderate length (ending at subcaudal 8-13), with a strictly terminal attachment of the retractor longus, so that there is no suggestion of terminal awn; distally the organ has numerous shallow calyces of many small spines on their borders; proximally there are one to five transverse whorls of large spines, some of which are at least equal to one subcaudal in length. With the exception of specimens from Woodlark Island, specimens have a distinct transverse fold between the calcyle and spinose zones, an obvious homologue of the fold between the (smooth) calyces and small proximal spines seen in some other *Charlespiersonserpens* gen. nov. No such fold is evident in Woodlark Island specimens or those from Bougainville. These are herein described as a new subspecies.

**Subgenus Downieea gen. nov.**

**Diagnosis:** The subgenus is named in honour of Meg Downie of Donvale, Victoria who tried with great difficulty to remove corruption from the Manningham (Melbourne) council in her role as elected councilor, as well as for her services towards improving animal welfare, in particular domestic dogs.

**CHARLESPRIERSONSERPENS (DOWNIEEA) PAPUENSIS LIZELLIOTTAE SUBSP. NOV.**

**Holotype:** Specimen number 42400, a male, at the American Museum of Natural History (AMNH) from Bougainville, New Guinea.

The relevant Museum is a government owned public facility that allows researchers access to their collections and the holotype specimen is already lodged with and belongs to this facility.

**Diagnosis:** This taxon would normally identify as *D. papuensis*, from which it is separated definitively by hemipenal morphology.

In this species the hemipenis organ is of moderate length (ending at subcaudal 8-12), with a strictly terminal attachment...
of the retractor longus, so that there is no suggestion of
terminal awn; distally the organ has numerous shallow calyces
with many small spines on their borders; proximally there are
one to five transverse whorls of large spines, some of which are
at least equal to one subcaudal in length. While specimens of
the nominate form papuenis papuenis have a distinct
transverse fold between the calyculate and spinose zones, an
obvious homologue of the fold between the (smooth) calyces
and small proximal spines seen in some other
Charlespiersonserpens gen. nov., no such fold is evident in
specimens of this subspecies.
The subspecies izelliotiae is further separated from papuenis
by the greater number of maxillary teeth, 26-27 in izelliotiae, versus 19-25 for papuenis.
At the present time, the subspecies is only known from
Bougainville and Woodlark Island, New Guinea.

**Etymology:** Named in honor of Liz Elliott, in recognition of her
role as faithful wife and helper of herpetologist Adam Elliott of
Hoppers Crossing, Victoria. She has spent many hours looking
after reptiles while Adam has been in the field conducting
research and the like.

More significantly, this has had to endure the terrorism and
trauma of late night and early morning raids by Victorian
government wildlife officers, headed by Glen Sharp and others
as they have trashed the family home inhabited by herself,
Adam and two very young children and also been forced to
endure the undercurrent of violence that has accompanied
these raids.

These officers have merely been acting on a warped sense of
hatred for Adam because sometime earlier he refused to act as
"informant" for them within the herpetological community.

Most specifically, this was an attempt to get him to give false
information and false statements against a herpetologist who
had previously blown the whistle on corruption within the same
government department.

**SUBGENUS MACMILLANUS GEN. NOV.**

**Type Species:** *Dendrophis lorentzi* Lidth De Juede, 1911

**Diagnosis:** This genus includes all the snakes formerly
referred to the species *Dendrophis lorentzi* Van Lidth De Juede,
1911, more recently known as *Dendrelaphis lorentzi*.

The genus includes the southern specimens still referred to the
species *lorentzi* and the northern specimens from the Huon
Peninsula, formerly referred to that species and herein
described as a new species, namely *Charlespiersonserpens*
*jackyhoserae* sp. nov.

*Macmillanus* subgen. nov. are separated from all other similar
species, including all five other members of the genus
*Charlespiersonserpens* gen. nov. by the following suite of
characters: There is a dark stripe present along the upper edge
of the lip scales, separating light labial scales from darker
pigment of dorsum of head; scales of dorsum of head lack pits,
average total body length of .9 to 1 metre and never exceeding
1.3 metres.; fewer than 140 subcaudals, 156-181 ventrals; 8 or
9 supralabials on each side in *lorentzi*.

**Holotype:** A male specimen lodged at the National Museum of
Natural History, Smithsonian Institution, USNM, from Gusiko,
Huon Peninsula, New Guinea.

The relevant Museum is a government owned public facility that
allows researchers access to their collections and the holotype
specimen is already lodged with and belongs to this facility.

**Diagnosis:** Separated from the species
*Charlespiersonserpens lorentzi* by the following suite of
characters: *Charlespiersonserpens jackyhoserae* sp. nov. has
181 ventrals versus a range of 156-173 in
*Charlespiersonserpens lorentzi*; *Charlespiersonserpens lorentzi*
has 8 supralabials (rarely nine on one side), versus 9
supralabials on both sides in *Charlespiersonserpens*
*jackyhoserae* sp. nov..

Furthermore *Charlespiersonserpens jackyhoserae* sp. nov. is
the only species within *Charlespiersonserpens* or
*Dendrelaphis* with the entire supraocular covered by the axial
musculature.

*Charlespiersonserpens jackyhoserae* sp. nov. also differs from
*Charlespiersonserpens lorentzi* in hemipenal morphology.

In this species the hemipenis extends to subcaudal 13, with
longitudinal rows of small spines (each about one sixth of
a subcaudal long), the rows of spines nearly to the tip and well
distal to the rightward angulation of the sulcus at subcaudal 9;

an apical awn, about three subcaudals long and with numerous
thin spines; no crossfold on the organ, but tips of sulcus,
raised as a pair of prominent folds. The structure of the
hemipenis in *Charlespiersonserpens jackyhoserae* sp. nov.
shares traits with *Charlespiersonserpens lorentzi* including the
black spotting on top of the head that looks like calligraphic
penciling, but differs in that the apical awn is longer, being only
1-2 subcaudals in *lorentzi*.

*Charlespiersonserpens jackyhoserae* sp. nov. is known only
from the holotype. It is therefore currently only known from the
Huon Peninsula, New Guinea, but presumably also occurs in
nearby parts of New Guinea north of the Central Cordillera.

Until proven otherwise, the taxon, *Charlespiersonserpens
lorentzi* should be regarded as confined to the region south of
the Central Cordillera of island New Guinea in the general
vicinity of the type locality in southern Irian Jaya in the general
vicinity of the Lorentz and Mimika Rivers.

**Etymology:** Named in honor of my daughter Jacky Hoser who
has spent the first 2 years of her life educating others about
reptiles in Australia in the face of incredible adversity, including
attacks from inexperienced business competitors motivated
solely by a desire to extract money from people on false
pretexsts aided and abetted by corrupt wildlife officers who
happen to be their friends. These wildlife officers and agents
acting on their behalf have unlawfully assaulted and attacked
Jacky both at school (on 10 August 2011) and even in her
bedroom at home on 17 August 2011.
Her courage in dealing with these attacks and in continuing to educate others about reptiles with correct factual information deserves more than one great honor and recognition. SPECIES WITHIN GENUS CHARLESPIERSONUS GEN. NOV. SUBGENERA Charlespiersonserpens (Charlespiersonserpens) punctulatus (Gray, 1826) Charlespiersonserpens (Charlespiersonserpens) calligaster (Günther, 1867) Charlespiersonserpens (Charlespiersonserpens) gastroticus (Boulenger, 1894) (1 subspecies) Charlespiersonserpens (Charlespiersonserpens) salomonis (Günther, 1872) Charlespiersonserpens (Downieea) papuensis (Boulenger, 1895) (1 subspecies) Charlespiersonserpens (Macmillanus) jackyhoserae sp. nov. Charlespiersonserpens (Macmillanus) lorentzi (Lidh De Jeude, 1911) SPECIES REMAINING WITHIN THE GENUS DENDRELAPHIS BOULENGER, 1890 Dendrelaphis andamanensis (Anderson, 1871) Dendrelaphis ashoki Vogel and Van Rooijen, 2011 Dendrelaphis bifrenalis (Boulenger, 1890) Dendrelaphis biloreatus Wall, 1908 Dendrelaphis caudolineatius (Gray, 1834) Dendrelaphis caudolineolatus (Günther, 1869) Dendrelaphis chaireaeos (Boie, 1827) Dendrelaphis cyanochloris (Wall, 1921) Dendrelaphis formosus (Boie, 1827) Dendrelaphis giri Vogel and Van Rooijen, 2011 Dendrelaphis grandoculis (Boulenger, 1890) Dendrelaphis grismeri Vogel and Van Rooijen, 2008 Dendrelaphis hollinraeki Lazzell, 2002 Dendrelaphis humayuni Tiwari and Biswas, 1973 Dendrelaphis inornatus Boulenger, 1897 Dendrelaphis kopsteini Vogel and Van Rooijen, 2007 Dendrelaphis marenuae Vogel and Van Rooijen, 2008 Dendrelaphis ngansonesis (Bourett, 1935) Dendrelaphis oliveri (Taylor, 1950) Dendrelaphis plicatus (Gmelin, 1789) Dendrelaphis schokari (Kuhl, 1820) Dendrelaphis striatus (Cohn, 1910) Dendrelaphis subocularis (Boulenger, 1888) Dendrelaphis tristis (Daudin, 1803) Dendrelaphis underwood Vogel and Van Rooijen, 2011 Dendrelaphis walli Vogel and Van Rooijen, 2011 GENUS BOIGA FITZINGER, 1826 SENSO LATO While these results showed the two species to be related, the division between the two was more than ample to warrant the splitting of the species between two genera when compared to other species tested within and between related genera. Although B. dendrophila is not the type species of the genus Boiga, it is safe to infer a similar result would have been obtained by Pyron et. al. if they had tested Boiga irregularis against African Boiga pulverulenta. What has not yet been determined by molecular means is the differences between the Asiatic and Australian species groups within Boiga or for that matter differences between the various Asiatic groups. It’s worth noting that what’s left of Boiga after the two Toxicodryas are removed is still a very paraphyletic group of common origin with a distribution ranging through most of Asia, from eastern Iran, across Indonesia and into north and east Australia. These species range from large moderately built species, to very thin and sometimes much smaller animals. In terms of morphology and habits, the species are diverse and often sympatric, with different taxa occupying different habitats and ecological positions, even though all are similar in obvious key respects such as their large eyes, laterally compressed bodies and so on. The taxonomic position is made even less clear by the fact that while there are about 30 recognized species and another 15 or so subspecies, these numbers do not give an accurate reflection of the true composition of the genus. Instead the current composition of the genus in many ways reflects collection localities and interpretations of morphological variants by different herpetologists. Therefore I should note that the current content compositions (total numbers) of the two newly named genera as well as the remaining Boiga beyond those listed within each, should be treated as provisional on the basis of further taxon likely to be described and/or added to given genera. Coluber irregularis Bechstein, 1802, now widely known as Boiga irregularis is the type species of the genus Boiga Fitzinger. The name Ibiba Gray, 1825, as suppressed under the plenary powers in ICZN Opinion 1374, has been placed on the Official Index of Rejected and Invalid Generic Names in Zoology. Genus Dipsadomorphus Fitzinger, 1843 appears to be a valid name for the type species Coluber trigonatus Schneider, 1802, now known widely as Boiga trigonatus. To a greater degree than others within the genus Boiga as presently understood, this taxon is divergent in being more terrestrial in habit and inhabits habitats not used by other Boiga, as well as being somewhat smaller in average size than many other members, including the type species for Boiga, namely B. irregularis. It is my view that this taxon should be placed within the genus Dipsadomorphus. Other taxa within Boiga, are also likely to be better placed in Dipsadomorphus instead of Boiga but this potential move is deferred for the time being. Noting the situation in terms of the rest of Boiga, the obvious divergent groups within the genus as currently understood and the current lack of molecular data on the genus, I have herein only removed the most obviously morphologically and ecologically divergent members of Boiga from the genus. I note however that further division of the genus, at least to subgenus and species groups is almost inevitable when firm molecular data is obtained for all species. Many of the south-east Asian species have little in common with the type species Boiga irregularis or the type for Dipsadomorphus and to complicate matters further there remain several undescribed forms in Indonesia and probably
Distribution

All are oviparous.

The species *Boiga dendrophila* is placed in a monotypic genus *Dorisis* gen. nov.

The highly divergent so-called *Boiga drapiezii* group, including species both described and undescribed are placed in the genus *Mulvanyus* gen. nov.


**GENUS BOIGA FITZINGER, 1826**

**Diagnosis:** As currently understood this is a composite group of snakes.

They are venomous rear fanged generally arboreal “Tree Snakes” or climbing species characterized by a broad head and large often bulbous eyes with a vertically elliptical pupil.

There are solid teeth on both jaws, the prefrontal is in contact with the nasal, the tail is more-or-less cylindrical and pointed, the nostrils are usually lateral and the ventrals, 114-168 divided subcaudals, and a single anal. The snake attains a maximum total length of about 2.5 metres.

In line with other Boiga, the snake retains large eyes, smooth dorsal scales, single anal, all divided subcaudals and has an enlarged vertebral row of scales.

This genus is presently monotypic for the species *Boiga dendrophila* including recognized subspecies, however some of the currently recognized subspecies may ultimately prove to be full species.

**Distribution:** Found in southern Thailand through peninsula Malaysia to Singapore and Sumatra, as well as the Philippines, Natuna Archipelago, Borneo, Java and Sulawesi.

**Common name:** Mangrove Snake, in reference to its preferred habitat, namely mangrove swamps.

**Etymology:** Named in honor of Morrie Dorisio, of Bulleen, Victoria, Australia for many to date unrecognized services to herpetology. Of relevance to reptile keepers in Australia and elsewhere, is that in February 1994, after all my computer equipment and files were taken and destroyed by corrupt Victorian police trying to stop the publication of what was ultimately three books about Victorian Police Corruption (Hoser 1995, Hoser 1999a, Hoser 1999b), Morrie Dorisio came to the rescue and spent countless days and hours teaching me how to use modern computers to enable these books and more importantly another book, Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia, (Hoser 1996) to be published.

Without Morrie’s efforts, for which he never sought or got any reward, that 1996 book would never have been published.

It was only as a result of the sequence of events arising from the publication of that book which caused the laws in Australia get changed by governments in Australia to allow private citizens in most parts of Australia to be allowed to keep reptiles as pets for the first time in over 20 years.

As this journal goes to print, those rights are under threat yet again and as I am now over 50 years old, I will probably not be able spend another 20 years fighting a ban on private reptile ownership if and when one is re-imposed in Australia.

All herpetologists in Australia owe Morrie Dorisio a debt in gratitude and it is fitting that he should be honored with a genus of snakes named after him.

One hopes that “new generation” reptile keepers in Australia think of Morrie in particular every time they handle the pet snake that his good work allowed them to keep without fear of a dawn raid and jail!

**GENUS MULVANYUS GEN. NOV.**

**Type species**:* Dipsas drapiezii* Boie, 1827

(known in most contemporary texts as *Boiga drapiezii*)

**Diagnosis:** These are a long vine-like snake with strongly laterally compressed body shape vertebral ridge, large head shields and vertical pupils.

*Mulvanyus* gen. nov. are separated from snakes of the genus *Boiga* and *Mulvanyus* gen. nov. by their greatly enlarged and blunt triangular head (distinctly blunt snout) as well as their unusually large and bulbous eyes (even when compared to other *Boiga* species).

There are 19 smooth dorsal mid-body scale rows, 250-285 ventrals, 114-168 divided subcaudals, and a single anal. The body comes in various colors depending on locality and species.

Most specimens are reddish or brownish with some sort of transverse bands not contacting the ventrals often with irregularly shaped white ventrolateral blotches occurring along the length of the body and tail, and with a brownish head.

**Distribution:** From southern Thailand, south and east through Indonesia through Sumatra, Java and Borneo and possibly elsewhere.
islands further east as well as the Philippines.

**Etymology:** Named in honor of Paul Mulvany of Blackburn, Victoria, Australia. He is the unseen handyman who kept all the Snakebusters cages in tip-top shape and our reptiles in immaculate health over many years. He deserves recognition for his generally unpaid efforts towards improving the welfare of our captive reptiles used for the invaluable public education of millions of Australians.

**CONTENT OF GENUS MULVANYUS GEN. NOV.**

*Mulvanyus drapiezii* (Boie, 1827) (Type species)

*Mulvanyus angulata* (Peters, 1861)

*Mulvanyus philippina* (Peters, 1867)

*Mulvanyus schultzei* (Taylor, 1923)

**SPECIES REMAINING WITHIN BOIGA**

*Boiga andamanensis* (Wall, 1909)

*Boiga barnesii* (Günther, 1869)

*Boiga beddomi* (Wall, 1909)

*Boiga borgkulensis* Orlov, Kudryavtzev, Ryabov and Shumakov, 2003

*Boiga bourreti* Tillack, Ziegler and Khac Quyet, 2004

*Boiga ceylonensis* (Günther, 1858)

*Boiga cyanea* (Duméril, Bibron and Duméril, 1854)

*Boiga cynodon* (Boie, 1827)

*Boiga dightoni* (Boulenger, 1894)

*Boiga forsteni* (Duméril, Bibron and Duméril, 1854)

*Boiga gokool* (Gray, 1835)

*Boiga guangxiensis* Wen, 1998

*Boiga hoeseli* Ramadhan, Iskandar and Subasri, 2010

*Boiga irregularis* (Bechstein, 1802)

*Boiga jaspidea* (Duméril, Bibron and Duméril, 1854)

*Boiga kraepelini* Stejneger, 1902

*Boiga nachalis* (Günther, 1875)

*Boiga ochracea* (Günther, 1868)

*Boiga quincunciala* (Wall, 1908)

*Boiga saengsomi* Nutaphand, 1985

*Boiga schultzei* Taylor, 1923

*Boiga siamensis* Nutaphand, 1971

*Boiga tanahjampeana* Orlov and Ryabov, 2002

*Boiga trigonata* (Schneider, 1802)

*Boiga wallachi* Das, 1998

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