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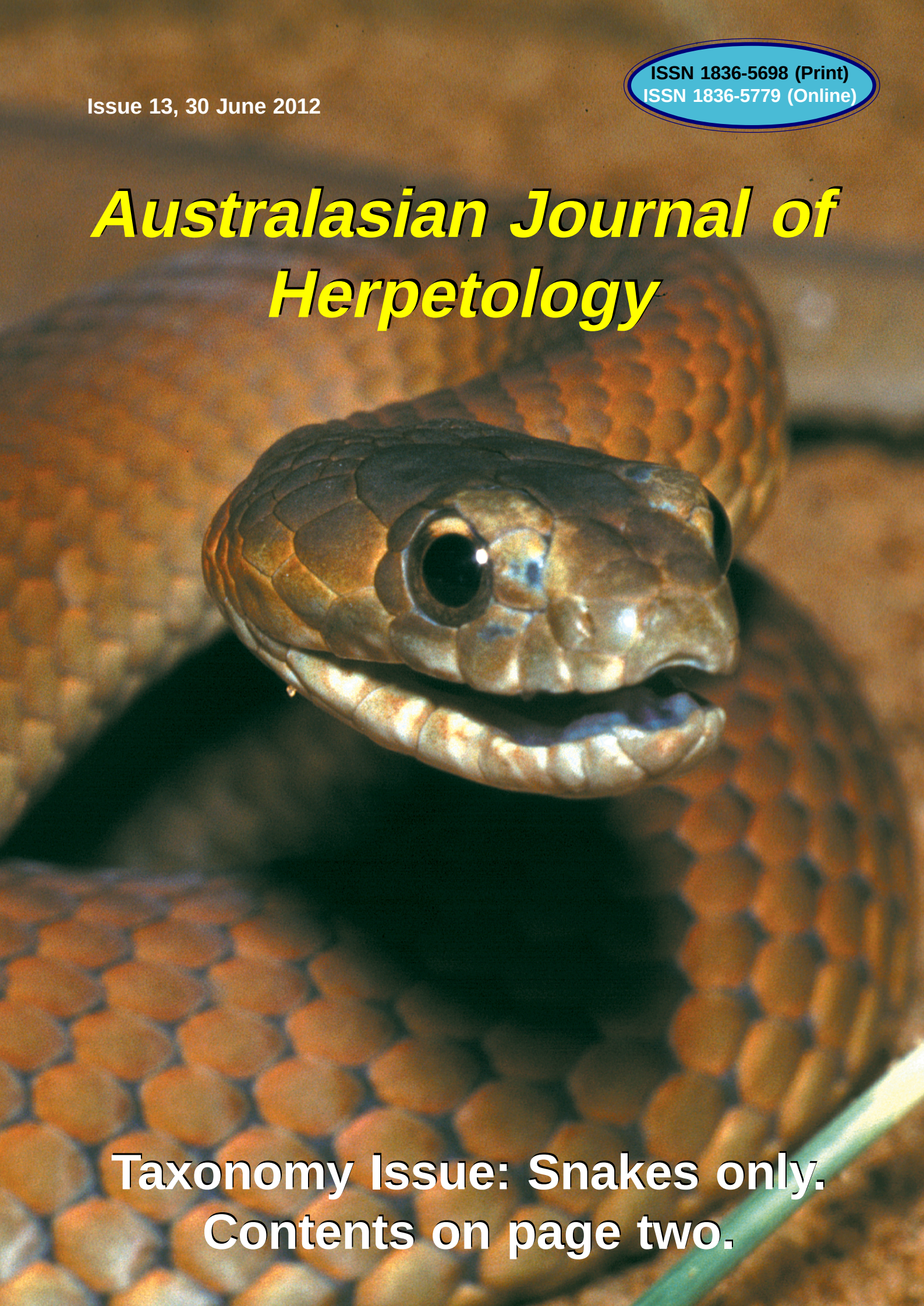

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Contents

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Some new small-eyed snakes from Australia and New Guinea (Serpentes:Elapidae).

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ABSTRACT

The so-called Small-eyed Snakes from Australia and New Guinea, within the elapid tribe Sutini have had a checkered taxonomic history. Most described species have been shuffled between genera by authors sometimes with little apparent concern for rules of nomenclature and priority.

This paper sets out the appropriate genera for the group and species within, based on the relevant rules of the ICZN.

Two well-known species that have not been formally described to date are named and diagnosed according to the Zoological Code. Likewise for a subspecies of another taxon.

This paper also formally names the previously unnamed eastern subspecies of the Bardick *Echiopsis curta*.

Keywords: Taxonomic revision; new species; *Sutini*; *Cryptophis*; *Parasuta*; *Suta*; *Hulimkai*; *Rhinoplocephalus*; *Unechis*; *Echiopsis*; *nigrescens*; *assimilis*; *boschmai*; *nigrostriata*; *edwardsi*; *crutchfieldi*; *durhami*; *curta*; *martinekae*.

INTRODUCTION

The so-called Small-eyed snakes within Australia have been placed in various genera by various authors. They are known from most parts of mainland Australia and Southern New Guinea.

They are usually smallish with an adult total length of under 60 cm and while not regarded as aggressive or dangerous to humans, fatalities have been reported.

Most are nocturnally mobile snakes that feed either by day through ambush predation or alternatively by active stalking at night.

They occupy all habitat types.

All have a generally unmarked dorsal body pattern although in some the spinal region has a color intensity greater so as to give the appearance of a stripe running down the spine. Some have darkening or lightening of the top of the head.

Names used within the last 30 years to describe the taxa subject of this paper have included, *Cryptophis* Worrell, 1961, *Parasuta* Worrell, 1961, *Rhinoplocephalus* Müller, 1885, *Suta Worrell*, 1961 and *Unechis* Worrell, 1961.

These changes have been largely tracked in the general identification manuals of the time period, including Cogger (1975 *et. seq.* to 2000), Cogger et. al. (1983), Hoser (1989), O'Shea (1996), Storr, Smith and Johnstone (1986, 2002), Wilson and Knowles (1988) and various taxonomic papers such as those of Kuch (2004), Parker (1972), Stapley et. al. (2005), Worrell (1961a, 1961b) and others.

Curiously and in spite a lot of flak directed their way at the time, Wells and Wellington (1985) largely resolved the genus-level taxonomy of the group. They did this by largely resurrecting the earlier work of Worrell in 1961.

Hoplocephalus sutus Peters, 1863, was the type species for the genus *Suta*. This and associated species have medium sized eyes, not small pin-like eyes, making these snakes clearly divergent from the ones subject of this paper.

Suta suta (Peters, 1863) and associated species are all dry to arid region species (including dry tropics) and the genus *Suta* includes the taxa *Suta ordensis* and *S. punctata*, although the latter taxon may be better placed in the genus *Hulimkai* Hoser, 2012, which includes the species *H. fasciata* (originally described as *Denisonia fasciata* Rosen, 1905).

Hulimkai (monotypic for the West Australian species *fasciata*) are readily separated from the other genera named here by their larger eye, longer body and a dorsal body pattern consisting of darker blotches or crossbands on a lighter background, which is not seen on any snakes in any of the other genera.

Suta suta and *S. punctata* as currently recognized may in fact be either species composites or consist of currently undescribed subspecies. Both have very broad distributions.

A number of recent authors, including Wilson and Swan (2008) merged the genera *Unechis* and *Cryptophis*. This is not supported by myself herein and the two genera are kept apart and diagnosed separately.

Relying on morphological evidence and recent molecular evidence from studies of Pyron et. al. (2011) and others, the relevant Small-eyed Snakes genera and *Suta* are effectively defined (redescribed) herein, before listing the component species within each genus.

Following on from this, three undescribed forms are formally named for the first time, these being a species of *Cryptophis* from south-east Queensland, a species of *Unechis* from New Guinea and a subspecies *Unechis* from Australia.

The small elapid species, the Bardick *Echiopsis curta* (Schlegel, 1837) is found in two generally disjunct populations. That found from Western Australia to the Eyre Peninsula in South Australia is the nominate form. A second population of these snakes, until now recognized as this species is found in the region of northwest Victoria, nearby NSW and adjacent parts of South Australia.

The Flinders Ranges forms a natural barrier between the groups of taxa and it can be safely assumed that both populations have been separated for quite some time.

Within the Western population, there is significant clinal variation between those from south-west Western Australia and those of eastern South Australia, with some herpetologists regarding these snakes as being different species or subspecies.

The same applies for the disjunct population centered on northern Victoria and Southern NSW.

Morphologically they are different, but in the absence of good DNA data, I have taken the conservative position and named this unnamed variant herein as a new subspecies rather than full species, this being done as the last formal description within this paper.

GENUS *SUTA* WORRELL, 1961.

Type species: *Hoplocephalus sutus* Peters, 1863

Diagnosis: Medium-sized large eyed terrestrial elapid snakes with a single anal, single subcaudals, head that is broad and flattened, without a canthus rostralis; temporal 2+2, internasals present; dorsal scales smooth and shiny in 15 or 19 mid-body rows (Genus *Hulimkai* Hoser, 2012, has 17 mid-body rows); concealed skin between scales is white; upper lip broadly to narrowly white; pale iris and vertically elliptical pupil; lower surfaces whitish, with or without some patterning; head with pattern or spotting or a large blotch, but the latter is brown or gray rather than glossy black.

With the exception of the species *punctata* (15 dorsal mid body rows), this genus is separated from *Parasuta* by having more mid-body rows (*Parasuta* usually has 15, all other *Suta* have 19), a pale rather than dark eye, vertically elliptical rather than round pupil, non-opalescent lower surfaces and a head blotch if present, not glossy black.

The species *punctata* is in many ways intermediate in form between the genera *Suta* and *Hulimkai*, which is why I have deferred for the time being transferring it from the former to the latter.

The genus *Cryptophis* is separated from this genus by the obvious pin-like eyes and lack of any head markings.

The genus *Rhinoplocephalus* is herein treated as monotypic for the West Australian species *bicolor* and it is separated from the others by having no internasal scales, a robust build, 15 dorsal mid-body rows, a depressed head, squarish snout, and small eye with a dark iris.

Content: *Suta suta* (Peters, 1863) (Type species), *Suta ordensis* (Storr, 1984), *Suta punctata* (Boulenger, 1896).

GENUS *RHINOPLOCEPHALUS* MÜLLER, 1885.

Type species: *Rhinoplocephalus bicolor* Müller, 1885

Diagnosis: The genus *Rhinoplocephalus* is herein treated as monotypic for the West Australian species *bicolor* and it is separated from the others by having no internasal scales, a robust build, 15 dorsal mid-body rows, a depressed head, squarish snout (in reflection of the common name “Square-snouted Snake”), and is a small eye with a dark iris.

Content: *Rhinoplocephalus bicolor* Müller, 1885

GENUS *UNECHIS* WORRELL, 1961

Type species: *Hoplocephalus carpentariae* Macleay, 1887

Diagnosis: Small to medium-sized elapid snakes with a relatively elongate and long-tailed body form. There are 15 dorsal mid-body scale rows, single anal, and the body is smooth and glossy and of uniform color although in some specimens the intensity of color along the mid-dorsal line gives the impression of a stripe running down the body.

Eyes are relatively small and uniformly dark. Lips and lower surfaces are white.

There are 15 dorsal mid-body scale rows, the frontal is longer than broad, more than one and a half times as broad as the subocular; supranasals are present in all species, single anal, undivided subcaudals, no suboculars, two to five small and solid maxillary teeth follow the fang. All species of *Parasuta* invariably have dark head markings, not seen in the genus *Unechis*.

The genus *Rhinoplocephalus* is herein treated as monotypic for the West Australian species *bicolor* and it is separated from the other similar genera including *Parasuta* by having the following suite of characters: no internasal scales, a robust build, 15 dorsal mid-body rows, a depressed head, squarish snout (in reflection of the common name “Square-snouted Snake), and small eye with a dark iris.

Content: *Unechis boschmai* (Knaap-van Meewen, 1964), *Unechis nigrostriatus* (Krefft, 1864), *Unechis incredibilis* Wells and Wellington, 1985, *Unechis durhami* sp. nov. (this paper).

GENUS *PARASUTA* WORRELL, 1961

Type species: *Elaps gouldii* Gray, 1841

Diagnosis: Small to medium-sized elapid snakes with a relatively elongate and long-tailed body form. There are 15 dorsal mid-body scale rows, single anal, and the body is smooth and glossy.

Eyes are relatively small and uniformly dark. Lips and lower surfaces are white.

Separated from the genus *Unechis* by the fact that the head and nape have a glossy black “hood”. The upper surface is grayish-brown to reddish-brown or even yellowish-brown and lacks any spots or crossbands.

Separated from *Suta* by the fewer mid-body rows (except for the species *punctata*), a dark rather than pale eye, round rather than vertically elliptical pupil, opalescent lower surfaces and head with a glossy black blotch.

Hulimkai is separated by having 17 dorsal mid-body scale rows.

Cryptophis is separated from this genus by the lack of a glossy black “hood” on the head or nape.

The genus *Rhinoplocephalus* is herein treated as monotypic for the West Australian species *bicolor* and it is separated from the other similar genera including *Parasuta* by having the following suite of characters: no internasal scales, a robust build, 15 dorsal mid-body rows, a depressed head, squarish snout (in reflection of the common name “Square-snouted Snake), and small eye with a dark iris.

Content: *Parasuta flagellum* (McCoy, 1878), *Parasuta gouldii* (Gray, 1841), *Parasuta nigriceps* (Günther, 1863), *Parasuta spectabilis* (Krefft, 1869).

GENUS *CRYPTOPHIS* WORRELL, 1961.

Type species: *Hoplocephalus nigrescens* Günther, 1862

Diagnosis: Similar in many respects to the other genera diagnosed within this paper.

These species have the following features: small to medium in size, characterized by a uniform dorsal color without any form of mid-dorsal stripe or color intensity or head markings, save for occasional darkening of the head sometimes seen in younger specimens. The scales are glossy and smooth with 15 dorsal mid-body scale rows, frontal is longer than broad, more than one and half times as broad as the supraocular; supranasals present, single anal, undivided subcaudals, and two to five small solid maxillary teeth following the fang.

The species within this genus are separated from the other genera by the following suite of characters (included with those just listed), Nasal contacts the preocular, the body is more-or-less uniformly black or dark brown above, 160-210 ventrals, belly often with darkish flecks on the subcaudals.

Content: *Cryptophis nigrescens* (Günther, 1862), *Cryptophis assimilis* (Macleay, 1885), *Cryptophis pallidiceps* (Günther, 1858), *Cryptophis edwardsi* sp. nov.

***UNECHIS DURHAMI* SP. NOV.**

Holotype: A specimen at the PNG Museum, specimen number: 22130, from Balamuk, Bensbach River, Western Province, PNG.

This is a government owned facility that allows researchers access to their specimens.

Paratypes: Two specimens in the Museum of Comparative Zoology (MCZ), Harvard University, specimen numbers: R140814 and 179580 from Morehead, New Guinea (Western Province), Lat. 8.7137681 deg South, Long. 141.6416893 deg East.

This is a government owned facility that allows researchers access to their specimens.

Diagnosis: This species would in the past have keyed out to be *Unechis nigrostriatus* (Krefft, 1864), which is separated from other snakes in the genus as diagnosed above and relied upon as part of this formal description, by the following suite of characters: Nasal contacting the preocular, the color is predominantly red or pink above, usually with a distinct black or dark grey or brown vertebral stripe along the length of the body, as opposed to being of uniform pink color on the entire dorsal body, or being dark brown or black above.

The species *Unechis durhami* sp. nov. is separated from *U. nigrostriatus* by having a longer body and tail. In *Unechis durhami* sp. nov. the tail is an average of 32.5 per cent of snout-vent length as opposed to 27 per cent in *U. nigrostriatus.*

Unechis durhami sp. nov. is found in southern island New Guinea, currently known only from the near eastern side of the PNG border with Irian Jaya.

U. nigrostriatus is now restricted to Australia.

Neither taxon is known from Torres Strait islands where another taxon *Unechis incredibilis* Wells and Wellington, 1985 has been found.

Unechis durhami sp. nov. presents as a longer thinner species than *U. nigrostriatus* and this also reflects in the known scale counts. 160-180 ventrals in *U. nigrostriatus* versus 170-190 in *Unechis durhami* sp. nov., and 45-64 subcaudals in *U. nigrostriatus* versus 65-79 in *Unechis durhami* sp. nov..

Both *Unechis durhami* sp. nov. and *U. nigrostriatus* are separated from the similar *Unechis boschmai* (Knaap-van Meewen, 1964) by the fact that *U. boschmai* lacks any form of vertebral stripe and is a shorter more thick-set snake.

In *U. boschmai*, the lower-most row of scales is marked with dark spots.

In *U. boschmai* the ventrals are fewer than 170, subcaudals fewer than 50, the nasal is not in contact with the pre-ocular, thereby allowing the prefrontal to contact the second supralabial and the tail is an average of 18 percent of the snout-vent length.

Etymology: *Unechis durhami* sp. nov. is named in honor of Chris Durham of the United States of America, former owner of UHN a reptile and reptile products distributor, for his many largely unrecognized contributions to herpetology in the United States including by provision of well-defined and documented locality specific reptiles to taxonomists and other scientists.

***UNECHIS BOSCHMAI CRUTCHFIELDI* SUBSP. NOV.**

Holotype: Specimen number R5835 in the Australian Museum, Sydney, NSW, Australia, collected at: Eidsvold Burnett River, Queensland, Australia. Lat. 25° 22' S, Long. 151° 07' E.

This is a government owned facility that allows researchers access to their specimens.

Paratype: Specimen number: R58512 from Duaringa, Queensland. Lat. 23° 43' S, Long. 149° 40' E. in the Australian Museum, Sydney, NSW, Australia

This is a government owned facility that allows researchers access to their specimens.

Diagnosis: The nominate species *U. boschmai* occurs in southern New Guinea. The taxon *Unechis boschmai crutchfieldus* sp. nov. is the Australian form of the species.

The two forms are easily separated by the fact that in *Unechis boschmai crutchfieldus* sp. nov. the upper postocular is considerably larger (more than twice as large) than the lower one. In *U. boschmai* from New Guinea the two postoculars are much the same size. In *Unechis boschmai crutchfieldus* sp. nov. the prefrontal is flat at the bottom where it contacts the upper labials, wheras in *U. boschmai* from New Guinea the lower edge forms a triangle at the contact point.

New Guinea *U. boschmai* usually have over 40 subcaudals whereas Australian specimens of *Unechis boschmai crutchfieldus* sp. nov. usually have less than 30.

Unechis boschmai (both subspecies) are separated from others within the genus by the following suite of characters: Uniform light tan, brown or very dark brown above, the lateral scales sometimes much lighter in color than the remainder. Sides of the head are often yellowish to reddish brown. The belly is creamish white with dark spots and a dark stripe under the tail. As mentioned already, the prefrontals contact the upper labials, separating the nasals from the preoculars. The scales are smooth with 15 dorsal mid-body rows.

This species is the most stoutly built species in the genus, also reflected by the lower average ventral scale counts.

A lot of older texts referred to the species as "*carpentariae*" as described by Macleay in 1887. Cogger et. al. 1983, identified the taxon as synonymous with the species *Suta suta*.

Etymology: Named in honor of Tom Crutchfield of Florida, for his many contributions to herpetology in the United States of America and elsewhere including by provision of well-defined and documented locality specific reptiles to taxonomists and other scientists. Crutchfield has also made an immense contribution through breeding rare and endangered reptile species in captivity.

***CRYPTOPHIS EDWARDSI* SP. NOV.**

Holotype: A preserved specimen in the Australian Museum Sydney, number: R10015 from Montville, south-east Queensland, Lat 26° 42' S, Long 152° 54' E.

This is a government owned facility that allows researchers access to their specimens.

Paratypes: First paratype is a preserved specimen in the Australian Museum Sydney, number: R10016 from Montville, south-east Queensland, Lat 26° 42' S, Long 152° 54' E.

Second paratype is a preserved specimen in the Australian Museum Sydney, number: R10572, from Barolin Station,

Bundaberg, Queensland Lat. 24° 53' S, Long. 152° 29' E.

This is a government owned facility that allows researchers access to their specimens.

Diagnosis: This taxa would in the past have been diagnosed as *Cryptophis nigrescens*.

Both species are readily separated from all other Australian snakes by the following suite of characters: Internasals present, the nasal contacts the preocular, the head is shiny black or dark grey above and the body is similarly colored and without any markings or blotches. The eyes are small and pin-like, giving these snakes their common name. Scales are smooth and shiny with 15 mid-body rows, frontal is longer than broad, more than one and half times as broad as the supraocular, supranasals present, 165-210 ventrals, single anal and 30-45 single subcaudals; no suboculars, two to five small solid maxillary teeth follow the fang.

Cryptophis edwardsi sp. nov. is most obviously separated by the ventral coloration. In this taxon it is a deep orange, fairly even in intensity across the entire belly. This is not the case in both *C. nigrescens* and the species *Cryptophis assimilis* (Macleay, 1885).

In both species the belly is usually whitish, or if with a pink hue (common in younger animals) it is distinctly pinkish as opposed to orange. Furthermore when the venter is pinkish in color, sections of whitish color are invariably present, the color intensity is not even in the same way as in *Cryptophis edwardsi* sp. nov..

In *Cryptophis edwardsi* sp. nov. the anterior lower temporal is larger than the adjacent supralabials. This is not the case in either *C. assimilis* of *C. nigrescens*.

C. assimilis is essentially similar to *C. nigrescens*, but occurs in the region from Townsville northwards to include most of eastern Cape York.

Originally described by Macleay in 1885, *C. assimilis* has been regarded by most authors as synonymous with *C. nigrescens* since, although Wells and Wellington (1985) were a notable exception.

Cryptophis nigrescens and *C. assimilis* are species that rarely exceed 60 cm in total length. By contrast *C. edwardsi* sp. nov. is known to exceed 90 cm and is a considerably larger snake.

While not aggressive to humans, a bite from a large specimen could be medically significant.

Comments: As a result of this description the species previously recognized as *C. nigrescens* has been effectively split three ways. Of note however is that the variation between the three taxa does not appear to be clinal in a north-south manner as would perhaps be expected.

Based on phenotypes, *C. edwardsi* sp. nov. appears to be the most divergent, the other two taxa presenting as physically very similar snakes.

There are also old museum records of specimens of "*C. nigrescens*" from Southern New Guinea. These snakes may be of another taxon, although noting the Australian distribution of the snakes formerly regarded as *C. nigrescens*, it is entirely possible that *C. assimilis* or a similar taxon are actually resident on island New Guinea.

Etymology: Named in honor of Euan Edwards, of the Gold Coast, Queensland Australia for his many contributions to herpetology in Australia, the United States and Madagascar.

It is notable that his expertise on reptiles and residency in Queensland in the early 1990's caused him great problems.

The late Steve Irwin, who marketed himself as "The Crocodile Hunter" got Queensland government wildlife officials to raid and close down anyone with expertise on reptiles he viewed as potentially stealing the limelight and publicity he craved.

Victims included Peter Krauss, Bob Buckley and of course Euan Edwards, all of whom had their reptiles stolen by wildlife officers in heavily armed raids.

They all then faced totally fabricated and trumped up criminal charges that none had any hope of defending due to the endemic corruption in Australia's legal system.

While this species is named in recognition of a great herpetologist in the form of Euan Edwards, it is also hoped that more people are made aware of the various unethical tactics used by the late Steve Irwin and associates to build his (ultimately huge) business empire built largely on television shows depicting him illegally tormenting and harassing wildlife as well as the commercially motivated destruction of lives of many good people working with wildlife, either as keepers, carers or scientists.

EASTERN BARDICK *ECHIOPSIS CURTA MARTINEKAE* SUBSP. NOV.

Holotype: A specimen in the Australian Museum in Sydney, Australia, specimen number R42213 collected at Balranald, NSW, Lat. 34° 38' S, Long. 143° 34' E.

This is a government owned facility that allows researchers access to their specimens.

Paratype: A specimen in the Museum of Victoria, Melbourne, Australia, specimen number D59712, collected halfway between Last Hope Tank and lower edge of Raak Plain, near Mildura, Victoria, Lat. 34°68'S, Long. 141°93'E.

This is a government owned facility that allows researchers access to their specimens.

Diagnosis: This supspecies is separated from the nominate form *E. curta curta* by several traits, the most obvious being the patterning on the labial scales. At least the first four supralabials in this subspecies have a white spot in the centre of each scale. Some of these may be elongate, the elongation often being angular or horizontal. *E. curta* from the western populations (Eyre Peninsula and west) do not have this configuration and white on the labials, if present is not positioned at the centre of each scale.

The second supralabial in *E. curta curta* is extremely large and square in shape; this is not the case in *E. curta martinekae* subsp. nov..

As already mentioned, *E. curta martinekae* subsp. nov. is found only in the region of northwest Victoria, nearby southern NSW and nearby parts of South Australia near the NSW/Victorian state borders.

By contrast *E. curta curta* is found in the region west of Port Augusta, across the Nullabor Plain and into south-west Western Australia.

E. curta (including this subspecies) is separated from all other Australian elapid snakes by the following suite of characters: Small, rather stout snakes, with smooth scales, 19 dorsal mid-body rows, no suboculars, single anal, less than 165 ventrals, less than 45 all single subcaudals, the head is not black, internasals present and two or three solid maxillary teeth following the fang.

Etymology: Named after a retired Australian army major, Maryann Martinek.

In 2009 to 2010 along with myself she played an important role in exposing a scam.

The scam involved corrupt officers within the Victorian Wildlife Department (DSE) and a Country Fire Authority (CFA) employee who contrived to make footage of a male pet Koala drinking from a bottle in a bushfire zone, falsely claiming the bottle-raised pet was in fact an injured fire victim. The people involved in the scam then unlawfully fleeced several hundred thousand dollars from well-meaning people in the form of "donations" thereby effectively stealing money from worthwhile charities in desperate need of money.
Martinek paid the ultimate price of blowing the whistle against a department and the officials noted for their criminal activities and aggressive hatred of those who expose them. In her case she

was harassed by staff who unlawfully targeted her at home and work.

Then there were the associated "stalkers" and staff who spent most of the time working as internet "trolls" who spread false and defamatory material about her on the internet and through search engine optimization methods (SEO) ensured that anyone who searched for her by name would be directed to false and defamatory claims. The DSE staff then abused a quazi legal process and with a high-powered team of lawyers that only an overfunded government bureaucracy could afford, literally outgunned her and financially destroyed her. All this came from a so-called government wildlife department that was supposed to be protecting the environment and not harassing corruption whistleblowers.

It's therefore fitting that a courageous woman such as Maryann Martinek should be honoured to have a subspecies of snake carry her name.

It is also noteworthy that any threat to the existence of this subspecies, sometimes listed as rare or endangered is the same threat that Martinek herself faced, in the form of a corrupt animal-hating wildlife department controlled by criminals and thugs, who also happen to environmental vandals of the worst possible form.

These people corruptly allow unlawful grazing and destruction of prime habitat for this species by stock owned by "friends" on so-called reserves and national parks, backed up by dubious reports that lack any scientific merit or basis.

Details of the Koala scam itself were published by Hoser (2010), in a 64-page volume of *Australasian Journal of Herpetology* Issue number 8.

It is hoped that when Victorians look into the etymology of one of their rarer snakes, they appreciate the courage Martinek had in exposing the endemic and systematic corruption within the State Government wildlife bureaucracy.

The corrupt DSE bureaucracy was protected at the time (2010-2012) by an equally corrupt Liberal Party environment Minister in the form of Ryan Smith, who was the local member for the safe Liberal Party seat of Warrandyte.

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A Division of the Asian Forest Ratsnakes Genus *Euprepiophis* Boie, 1826 (Serpentes: Colubridae).

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ABSTRACT

The so-called Forest Ratsnakes have had an unstable history in terms of their taxonomy at genus level.

Until Utiger et. al. (2002) placed the species *conspicillata*, *mandarinus* and *perlacea* in the resurrected genus *Euprepiophis* Boie, 1826 on the basis of molecular studies, these snakes had been shifted between several genera.

A reassessment of this evidence and morphological differences between the three species shows a need to further divide the snakes.

As a result the species *mandarinus* and *perlacea* are placed in a newly erected genus *Sinoelaphe* gen. nov. formally defined according to the Zoological Code.

Keywords: new genus; *Euprepiophis*; *Sinoelaphe*; *conspicillata*; *mandarinus*; *perlacea*; taxonomy; snake; colubrid.

INTRODUCTION

The so-called Forest Ratsnakes have been relatively neglected by herpetologists in Europe and the United States for several reasons, not the least being that for most of the 1900's, China was effectively cut off from the rest of the world.

Due to their morphological similarities to other ratsnakes from elsewhere their taxonomic position was rarely disputed or subject to controversy.

While they were shifted between genera, they were assumed by most herpetologists to be part of *Elaphe sensu lato.*

In the period from 1826 to 2002 the Japanese Woodsnake first described as *Coluber conspicillatus* by Boie in 1826 has been moved between various genera by herpetologists.

An early placement was *Euprepiophis conspicillatus* Fitzinger, 1843, for which he created the genus *Euprepiophis* for this species.

However other herpetologists disagreed and merely placed this taxon within other pre-exiting genera, including the following binomials; *Elaphis conspicillatus* by Duméril et. al. in 1854; *Proterodon tessellatuys* by Hallowell in 1860 (*Proterodon* being a newly erected genus for the taxon and a junior synonym of *Euprepiophis*); *Coronella conspicillata* by Jan in 1865; *Coronella perspicillata* by Müller in 1878; *Coluber conspicillatus* by Boulenger in 1894; *Elaphe conspicillata* by Stejneger in 1907, where it remained until 2002, when Utiger et. al. published a molecular phylogeny for the ratsnakes.

As a result of their findings they decided that the three species, *conspicillatus*, *mandarinus* and *perlacea* the latter two from China, should be placed in their own genus apart from the other ratsnakes. As *Euprepiophis* was the first available name, they transferred all three to this genus.

The species *mandarinus* had a similar taxonomic history to *conspicillatus,* with *mandarinus* also being previously placed in the genera *Ablabes* and *Holarchus*. The species *perlacea* remained in *Elaphe* from the time of its first description until removed from that genus by Utiger et. al. in 2002.

The molecular phylogeny produced by Utiger et. al. in 2002 and a similar one produced by Pyron et. al. in 2011 showed that the Japanese taxon was significantly divergent from the Chinese ones. While Utiger et. al. obviously decided they weren't sufficiently divergent to warrant placement in separate genera, a revisitation of the data shows that a split is in fact appropriate.

There are no available genus names for either Chinese species so one is erected and defined for the first time herein according to the Zoological Code (Ride et. al. 1999) below.

Key publications in terms of the relevant three species include, Alexander and Diener (1958), Barbour (1909), Boie (1826), Boulenger (1894), Burbink and Lawson (2007), Cantor (1842), Dowling and Jenner (1988), Duméril et. al. (1854), Fleck (1985), Golder (1974), Gumprecht (2002, 2003, 2004), Hallowell (1861), Jan (1865), Lenk et. al. (2001), Love (2010), Mell (1931), Mori (1982), Müller (1878), Nagata and Mori (2003), Nguyen et. al. (2009), Prater (1919), Purser (2003), Pyron et. al. (2011), Schultz (1996a, 1996b), Stejneger (1907, 1929), Utiger et. al. (2002), Wang et. al. (1999), Whitaker and Captain (2004), Winchell (2003a, 2003b), Zhao (1990), Zhao and Adler (1993).

GENUS *SINOELAPHE* GEN. NOV.

Type species: *Coluber mandarinus* Cantor, 1842

Diagnosis: This genus comprises two species, *mandarinus* and *perlacea*. It is best defined by defining each species individually in order to separate this genus from all similar snakes.

Sinoelaphe mandarinus is a medium-sized snake; total length up to 140 cm. There are 17-25 (21-23 at mid-body) dorsal rows of scales, which are smooth and shiny. The head is oval with a slightly blunt snout; body is medium stout; tail is medium in length. Eye is medium-sized; iris is dark brown to blackish and pupil is round, black, and less distinct from rest of eye. Tongue is flesh-coloured with gray fork tips. Upper head is yellow and the labials are white, except three broad, black cross-bands; the anterior one is located on the snout, ending on the first infralabials, the median one extends from top of head, divides over eye, to the labials, and the posterior one extends postolaterally from top of posterior head to base of jaw. Upper body and tail are purplish-gray or even reddish, with a series of conspicuous, yellow-margined, yellow-centered, black saddles separated from one another by length of 1-2 scales. There may also be a lateral series of small, black spots. Ventral head is white except the black spots on the gulars and some infralabials. Ventral body and tail are white with scattered quadrangular marks of prominent black pigment which are irregularly arranged on sides. The anal scale is divided and subcaudals are paired.

Sinoelaphe perlacea differs from *Sinoelaphe mandarinus* in many ways. *S. mandarinus* has: 1) 23 scale rows on the neck and mid-body, 19 or 21 before the vent; 2) Two anterior temporal scales (occasionally one); 3) A much different dorsal pattern.

Distribution: In a triangle including India, China, Vietnam and countries within this region. Includes Taiwan. The species *Sinoelaphe perlacea* is only known from near Chengdu, China.

Etymology: Named in reflection of the Chinese centred distribution of the taxa.

Content of *Sinoelaphe* gen. nov.

Sinoelaphe mandarinus (Cantor, 1842) (Type species).

Sinoelaphe perlacea (Stejneger, 1929).

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A three-way division of the African Centipede Eating Snakes, *Aparallactus* Smith, 1849 (Serpentes: Lamprophiidae: Aparallactinae) and a new subgenus of Wolf Snakes *Lycophidion* Fitzinger, 1843 (Serpentes: Lamprophiidae, Lamprophiinae).

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ABSTRACT

A review of the Centipede Eating Snakes, *Aparallactus* Smith, 1849 shows that the genus as understood at present comprises three well-defined species groups. On this basis the genus *Aparallactus* Smith, 1849 is divided three ways.

Most species remain within *Aparallactus.* The species *modestus* is placed on its own in the genus *Elapops* Günther, 1859.

Two species, *Aparallactus werneri* Boulenger, 1895 and *Aparallactus nigriceps* (Peters, 1854), are placed in a new genus *Plumridgeus* gen. nov. which is named and diagnosed according to the Zoological Code.

Within the African Wolf Snake genus *Lycophidion* Fitzinger, 1843 one species is divergent from the rest and is placed within its own subgenus, namely *Jacobclarkus* subgen. nov..

Keywords: Taxonomic revision; new genus; new subgenus; *Aparallactus*; *Plumridgeus*; *Lycophidion*; *Jacobclarkus*; *Elapops*; *Metoporhina*; *Cryptolycus*; *capensis*; *modestus*; *werneri*; *nigriceps*; *laterale*.

INTRODUCTION

The Centipede Eating Snakes, genus *Aparallactus* Smith, 1849 as currently recognized consists of a genus of rear-fanged snakes found in Africa.

The taxonomic history of the group is similar to that of many other snake genera.

In the 1800's when species were named, many were placed in new genera at the time of first description.

In the 1900's these genera have been merged with the senior name taking priority.

In the post 2000 period a number of snake genera have been revisited to see if it is in fact appropriate to have morphologically conservative species within a single genus.

When it has been deemed appropriate to split a genus up, a search for pre-existing "available" names is done and if such are available, then these are used. If not, then one is assigned.

Aparallactus has also been the subject of molecular studies that have shown phylogenetic divisions within the genus as currently understood worthy of recognition at the genus level.

Pyron et. al. (2011) published results for three species showing at least two species groups within *Aparallactus* worthy of generic recognition.

A review of the entire 11 species currently placed within *Aparallactus* has found three distinct groups worthy of generic recognition.

These are easily characterized as follows:

The first group consists of most species, including the type species *capensis*. These snakes typically have seven supralabials and a high subcaudal count and in line with their common name, typically feed on centipedes.

The second group is that of the divergent species, *modestus* which while physically similar to the snakes in the first group,

appears to lack the back fangs seen in the other species and also appears to have a preference for earthworms as opposed to centipedes. When he first described this taxon, Günther assigned it to a new genus he erected, namely *Elapops* and so this species is re-assigned to this currently monotypic genus.

The third group of species includes two species, namely *Aparallactus werneri* Boulenger, 1895 and *Aparallactus nigriceps* (Peters, 1854). These are separated from the rest of the genus by a suite of characters, most notably including a lower subcaudal count and six, as opposed to seven supralabials.

The results of Pyron et. al. 2011, show clearly that *Aparallactus werneri* is sufficiently divergent from the type species of *Aparallactus* to warrant being placed in a separate genus (obviously with the similar species *nigriceps*). As no genus name is available for these snakes, a new genus is erected to accommodate these species, namely *Plumridgeus* gen. nov. which is named and defined according to the Zoological Code (Ride et. al. 1999).

The genus name *Uriechis* Peters, 1854, is referable to *A. lunulatus* and is therefore not available for the species referred to *Plumridgeus* gen. nov..

There have been numerous published studies that clearly diagnose and separate the various species-level taxa within *Aparallactus* sensu lato, in terms of the 11 species formerly placed within the genus. These include: Auerbach (1987), Barbour and Loveridge (1928), Bauer et. al. (1995), Böhme (1975), Böhme et. al. (2011), Boulenger (1893a, 1895, 1897a, 1897b, 1907, 1910), Boycott (1992), Branch (1993), Branch et. al. (2005), Briscoe (1949), Broadley (1959, 1962, 1998), Broadley and Cotterill (2004), Broadley and Howell (1991), Broadley et. al. (2003), Chabanaud (1916), Chifundera (1990), Chirio and Ineich (2006), Chirio and Lebreton (2007), Cole and Kok (2006), Cope (1860, 1861), de Witte (1927), de Witte and Laurent (1943, 1947), Fischer (1884), Günther (1859, 1888), Hughes (1983), Hughes and Barry (1969), Jackson and Blackburn (2007), Jacobsen et. al. (2010), Jan (1862, 1865, 1866), Lanza (1983, 1990), Largen and Spawls (2010), Lawson (1993), LeBreton (1999), Loveridge (1929, 1935, 1936, 1938, 1944, 1956, 1957), Mertens (1938), Parker (1949), Pauwels and Vande weghe (2008), Pauwels et. al. (2006, 2008), Peters (1854, 1870), Rasmussen (1981), Rödel and Mahsberg (2000), Rödel et. al. (1999), Smith (1849), Spawls et. al. (2001), Sternfeld (1909, 1910), Taylor and Weyer (1958), Trape and Roux-esteve (1990, 1995), Trape and Mane (2006), Wallach (1994) and Werner (1897, 1899, 1902).

Within the African Wolf Snake genus *Lycophidion* Fitzinger, 1843 there have been various attempts in the past to break the genus up into smaller groups.

Besides the pre-existing genus name *Lycophidion*, the name *Metoporhina* Günther, 1858 is available for the species *irrorata* Günther, 1858 and others within this defined species group. The genus name *Cryptolycus* Broadley, 1958 is available for the species *nanus* Broadley, 1958 for this taxon and others in this species group.

The genus name *Alopecion* Peters, 1863 is available for the species *nigromaculatus* Peters, 1863, but because it is within the same species group as *irrorata*, it would in effect be a junior synonym for the former.

Recent molecular studies and data published by Pyron et. al. (2011) and others have shown there to be at least three distinct species groups within the genus *Lycophidion* as presently recognized. However Broadley 1996 identified no fewer than four major species groups.

Combining these and other studies, it is clear that *Lycophidion* should be divided. However due to the obvious morphological similarities between all species, my view is that these divisions should be at the subspecies level only.

I therefore recognise the subgenera *Metoporhina* Günther, 1858, *Cryptolycus* Broadley, 1958, the nominate subgenus (*Lycophidion*) and a fourth group as yet unnamed as a subgenus consisting of the divergent taxon, *Lycophidion laterale* Hallowell, 1857.

Therefore following the division of the genus *Aparallactus* below I name and diagnose a new subgenus within *Lycophidion,* namely *Jacobclarkus* subgen. nov. according to the Zoological Code (Ride et. al. 1999).

Important publications in relation to the relevant species of *Lycophidion* sensu lato include, Auerbach (1997), Boulenger (1893b), Branch (1976, 1993), Broadley (1958, 1969, 1991, 1992, 1996), Broadley and Hughes (1993), Broadley et. al. (2003) Chirio and Ineich (2006), Hallowell (1857), Largen and Spawls (2010), Parker (1949), Spawls et. al. (2001) and Werner (1899).

GENUS *APARALLACTUS* SMITH, 1849

Type species: *Aparallactus capensis* Smith, 1849

Diagnosis: A genus of usually rear-fanged snakes found in sub-Saharan Africa. They are known as centipede eaters in reflection of what is thought to be their main diet.

The following traits diagnose these very thin snakes. Maxillary is short, with 6-9 small teeth followed by a large grooved fang situated below the eye. Anterior mandibular teeth longest. Head small, not distinct from neck. Eye is small, with a round pupil. Nasal entire or divided; no loreal. Body cylindrical; tail moderate or short. Dorsal scales smooth, without pits, arranged in 15 dorsal mid-body rows. Ventrals are rounded; subcaudals are single.

Not included in the genus *Aparallactus* as defined herein are three species formerly placed within this genus.

Specimens that would previously have been defined as being within this genus with six supralabials are placed in a new genus *Plumridgeus* gen. nov.. Those species are the species originally described as *Aparallactus werneri* Boulenger, 1895 and *Uriechis nigriceps* Peters, 1854. These two species are separated from *Aparallactus* (and *Elapops*) by having 6 supralabials, as opposed to seven in all other species within *Aparallactus* (and *Elapops*).

Plumridgeus gen. nov. is further separated from Aparallactus by their lower subcaudal count (below 41, versus above 41), being a reflection of the considerably shorter tail seen in snakes of that genus.

The species originally described as *Elapops modestus* Günther, 1859 is returned to that genus as the type and sole species. It is separated from all other *Aparallactus* by an apparent lack of visible back fangs as seen in the other species.

Elapops modestus Günther, 1859 apparently feeds on worms as a preferred diet as opposed to centipedes.

Distribution: Sub-Saharan Africa.

Content of Genus *Aparallactus* Smith, 1849

Aparallactus capensis Smith, 1849 (Type species).

Aparallactus guentheri Boulenger, 1895.

Aparallactus jacksonii (Günther, 1888).

Aparallactus lineatus (Peters, 1870).

Aparallactus lunulatus (Peters, 1854).

Aparallactus niger Boulenger, 1897.

Aparallactus moeruensis de Witte and Laurent, 1943.

Aparallactus turneri Loveridge, 1935.

GENUS *ELAPOPS* GÜNTHER, 1859

Type species: *Elapops modestus* Günther, 1859

Diagnosis: This genus is monotypic for the type species.

It is separated from all snakes within genera *Aparallactus* and *Plumridgeus* gen. nov. by a lack of defined back fangs at the rear of the mouth. *Elapops modestus* Günther, 1859 apparently feeds on worms as a preferred diet as opposed to centipedes.

This genus (type species) is diagnosed by the following suite of characters: Dorsally *Elapops modestus* is a dark olive-gray, the

scales more or less distinctly edged with black. The ventrals and subcaudals are yellowish, olive-gray, or yellowish dotted or spotted with gray, the spots sometimes forming a median series.

Adults may attain a total length of 54 cm, with a tail 7.5 cm long.

There are 11 or 12, maxillary teeth the last two enlarged and feebly grooved on the inner side. Anterior mandibular teeth are longest. Head small, not distinct from neck. Eye small, with round pupil. Nostril between two nasals; no loreal; parietal in contact with upper labials. Body cylindrical; tail moderate. Dorsal scales smooth, without pits, in 15 dorsal mid-body rows. Ventrals rounded, subcaudals single.

Portion of rostral visible from above is half as long as its distance from the frontal. Internasals shorter than prefrontals. Frontal one and a third to one and a half times as long as broad, as long as or longer than its distance from the end of the snout, shorter than the parietals. One preocular, in contact with the posterior nasal. One or two postoculars. A single temporal. Seven upper labials, third and fourth entering the eye, sixth or fifth and sixth in contact with the parietal. Four lower labials in contact with the anterior chin shield. Anterior chin shields slightly longer than posterior chin shields.

Ventrals 138-158; anal plate single; subcaudals 42-45, also single.

Distribution: West Africa in the countries stretching in a line from Uganda to Sierra Leone. This includes, Central African Republic, Uganda, Democratic Republic of the Congo (Zaire), Congo (Brazzaville), Cameroon, Nigeria, Togo, Benin, Ghana, Ivory Coast, Liberia, Sierra Leone, Cameroon and Gabon.

GENUS *PLUMRIDGEUS* GEN. NOV.

Type species: *Aparallactus werneri* Boulenger, 1895

Diagnosis: Physically species within this genus are similar in most respects to *Aparallactus* as defined within this paper.

Plumridgeus gen. nov. is most easily separated from genera *Aparallactus* and *Elapops* by having six as opposed to seven supralabials.

Plumridgeus gen. nov. is also separated from genera *Aparallactus* and *Elapops* by their consistently lower subcaudal count (below 41, versus above 41), being a reflection of the considerably shorter tail seen in snakes of this genus.

Traits otherwise common to all three genera are as follows: very thin snakes. Maxillary is short, with 6-9 small teeth followed by a large grooved fang situated below the eye. Anterior mandibular teeth longest. Head small, not distinct from neck. Eye is small, with a round pupil. Nasal entire or divided; no loreal. Body cylindrical; tail moderate or short. Dorsal scales smooth, without pits, arranged in 15 dorsal mid-body rows. Ventrals are rounded; subcaudals are single.

In terms of the type species *Plumridgeus werneri*, it is a blackish colored snake with a deep black, light-edged nuchal collar. The upper lip is blackish below the eye, and yellowish in front of and behind the eye. Ventrally it is uniformly yellowish.

It may attain 39 cm in total length, with a tail 6.5 cm long.

The dorsal scales are smooth, without pits, and are arranged in 15 dorsal mid-body rows. Ventrals 147-160; anal plate single; subcaudals 32-40, all single.

Portion of rostral visible from above nearly half as long as its distance from the frontal. Internasals much shorter than the prefrontals. Frontal one and a half times as long as broad, longer than its distance from the end of the snout, as long as the parietals. Nasal entire, in contact with the preocular. Two postoculars, in contact with the anterior temporal. Temporals 1+1. Six upper labials, second and third entering the eye. First lower labial in contact with its fellow behind the mental. Three lower labials in contact with the anterior chin shield. Two pairs of chin shields, the anterior pair broader and slightly longer than the posterior pair.

For the species *Plumridgeus nigriceps* it is reddish brown dorsally, and whitish ventrally. The top of the head and the nape of the neck are black, the black on the nape edged with yellowish. A pair of yellowish spots may be present behind the parietal shields. The sides of the head are yellowish, with the shields bordering the eye black.

Adults may attain a total length of 25.5 cm. A juvenile 103 mm in total length has a tail 17 mm long.

Smooth dorsal scales in 15 mid-body rows. Ventrals 110-149; anal plate single; subcaudals 21-40, all single.

Portion of rostral visible from above about one third as long as its distance from the frontal. Internasals much shorter than the prefrontals. Frontal is one and a third times as long as broad, much longer than its distance from the end of the snout, a little shorter than the parietals. Nasal entire, in contact with the preocular. One postocular. Temporals 1+1 (the first sometimes absent). Six upper labials, second and third entering the eye, fourth (or fourth and fifth) in contact with the parietal. Three lower labials in contact with the anterior chin shield. Anterior chin shields in contact with the mental, slightly larger than the posterior chin shields.

Distribution: *Plumridgeus werneri* is found in south-east Mozambique.

Plumridgeus nigriceps is only known from the Uluguru and Usambara Mountains, East Tanzania.

Etymology: Named after Gordon Plumridge of Kangaroo Flat, Bendigo, Victoria, Australia for services to reptile education in Australia.

Content of *Plumridgeus* gen. nov.

Plumridgeus werneri (Boulenger, 1895) (Type species).

Plumridgeus nigriceps (Peters, 1854).

GENUS *LYCOPHIDION* FITZINGER, 1843

Type species: *Lycodon horstokii* Schlegel, 1837

(Known in most contemporary texts as *Lycophidion capense* (Smith, 1831)).

Diagnosis: The genus *Lycophidion* is a genus distributed across most parts of Africa and commonly known as Wolf Snakes. Consisting roughly 19 described and recognized species, they are smooth-scaled, moderate to small sized snakes with needle sharp and strongly recurved teeth, which are longest in the front of the upper jaw. These consist of 6-10 maxillary teeth increasing in size, and then after a small gap 15-17 very small teeth. Mandible anteriorly with 5-6 small teeth, increasing in size and then one or two large fang-like teeth, followed by very small teeth. The head is barely distinct from the neck, distinctively flattened and the snout is broadly rounded; the rostral is small; nostril pierced in a single nasal shield, followed by a small post-nasal; the eye is small with a vertically elliptical pupil; praeocular is much developed on the upper surface of the head taking the place of the supraocular anteriorly. The body is cylindrical and scales are smooth, with apical pits in 15-17 (rarely 19) dorsal mid body rows, rounded ventrals, single anal and all subcaudals paired, with the tail being short to moderate. All are oviparous.

Distribution: Africa, with most species south of the Sahara.

SUBGENUS *JACOBCLARKUS* SUBGEN. NOV.

Type species: *Lycophidion laterale* Hallowell, 1857

Diagnosis: This subgenus is monotypic for this species. It is separated from all other species within *Lycophidion* by having four or more apical pits. There are 2 or 3 in *Lycophidion irroratum* and *Lycophidion nigromaculatum* (subgenus *Metoporhina*) while all other species have a single pit.

The species *Lycophidion* (*Jacobclarkus*) *laterale* is also separated from others in the genus by having 17 dorsal mid-body rows, 8 supralabials, the rostral is nearly twice as broad as deep, two labials enter the eye, the diameter of the eye is not greater than the distance from the mouth and there are 176-188 ventrals.

In common with the rest of the genus, this species is a smooth-

scaled, moderate to small sized snake with needle sharp and strongly recurved teeth, which are longest in the front of the upper jaw. These consist of 6-10 maxillary teeth increasing in size, and then after a small gap 15-17 very small teeth. Mandible anteriorly with 5-6 small teeth, increasing in size and then one or two large fang-like teeth, followed by very small teeth. The head is barely distinct from the neck, distinctively flattened and the snout is broadly rounded; the rostral is small; nostril pierced in a single nasal shield, followed by a small post-nasal; the eye is small with a vertically elliptical pupil; praeocular is much developed on the upper surface of the head taking the place of the supraocular anteriorly. The body is cylindrical and scales are smooth, with apical pits in 15-17 (rarely 19) dorsal mid body rows, rounded ventrals, single anal and all subcaudals paired, with the tail being short to moderate. Oviparous.

Distribution: From the Central African Republic west to Senegal and including Senegal, Gambia, Guinea, Ivory Coast, Ghana, Togo, Benin, Nigeria, Cameroon, Democratic Republic of the Congo (Zaire), Congo (Brazzaville), Gabon, Central African Republic and North Angola.

Etymology: Named in honour of Jacob Clark of Ballarat, Victoria, Australia in recognition for his services to reptile education.

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A review of Kukri Snakes, currently referred to the genus *Oligodon* Fitzinger, 1826, with a division into twelve genera, four further subgenera and the creation of a tribe to accommodate them (Serpentes:Colubridae).

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ABSTRACT

The taxonomy of the Kukri Snakes, long placed in the genus *Oligodon* Boie, 1827 has been in urgent need of a taxonomic overhaul for some years.

This paper reviews the approximately 70 recognized species taxa and places them within twelve (12) genera, only two of which have available names.

As a result ten new genera are created and named according to the Zoological Code. These are, *Smythkukri* gen. nov., *Cottonkukri* gen. nov., *Funkikukri* gen. nov., *Hoserkukriae* gen. nov., *Oxykukrius* gen. nov., *Daviekukri* gen. nov., *Moseselfakharikukri* gen. nov., *Dannyelfakharikukri* gen. nov., *Hugheskukri* gen. nov. and *Ninkukri* gen. nov..

Four subgenera are also created, namely *Geddykukrius* subgen. nov., *Sammykukriae* subgen. nov., *Crottykukrius* subgen. nov. and *Harrigankukriae* subgen. nov..

Furthermore, the group are sufficiently divergent from other Colubrids to be placed within their own tribe Oligodonini tribe nov.

Keywords: Taxonomic revision; new tribe; new genera; *Smythkukri*; *Hoserkukriae*; *Oxykukrius*; *Cottonkukri*; *Ninkukri*; *Hugheskukri*; *Funkikukri*; *Daviekukri;* *Moseselfakharikukri*; *Dannyelfakharikukri*; new subgenera; *Crottykukrius*; *Sammykukriae*; *Geddykukrius*; *Harrigankukriae*; Oligodonini; Kukri snake.

INTRODUCTION

The so-called Kukri Snakes from south and east Asia got their name from a distinctively shaped Nepalese knife, which is similar in shape to the broad, flattened, curved hind teeth these snakes possess.

These teeth are designed to assist in feeding on eggs, a dominant part of the diet of many species. They slit open eggs as they are being swallowed, allowing for easier digestion. These specialized teeth are in addition to the functional venom glands possessed by the rear-fanged Colubrids. None are believed to be dangerous to humans.

Most species are egg eaters, but they also feed on lizards, frogs and small rodents.

They are generally small to medium in size, (usually under 90 cm) innocuous, often move about at night and are most likely to be found on the floor of mature forests.

Color and pattern varies, but is often bright and distinctive.

There are approximately 70 recognized described species, although the exact number isn't certain due to the fact that some described taxa may be synonymous with others and there's no doubt that undescribed forms remain to be named.

Some species are known only from the holotype or a few specimens only.

At the present time and for many years, all Kukri snakes have been referred to the genus *Oligodon* Boie, 1826 by publishing herpetologists.

However the taxonomy of these snakes as a group has been anything but stable.

At the genus level, several names have been proposed and used, including the following:

Oligodon H. Boie in Fitzinger 1826:25 (type species *Coluber bitorquatus*).

Simotes Duméril, Bibron and Duméril 1854: 624 (nec. Fischer 1817, Mammalia).

Tripeltis Cope 1886:487 (type species *O. brevicauda* Günther).

Holarchus Cope 1886: 488 (type species later designated as *O. formosanus* Günther by Pope 1935).

Dicraulax Cope 1893:480 (type species *S. trinotatus* Günther).

Arguments have been raised by many authors to divide them into more than one genus including Günther (1864) and Boulenger (1894), both of whom sought to split them on the basis of dentition.

More recent divisions of *Oligodon* have been proposed on the basis of other features such as hemipenal morphology or molecular phylogeny (Green 2010).

Green (2010) found that the divisions based on his molecular results accurately matched the clades previously defined based on hemipenal morphology.

Green (2010) in particular clearly identified several distinctive groups within *Oligodon* as recognized worthy of recognition as genera in their own right, but failed to make the obvious move of assigning species.

This had followed on from the comments of Pawells et. al. (2002) indicating the heterogenous nature of the genus *Oligodon* as then understood.

Pyron et. al. (2011) produced a molecular phylogeny of the modern snakes which included a result for the taxon identified as *Oligodon cinerus*.

In their phylogeny, *Oligodon* showed as an ancient divergence in the Colubridae, closest to the Oriental Ratsnake genus *Ptyas*.

Groups of species within that genus as recently recognized have been divided into two different genera to separate the smooth and rough-scaled forms.

Noting the results of Green (2010) combined with those of Pyron et. al. (2011) and sources cited within each, it is clear that failure to divide *Oligodon* as currently recognized is inconsistent.

As a result, the division of the Kukri snakes into several genera is inevitable.

Rather than unnecessarily delay the process, I herein name and diagnose all obvious genera within the Kukri snake group according to the Zoological Code (Ride et. al. 1999). This is done using available names and when none are available, the genera are named herein.

Due to the deep divergence between the Kukri Snakes (as shown by Pyron et. al. 2011) and long recognized by others (e.g. Green 2010), these snakes and all genera containing them are all placed within a newly named tribe Oligodonini tribe nov..

In terms of genus name assignment, *Oligodon* is obviously available for one group of species and so is used.

The three genera proposed by Cope all have different type species. However all fall within a single species group as defined in the literature as the so-called "*cyclurus* group". Therefore they effectively become synonymous for one another with *Trileptis* Cope, 1886 taking date priority over the others.

For the unnamed genera, the following ten names are allocated: *Smythkukri* gen. nov., *Hoserkukriae* gen. nov., *Oxykukrius* gen. nov., *Cottonkukri* gen. nov., *Hugheskukri* gen. nov., *Daviekukri* gen. nov., *Ninkukri* gen. nov., *Moseselfakharikukri* gen. nov., *Dannyelfakharikukri* gen. nov. and *Funkikukri* gen. nov..

Four subgenera are also created, namely *Sammykukriae* gen. nov., *Crottykukrius* subgen. nov., *Geddykukrius* subgen. nov. and *Harrigankukriae* subgen. nov..

In terms of defining the genus groups, the publications of Marc Green (including Green 2010, Green et. al. 2010) have proved useful in terms of distilling the current knowledge of the genus into a manageable format.

It is not my desire to rehash the detail of those studies herein as both of Green's publications are freely available on the internet.

Diagnoses below have been confined to the essential elements of each new genus group and concentrate on characters found to be reliable for differentiating the groups, including hemipene morphology and scalation, the former alone being effective in diagnosing most if not all newly named genera. Less reliable and consistent characters, including color patterns are sometimes omitted from the diagnoses.

Important literature relevant to the taxonomic conclusions within this paper includes numerous papers dealing with the taxonomy of these snakes, their habits and the like. These include the following: Abercromby (1910, 1911), Acharji and Ray (1936), Acala (1986), Anderson (1971a, 1971b), Andersson (1899), Angel (1920, 1927, 1929), Angel and Bourret (1933), Annandale (1905, 1912), Ataev et. al. (1991), Barbour (1908, 1909, 1912), Bartlett (1895), Batchelor (1958), Bauer (2003), Baumann (1913), Beddome (1862, 1863, 1877), Berthold (1859), Bethancourt-Ferreira (1897), Bhatnagar (1959), Blanford (1879a, 1879b, 1881), Bleeker (1857, 1858, 1860a, 1860b, 1860c), Blyth (1854), Bocourt (1866), Boettger (1883, 1885, 1886a, 1886b, 1886c, 1887, 1888, 1890, 1892, 1894, 1895, 1898), Boie (1827), Boulenger (1883, 1885, 1888, 1890a, 1890b, 1892, 1893a, 1893b, 1994, 1900, 1903, 1905, 1907, 1912, 1913, 1914, 1918, 1920), Bourret (1927, 1934a, 1934b, 1934c, 1934d, 1935a, 1935b, 1935c, 1935d, 1936, 1937a, 1937b, 1939a, 1939b, 1941, 1942, 1943), Brongersma (1929, 1933), Brown and Alcala (1970), Burbrink and Lawson (2007), Campden-Main (1969, 1970, 1984), Cantor (1839, 1847), Captain et. al. (2004), Chan-Ard et. al. (1999), Chang and Fang (1931), Chang and Li (1947), Chasen and Smedley (1927), Chatigny (2000), Cheke (1973), Chernov (1935), Cochran (1930), Cohn (1905), Coleman et. al. (1993), Constable (1949), Cope (1860, 1886, 1893, 1895a, 1895b), Cox (1991), Cox et. al. (1998), Dang and Nhue (1995), Darevsky (1970), Das (1995, 1996, 1999), Das and Palden (2000), Daudin (1803), David and Vogel (1996), David et. al. (2004, 2008a, 2008b), De Elera (1895), de Lange and De Rooij (1910), de Queiroz and Lawson (1994), de Queiroz and Rodríguez-Robles (2006), De Rooij (1915, 1917), De Silva (1969, 1980), Deraniyagala (1936, 1955), Despax (1912), Deuve (1961, 1962, 1963a, 1963b, 1963c, 1970), Ding and Zheng (1974), Dotsenko (1984), Dowling (1974), Dowling and Duellman (1978), Dowling and Jenner (1988, 1989), Dowling et. al. (1996), Dring et. al. (1989), Duméril et. al. (1854), Edeling (1864a, 1864b, 1870), Eernisse and Kluge (1993), Erixon et. al. (2003), Evans (1904, 1905), Fan (1931), Felsenstien (1985), Ferguson (1895), Ferner (2001), Fischer (1885a, 1885b, 1886), Fitzinger (1826), Flower (1896, 1899), Frank and Ramus (1995), Fraser (1937), Gardner and Mendelson III (2003), Gaulke (1993, 1994, 1999, 2001), Gayen (1999), Girard (1857, 1858), Golf (1980), Gong and He (2008), Gong et. al. (2007), Grandison (1978), Gray (1834, 1853), Green (2010), Griffin (1909, 1911), Grismer et. al. (2008), Grossmann (1992), Günther (1858, 1861a, 1861b, 1862, 1864, 1865, 1868, 1872a, 1872b, 1873, 1875, 1879, 1888), Gyldenstolpe (1916), Haas (1950), Hagen (1890), Haile (1958), Hall and Holloway (1958), He and Yang (1979), Hendrickson (1996), Hoesel (1959), Holtzinger-Tenever (1919), Hoser (1995), Hu and Zhao (1987), Hu et. al. (1973, 1980), Huang and Jin (1987), Huang et. al. (1978), Hubrecht (1879, 1887), in den Bosch (1985), Jan (1862, 1863a, 1963b), Jan and Sordelli (1881), Jerdon (1853), Jiang et. al. (1983, 2006), Karns

et. al. (2000), Kelly (2003), Khan (1982), Kiran (1981, 1982), Klauber (1935), Kluge (1997), Kopstein (1926, 1927, 1935), Kou and Wu (1993), Kramer (1997), Kraus and Brown (1998), Kreutz (1993), Lampe (1902), Lawson et. al. (2005), Lazell et. al. (1999), Leong and Grismer (2004), Leong and Lim (2003), Leviton (1953, 1960, 1963a, 1963b), Li (1985, 1989), Lidth de Jeude (1890a, 1890b, 1890c, 1922), Lim and Tat-Mong (1989), Linnaeus (1754, 1758), Liu et. al. (2000), Lönnberg and Rendahl (1925), Lopez and Maxson (1996), Mahendra (1984), Makeev et. al. (1983), Maki (1931), Manthey and Grossmann (1997), Maslin (1950), Mathew (1995), Mell (1922, 1929a, 1929b), Mertens (1929a, 1929b, 1930, 1959, 1969), Minton and Anderson (1963), Mocquard (1890, 1904, 1907), Mori et. al. (1992), Morice (1875), Motley and Dillwin (1855), Müller (1878, 1882, 1883, 1885, 1887, 1897), Murthy (1995), Murthy et. al. (1993), Nikolsky (1903), Oshima (1910), Ota and Lin (1994), Patel and Reddy (1995), Pauwels et. al. (2002, 2003), Pearless (1910), Pellegrin (1910), Peters (1861, 1862, 1874), Peters and Doria (1878), Pope (1929, 1935), Prater 91924), Pyron et. al. (2011), Reed and Marx (1959), Rendahl (1937), Ride et. al. (1999), Robinson and Kloss (1920, 1923), Rodríguez-Robles and de Jesús-Escobar (1999), Romer (1961), Roux (1914, 1919), Russell (1796, 1810), Ruthven (1921), Saint Girons (1972a, 1972b), Sanyal et. al. (1993), Sarasin (1910), Sauvage (1876, 1877), Schammakov et. al. (1993), Schenkel (1901), Schlegel (1837, 1839), Schmidt (1927a, 1927b), Schneider (1801), Schulz (1988), Schulz et. al. (2000), Sclater (1891), Sharma (1982), Shaw (1802), Shelford (1901), Shi and Zheng (1985), Siddall and Kluge (1997), Sison et. al. (1985), Slevin and Leviton (1956), Slowinski and Lawson (2002), Slowinski et. al. (2001), Smith (1993), Smith (1914, 1915, 1916, 1917, 1920a, 1920b, 1927, 1928, 1930, 1940, 1943), Smith and Kloss (1915), Stanley (1914), Starkov (1988), Steindachner (1867, 1891, 1913), Stejneger (1898, 1907, 1922), Stoliczka (1873), Stuart and Emmett (2006), Stuart et. al. (2006), Stuebing (1991, 1994), Stuebing and Inger (1999), Swinhoe (1863), Sworder (1922), Taylor (1917, 1918, 1922, 1925, 1950, 1965), Taylor and Elbel (1958), Teynie and David (2007), Teynie et. al. (2004), Theobald (1868), Thompson (1913), Tian and Jiang (1986), Tillack (2008), Tillack and Günther (2009), Tillack et. al. (2008), Tirant (1885), Toriba (1987, 1989, 1994), Trinco and Smith (1971), Tweedie (1953), Utiger et. al. (2002, 2005), Van Denburgh (1909), Venning (1910, 1911), Vidal et. al. (2000), Vijayakumar and David (2006), Volz (1904), Voris (1977), Vyas (1998), Wagner (1975), Wall (1899, 1903, 1905a, 1905b, 1908a, 1908b, 1908c, 1908d, 1909a, 1909b, 1910a, 1910b, 1910c, 1910d, 1910e, 1911a, 1911b, 1913a, 1913b, 1914a, 1914b, 1914c, 1919, 1921a, 1921b, 1921c, 1922, 1923a, 1923b, 1924a, 1924b, 1925a, 1925b, 1926), Wall and Evans (1900, 1901a, 1901b), Wallach and Bauer (1996), Wang and Wang (1956), Wang and Cheng (1947), Ware et. al. (2008), Welch (1988), Werner (1893, 1896, 1900, 1903, 1905, 1909, 1913, 1924, 1925, 1929), Westermann (1942), Whitaker (1982), Wiley (1980), Willey (1906), Williams (1985), Wu et. al. (1979, 1985), Wüster and Cox (1992), Yang (1993), Yang et. al. (1980), Yuan (1983), Zaher (1999), Zaher et. al. (2009), Zhang et. al. (1984), Zhao and Adler (1993), Zhao and Jiang (1981), Zhao et. al. (1986, 1998), Zug et. al. (1998).

TRIBE OLIGODONINI TRIBE NOV.

(Terminal taxon: *Oligodon bitorquatus* Boie, 1827)

Diagnosis: Maxillary teeth 6-16, the posterior very enlarged and compressed and diagnostic for these snakes; palatine teeth, well developed or vestigial; head short, not distinct from neck; round pupil. Rostral large and when viewed from above, protruding. Cylindrical body, paired subcaudals. Usually 1 preocular.

First pair of infralabials usually in contact behind the mental. Anterior chin shields usually

longer then posterior. Another conspicuous character of this tribe is a rather blunt head terminating in a large rostral shield. Dorsal scale rows at the neck and 2 head lengths behind the head are usually equal to those at midbody, especially in smaller species, but there are many cases of an increase or reduction after the occipit and neck. There is potential for confusion in some species in which there is a scale row reduction near mid-body. Tillack and Günther (2009) have pointed out that measuring mid-body in the snake by total length as opposed to the middle ventral count location can make a difference to final numbers. The mid-ventral location should be used to determine mid-body position. These snakes are found in south and east Asia including island chains. This definition is in effect the former diagnosis for the genus *Oligodon* that has now been divided.

Content: All genera listed below (and in the abstract of this paper).

GENUS *OLIGODON* FITZINGER, 1826

Type species: *Oligodon bitorquatus* Boie, 1827.

Diagnosis: Separated from the genera defined below by the following suite of characteristics: Dominant dorsal colour purple to blackish. Head markings black, with an ocular bar, thick, confluent temporal bars and thin collar shaped chevron. Between the temporal bars and chevron there is a brighter yellow collar. Sometimes the area between the ocular and temporal bars is brighter. Body with yellow and red dots, usually also with a vertebral series of larger spots. Ventral colour red with black quadrangular spots. Nasal divided. Two internasals. Loreal usually present. Two postoculars. Temporals 1+2 or 2+2. Seven supralabials, third and fourth in contact with eye. Seven infralabials. Dorsal scales in 17 rows at midbody. Ventrals 130-166. Anal undivided. Subcaudals 30-46.

Six to 8 maxillary teeth. Hemipenis is not forked, with two small papillae. Proximal third with a few small spines. Distal two thirds with transverse folds.

Distribution: Known only definitively from Java and Sumbawa, but may be on nearby islands such as Sumatra, where old records exist, but are in dispute.

Content of genus *Oligodon* Fitzinger 1826

Oligodon bitorquatus Boie, 1827.

GENUS *TRILEPTIS* COPE, 1886

Type species: *Oligodon brevicauda* Günther, 1862.

Diagnosis: Known in the literature as the *Oligodon cyclurus* group, this genus is separated from others within the tribe Oligodonini by (1) long and deeply forked hemipenes, reaching 15th-28th subcaudal, thin, smooth and not spinose throughout; (2) 19-19-15 (rarely 13) dorsal scale rows; (3) reductions between 19 and 17 rows occurring between ventrals 79-107; (4) a very short tail; (5) 9-11 maxillary teeth, the last two or three strongly enlarged; (6) anal plate single; (6) head scalation complete, including a presubocular; (7) 8 (rarely 7) supralabials; (9) usually 2 anterior temporals; and (10) a typically blotched dorsal pattern, with large blotches in most specimens, or sometimes merely a reticulated pattern with very faint blotches.

Distribution: India, Nepal, Thailand, China, Taiwan and countries between these.

Content of Genus *Trileptis* Cope, 1886.

Trileptis brevicauda (Günther, 1862) (Type species).

Trileptis chinensis (Günther, 1888).

Trileptis cyclurus (Cantor, 1839).

Trileptis ocellatus (Morice, 1875).

Trileptis formosanus (Günther, 1872).

Trileptis kheriensis (Acharji and Ray, 1936).

Trileptis jintakunei (Pauwels, Wallach, David and Chanhome, 2002).

Trileptis lacroixi (Angel and Bourret, 1933).

Trileptis fasciolatus (Günther, 1864).

Trileptis juglandifer (Wall, 1909).

Trileptis saintgironsi (David, Vogel and Pauwels, 2008).

Trileptis macrurus (Angel, 1927).

GENUS *SMYTHKUKRI* GEN. NOV.

Type species: *Simotes taeniatus* Günther, 1861

Diagnosis: Separated from all other species in the tribe Oligodonini by hemipenal morphology.

Hemipenis is deeply forked; large papillae; no spines; calyculate proximal to the fork. The only exception to this configuration within this genus is the taxon *Smythkukri annamensis* Leviton, 1953, which has a hemipenis which is deeply forked; thin papillae present, extending half the length of the fork and no spines. This species is placed within the subgenus *Geddykukrius* subgen. nov..

13 dorsal mid body rows for the subgenus *Geddykukrius* subgen. nov. and higher counts for the rest of the genus *Smythkukri* gen. nov..

Distribution: Vietnam, Cambodia, Thailand

Content of *Smythkukri* gen. nov.

Smythkukri taeniatus (Günther, 1861) (Type species).

Smythkukri barroni (Smith, 1916).

Smythkukri mouhoti (Boulenger, 1914).

Smythkukri pseudotaeniatus (David, Vogel and Van Rooijen, 2008).

Smythkukri deuvei (David, Vogel and Van Rooijen, 2008).

Smythkukri moricei (David, Vogel and Van Rooijen, 2008).

Smythkukri annamensis (Leviton, 1953).

SUBGENUS *GEDDYKUKRIUS* SUBGEN. NOV.

Type species: *Oligodon annamensis* Leviton, 1953

Diagnosis: Separated from all other species within the genus *Smythkukri* gen. nov. by the following suite of characters: Dominant dorsal colour brown, scales often darker edged and with fine dark flecks. Head markings are black-edged white blotches. Instead of ocular and temporal bars, there are whitish marks in front and behind the eye, meeting just above the eye, but not confluent across the top with those from the other side. Thin whitish chevron marks extend from the neck to the parietals, but may or may not be confluent with a spot there. Body with

approximately 10, more or less distinct, black-edged white crossbars. A white spot on the tip of the tail. Ventral colour white with black quadrangular spots, some confluent across the ventrals. Nasal undivided or partially divided. Two internasals. No loreal. One postocular. Temporals 1+2. Six supralabials, third and fourth in contact with eye. Six infralabials. 13 dorsal mid-body rows, 159-170 ventrals, laterally angulate. Anal single. Subcaudals 30-44. Eight maxillary teeth. The hemipenis is deeply forked with thin papillae present, extending half the length of the fork and no spines.

Distribution: Known only from two specimens, from Blao and Haut Donai in Vietnam.

Etymology: Named in honour of Andrew Geddy, formerly of Cheltenham, Victoria, Australia now of Cairns, Queensland, for his contributions to captive breeding of Australian snakes. He was physically driven out of Victoria by Glenn Sharp, Ron Waters and others at the Victorian Department of Sustainability and Environment (DSE), because Sharp took a dislike to Geddy and decided to “destroy” him with all the hatred he could muster.

After a few too many dawn raids on his house, where his wife and young child suffered the trauma of being terrorized by police at gunpoint and raids by DSE fauna officers intent on destroying an excellent captive breeding program, even though Geddy had committed no crimes, Geddy fled to Queensland, taking his expertise with him.

Content of subgenus *Geddykukrius* subgen. nov.

Smythkukri (*Geddykukrius*) *annamensis* Leviton, 1953

GENUS *COTTONKUKRI* GEN. NOV.

Type species: *Simotes taeniatus* Günther, 1861.

Diagnosis: Separated from all other snakes in the tribe Oligodonini by the following suite of characters: coloration may be a dorsal pattern of stripes, crossbars or even a configuration of both, or dark white-edged spots on either side of the vertebral line; sometimes head markings or a bar across the eyes. 6-9 maxillary teeth; hemipenis is two fifths forked at the tip. No papillae. Usually spinose from the base to the fork, spines decreasing in size distally. The tip sometimes has four longitudinal folds.

Distribution: Turkmenistan, Iran, Burma, Nepal, Pakistan, Afghanistan, Sri Lanka, Bangladesh, Bhutan, Thailand.

Content of genus *Cottonkukri* gen. nov.

Cottonkukri taeniolatus (Jerdon, 1853)(Type species).

Cottonkukri sublineatus (Duméril, Bibron and Duméril, 1854).

Cottonkukri dorsalis (Gray and Hardwicke, 1835).

Etymology: In recognition of the excellent work on reptiles and reptile education spanning 8 years by Tom Cotton of Ringwood, Melbourne, Victoria, in his roles with Snakebusters, Australia’s best reptiles displays.

In recognition of his excellent work, Tom has had to endure an armed raid by police and DSE officers, and second attack inside a factory in Bayswater, Victoria where the hateful and corrupt DSE wildlife officer Glenn Sharp illegally entered a hazardous chemical site, committed unlawful assault and nearly caused an industrial accident, for which he has escaped criminal sanction due to his “untouchable” position as a government employed wildlife officer in Victoria.

While Sharp has continued his totally unlawful harassment of Snakebusters and all associated with the wildlife education enterprise, himself and his subordinates at the DSE have “green-lighted” (unlawfully allowed) friends of his to systematically breach wildlife laws, and in turn endanger both people and wildlife.

The actions of Sharp and associates at DSE in the period 2011-2012 have already been directly associated with at least one avoidable death from snakebite, for which no one has been punished or sanctioned in any way.

SUBGENUS *SAMMYKUKRIAE* SUBGEN. NOV.

Type species: *Elaps dorsalis* Gray and Hardwicke, 1835.

Diagnosis: As for the nominate genus, but separated from the other species by the following suite of characters: Nasal undivided. Two internasals. Loreal present. One postocular, very rarely 2 on one side. Temporals 1+2. Seven supralabials, third and fourth in contact with eye. Seven infralabials. Dorsal scales in 15 rows at midbody. Ventrals 160-188. Anal divided. Caudals 27-51. Six to seven maxillary teeth. The hemipenis is about one third forked. No papillae. A few large basal spines. Distally with oblique flounces.

Dominant dorsal colour brown, darker laterally, some specimens dark brown. Head markings very indistinct or absent, with hints of an ocular bar, and chevron, confluent on the frontal. Body with a light vertebral stripe, edged with black or black dots. Another fine, dark lateral line on scale rows 2 and 3. Ventral colour white with equal proportion black quadrangular spots many confluent across the ventrals. Tail crimson to orange with a bar at the base and another one or two at the tip.

Distribution: India (Assam), Bhutan, Bangladesh, Myanmar.

Etymology: Named in honour of Sammy Watson for valuable assistance’s in reptile education with Snakebusters, Australia’s best reptiles shows.

Content of *Sammykukriae* subgen. nov.

Cottonkukri (*Sammykukriae*) *dorsalis* (Gray and Hardwicke, 1835)

GENUS *FUNKIKUKRI* GEN. NOV.

Type species: *Elaps octolineatus* Schneider, 1801

Diagnosis: *Funkikukri* gen. nov. is separated from all other species in the tribe Oligodonini by different hemipenal characteristics. It is not forked, with or without two large papillae,

there are no spines and the distal third often has two folds, proximally calyculate.

Nasal divided, two internasals, loreal present, two postoculars, temporals usually 2+2, lower anterior usually not in contact with oculars. Six, rarely 5 or 7 supralabials, third and fourth in contact with eye, 7 or 8 infralabials, ventrals 150-200, slightly laterally angulate, 17 dorsal mid-body rows, anal undivided, subaudals 42-63, 9-10 maxillary teeth.

Distribution: Indonesia and immediately adjacent islands.

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 *Australasian Journal of Herpetology* issue 12 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 sworn 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 Felcity 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 *Australasian Journal of Herpetology*, Issue 12, 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.

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 found she had totally misrepresented one or more statements by another judge to twist their meaning to be different to that intended in order to convict Morgan when he shouldn't have been.

Morgan had been a lawyer acting on behalf of people bashed in their own home by corrupt Victorian Police, the case detailed in Hoser (1999).

Of note in terms of Dr Funk, is that he was forced to wait for the best part of a week in the courthouse foyer in Melbourne, Australia for the best part of a week before he was made to give "evidence". When in the witness box in the court room, the corrupt judge Pamela Jenkins was rude and abusive to Dr. Funk and treated him with hatred and contempt.

In spite of this incredibly harsh treatment, Dr. Funk never complained about his mistreatment and time wasting once!

The genus name is also a play on words as some of these snakes have "funky" patterns!

As an endnote, on 8 June 2012, the corrupt Jenkins judgements were reversed by two judges at the Victorian Supreme Court of Appeal (Nettle and Buchan) who found that Jenkins had asserted findings of fact in her judgement that were not available to her on the basis of the evidence in front of her in her hearing earlier in 2012.

The judges also found that she had lied and misquoted material in her judgement and made numerous false statements in terms of the Hoser venomoid snakes.

The Supreme Court of Appeal judges confirmed that Jenkins and the DSE had no factual basis to assert that Snakebusters reptile displays were unsafe in any way and pointed out the fact that Snakebusters have a perfect safety record, as opposed to that of competitors, including Melbourne Zoo and the DSE, who have had numerous serious venomous snake bites and even death from snakebite.

Content of genus *Funkikukri* gen. nov.

Funkikukri octolineatus (Schneider, 1801) (Type species).

Funkikukri forbesi (Boulenger, 1883).

Funkikukri meyerinkii (Steindachner, 1891).

Funkikukri unicolor (Kopstein, 1926).

Funkikukri woodmasoni (Sclater, 1891).

Funkikukri trilineatus (Duméril, Bibron and Duméril, 1854).

GENUS *HOSERKUKRIAE* GEN. NOV.

Type species: *Oligodon modestum* Günther, 1864

Diagnosis: Separated from all other species within the tribe Oligodonini by hemipenal morphology. In this genus the hemipenis is not forked, there are no papillae, no spines and the distal third usually has narrow longitudinal folds, proximal two thirds with transverse folds.

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Nasal usually divided. Two internasals. Usually no loreal. Usually one postocular, Temporals vary but usually 1+1/2/3. Usually six supralabials, usually third only in contact with eye; six or 7 infralabials, 15 dorsal midbody rows, 158-176 ventrals, single anal, 27-44 subcaudals. Usually there are about eight maxillary teeth.

Distribution: Philippines and Indonesia.

Etymology: Named in honor of my long suffering wife, Shireen Hoser, including for her many services to herpetology globally.

Content of genus *Hoserkukriae* gen. nov.

Hoserkukriae modestum (Günther, 1864) (Type species).

Hoserkukriae ancorus (Girard, 1858).

Hoserkukriae waandersi (Bleeker, 1860).

Hoserkukriae vertebralis (Günther, 1865).

Hoserkukriae notospilus (Günther, 1873).

Hoserkukriae everetti (Boulenger, 1893).

GENUS *OXYKUKRIUS* GEN. NOV.

Type species: *Coluber arnensis* Shaw, 1802.

Diagnosis: Separated from all other snakes in the tribe Oligodonini by hemipenal morphology.

In all species it is not forked, no papillae and generally spinose, especially in the proximal third. Distally there may be transverse or longitudinal folds, with or without tiny spines.

Subgenus *Crottykukrius* subgen. nov. has longitudinal folds distally, (as opposed to none or transverse in the nominate subgenus).

Colouration, may be of various forms with either crossbands or spots and with or without head markings. Within species markings vary geographically. Ventrally lightish with dark markings, spots or similar.

Scalation is usually within the range of nasal either divided, single or semi-divided, loreal may or may not be present, two internasals, two postoculars, temporals 1+2, seven, rarely 6 (very rarely 8), supralabials, third and fourth in contact with eye, usually seven infralabials. 17 dorsal mid-body rows 138-165 ventrals, divided anal and 27-41 subcaudals.

Distribution: India, Sri Lanka, Nepal, Pakistan.

Etymology: Named in honor of my Great Dane dog Oxyuranus (called “Oxy” for short) who for eight years protected the Snakebusters reptiles safe from numerous attempted thefts by DSE (wildlife) officers acting outside their legal jurisdiction and inexperienced rival demonstrators seeking to undermine our position as the best reptile shows in Australia.

PS *Oxyuranus* is a scientific name for a well-known genus of Australian elapid snake.

Content of Genus *Oxykukrius* gen. nov.

Oxykukrius arnensis (Shaw, 1802)(Type species).

Oxykukrius venustus (Jerdon, 1853).

Oxykukrius calamarius (Linnaeus, 1758).

Oxykukrius travancoricus (Beddome, 1877).

Oxykukrius affinis (Günther, 1862).

SUBGENUS *CROTTYKUKRIUS* SUBGEN. NOV.

Type species: *Oligodon affinis* Günther, 1862

Diagnosis: Separated from others in the genus *Oxykukrius* gen. nov. by hemipenal morphology. In this subgenus it is not forked, with no papillae. Distally it has longitudinal folds and flounces and very small spines; proximally spinose.

Other diagnostic features include, nasal divided, two internasals. Loreal may or may not be present, posterior nasal sometimes in contact with preocular. Two postoculars. Temporals 1+2. Seven supralabials, third and fourth in contact with eye. Seven infralabials.17 dorsal mid-body rows, 129-145, ventrals, divided anal and 23-37 subcaudals.

Dominant dorsal colour is brown. Head markings black, with an ocular bar, temporal bars and small chevron all present, but confluent on the frontal and parietals. Body with indistinct darker reticulations and narrow (5-7 rows broad), often broken and indistinct, crossbars. Crossbars often with lighter edging. Ventral colour white with black quadrangular spots, many confluent across ventrals.

Distribution: India (Western Ghats south of the Goa Gap).

Etymology: Named in honor of my Great Dane Rottweiler cross, named *Crotalus* (called “Crotty” for short) who guarded my property for nearly 13 years, through the entire 1990’s, enabling herpetological research and publications to take place, including various books.

PS *Crotalus* is the scientific name for a well-known genus of American Pitviper.

Content of subgenus *Crottykukrius* subgen. nov.

Oxykukrius (*Crottykukrius*) *affinis* (Günther, 1862) (Type species).

GENUS *DAVIEKUKRI* GEN. NOV.

Type species: *Simotes cinereus* (Günther, 1864)

Diagnosis: Separated from all other species in the tribe Oligodonini by hemipenal morphology.

The hemipenis in this genus is not forked. There are two large papillae of unequal length. No spines. Distally, with longitudinal folds merging into a proximally calyculate area. The only exception to this is for the subgenus *Harrigankukriae* subgen. nov. which has a slightly different hemipenis. In this subgenus it is not forked and has a large spongy papillae extending half the length of the organ. No spines. The proximal half of the organ is calyculate.

Snakes is the genus *Daviekukri* gen. nov. are usually brownish in dorsal color, may or may not have markings, either on the head or in the form of crossbars in various configurations, number, etc. Ventrals are usually light, either with or without markings, spotting or similar.

Daviekukri gen. nov. is diagnosed by the following suite of scale characters, nasal may be either divided or undivided, two or four internasals, loreal present, two (occasionally one) or four preoculars, the second or higher sometimes a subocular, two or four postoculars, rarely 1. Temporals 1+2 or 2+2, seven or eight supralabials, third and fourth or fourth and fifth in contact with eye, eight, rarely 7 or 9 infralabials, 17-21 dorsal mid-body rows, 150-200 ventrals, laterally angulate. Single anal, 26-57 subcaudals. 9-13 (rarely 8) maxillary teeth.

Distribution: China, India, Peninsula Malaysia, the Philippines (species *maculatus* only) and everywhere in between.

Etymology: Named in honor of Neil Davie of Lara, Victoria, Australia for numerous services to herpetology in Australia, including at times publicly exposing the endemic corruption and dishonesty within the Victorian wildlife department (DSE) and associated bureaucracy.

Content of genus *Daviekukri* gen. nov.

Daviekukri cinereus (Günther, 1864) (Type species).

Daviekukri albocinctus (Cantor, 1839).

Daviekukri inornatus (Boulenger, 1914).

Daviekukri joynsoni (Smith, 1917).

Daviekukri maculatus (Taylor, 1918).

Daviekukri splendidus (Günther, 1875).

SUBGENUS *HARRIGANKUKRIAE* SUBGEN. NOV.

Type species: *Holarchus maculatus* Taylor, 1918

Diagnosis: For the subgenus the hemipenis is not forked and has large spongy papillae extending half the length of the organ. No spines. The proximal half of the organ is calyculate.

No other snakes in the tribe Oligodonini have a hemipenis exactly like this. For other species in *Daviekukri* gen. nov. the hemipenis is not forked. There are two large papillae of unequal length. No spines. Distally, with longitudinal folds merging into a proximally calyculate area.

Further features diagnostic for the subgenus are that the dominant dorsal colour is pale lavender. Head markings are dark, with a broad ocular bar, temporal bars and chevron. Chevron, temporal and ocular bars may all be separate or confluent on the frontal. Body with 20-24 white-edged, dark crossbars, 6-8 scales wide in the middle narrowing to 1-3 scales laterally. Alternate lighter crossbands 3-6 scales wide. Ventral colour yellow with black quadrangular spots on the edges of alternating scales. Nasal entire or occasionally partially divided. Two internasals, loreal

present or absent, two, sometimes 1 or 3 preoculars, two postoculars, temporals 1+2, 2+3, 1+3

or 2+2, seven supralabials, fourth only in contact with eye, seven infralabials. 17 dorsal mid-body rows, 156-164 ventrals, single anal and 52-55 subcaudals. Usually nine maxillary teeth.

Distribution: Philippines.

Etymology: Named in honor of Liz Harrigan of Narre Warren South, Victoria, Australia, who has made various contributions to animal welfare of reptiles in Victoria.

Content of subgenus *Harrigankukriae* subgen. nov.

Daviekukri (*Harrigankukriae*) *maculatus* (Taylor, 1918).

GENUS *HUGHESKUKRI* GEN. NOV.

Type species: *Xenodon purpurascens* Schlegel, 1837

(Known in most contemporary texts as *Oligodon purpurascens*).

Diagnosis: Separated from all other Oligodonini by hemipenal morphology.

This genus has a hemipenis that is not forked, has large papillae and no spines.
This genus is obviously closely related to *Daviekukri* gen. nov. But hemipenal and other differences warrant this group being placed in a separate genus.

Hugheskukri gen. nov. is also diagnosed by the following suite of characters; nasal divided, two internasals (sometimes fused to the prefrontals), loreal present, one or 2 preoculars, 1 or 2 suboculars. two or 3 postoculars, temporals variable including 1+1, 1+2, 2+3 or 2+2, usually six, seven or eight supralabials, third to fifth in contact with eye (sometimes as few as one in contact), sometimes the seventh excluded from lip, sometimes fourth divided into a second subocular, nine infralabials, 15-21 dorsal midbody rows, 150-210 ventrals that are laterally angulate, divided anal and 37-60 subcaudals. Nine to 10 maxillary teeth. There are nine palatine teeth with an anterior edentulous space 1-2 teeth in size.

Colouration is variable but typically the dominant dorsal colour is purple to brown. Head markings are often dark, with an ocular bar, temporal bars (often faded) and chevron. The body commonly has approximately 10-18 wavy crossbars, sometimes very faded or absent. The crossbars are usually quite thick, either light-edged dark or thinner dark-edged light. Most individuals have about five faint, dark reticulations between the bands. Other specimens have oval or elongated spots. Ventral colour is yellowish or pinkish with black quadrangular spots covering half or all of alternating ventrals.

Distribution: Philippines and Indonesia (mainly), Singapore, Malaysia, Thailand, Vietnam, Laos, Cambodia.

Etymology: In recognition of Geelong, Australia herpetologist Steve Hughes, in particular his magnificent photography skills.

Content of genus *Hugheskukri* gen. nov.

Hugheskukri purpurascens (Schlegel, 1837) (Type species).

Hugheskukri signatus (Günther, 1864).

Hugheskukri perkinsi (Taylor, 1925).

Hugheskukri booliati (Leong and Grismer, 2004).

Hugheskukri annulifer (Boulenger, 1893).

Hugheskukri pulcherrimus (Werner, 1909).

Hugheskukri praefrontalis (Werner, 1913).

Hugheskukri petronellae (Roux, 1917).

GENUS *NINKUKRI* GEN. NOV.

Type species: *Simotes cruentatus* Günther, 1868.

Diagnosis: This genus is separated from all others in tribe Oligodonini by hemipenal morphology. In *Ninkukri* gen. nov. the hemipenis is not forked, with two large papillae, the proximal two thirds are spinose, the spines increasing in size basally.

Diagnostic scalation for the genus is nasal divided, two internasals, loreal present most of the time but is occasionally absent, one or two preoculars, two postoculars, temporals usually 1+2, seven to eight supralabials, third fourth or fifth may make contact with the eye, seven to eight infralabials, 15-17 dorsal mid-body rows, 144-179 ventrals laterally angulate, divided anal and 25-40 subcaudals. 14-16 maxillary teeth.

Colouration varies but is usually grey-brown dorsally. Head markings are dark in the young, often lost in the adults. There is usually an ocular bar (or spot), temporal bars and chevron. The temporal bars may or may not be confluent on the frontal. Body has numerous darkened scales edges forming reticulations. There's commonly a pale vertebral line bordered by thicker dark lines and a dark lateral line. There may be from 1-4 lines running along the body. Ventral colour is yellowish with black quadrangular spots (most concentrated posteriorly), tail crimson with or without spots at the base tip or elsewhere. Ventral colour is light and has black quadrangular spots.

Distribution: Burma, India, Thailand, Indonesia (Sumatra area only), China, Nepal and presumably other countries situated between these, including Cambodia and Laos.

Etymology: Named in honor of Dara Nin, of Ringwood, Victoria, Australia for his magnificent work over many years assisting Australian herpetology in his roles with Snakebusters, Australia's best reptiles displays, educational school shows and the like and his other activities promoting reptile science and conservation elsewhere. Besides his magnificent work with reptiles, Dara is one of the finest humans I have ever met.

Content of genus *Ninkukri* gen. nov.

Ninkukri cruentatus (Günther, 1868).

Ninkukri planiceps (Boulenger, 1888).

Ninkukri theobaldi (Günther, 1868).

Ninkukri torquatus (Boulenger, 1888).

Ninkukri wagneri (David and Vogel, 2012).

Ninkukri erythrogaster (Boulenger, 1907).

Ninkukri hamptoni (Boulenger, 1900).

Ninkukri melanozonatus (Wall, 1922).

GENUS *MOSESELFAKHARIKUKRI* GEN. NOV.

Type species: *Calamaria catenata* Blyth, 1854

Diagnosis: Separated from all other species within the tibe Oligodonini by the following suite of characters; hemipenis is not forked; no papillae; distally, with spine edged longitudinal folds and a proximally spinose area; nasal undivided; no internasals, no loreal, temporals 1+2, six supralabials, third and fourth in contact with the eye, six infralabials, 13 dorsal mid-body scale rows, 165-212 ventrals, divided anal and 29-43 subcaudals. Seven maxillary teeth.

The colour varies but is usually a purplish-grey to brown dorsally. Head markings are dark on a lighter background, with an ocular bar, thick temporal bars and chevron. There's usually a spot on the frontal which may or may not be connected to the chevron and the ocular bar. At the back, the chevron is confluent with the stripes. Body is usually with two dark lateral lines and a lighter vertebral stripe bordered. Ventrally colour varies but commonly has black quadrangular spots on edges of alternating ventrals.

Distribution: India, Cambodia, Burma, Laos, Vietnam, China and Taiwan.

Etymology: Named in honor of one of three brothers, Moses, Danny and Ackram El-Fahkri of Northcote, Melbourne, Victoria, Australia, in this case Moses only, for numerous services to the Victorian Taxi Industry and for extremely brave efforts in fighting

corruption within the Victorian Taxi Directorate (VTD) and predecessor Vicroads in the 1980's and 1990's including against corrupt VTD lawyers Terry O'Keefe, David Robby and John Connell, and their army of corrupt and dishonest "enforcement officers", better described as violent thugs, who broke every conceivable rule, including George Olsen, Roger Bowman, John Brentnall, John Perry, Len Hodgens, Gordon Alliston, Geoffrey Goodson, Derry Ashton, Andrew Pingo and Arnold Howard (see Hoser 1995 for details).

Content of *Moseselfakharikukri* gen. nov.

Moseselfakharikukri catenatus (Blyth, 1854) (Type species).

Moseselfakharikukri ningshaanensis (Yuan, 1983).

Moseselfakharikukri mcdougalli (Wall, 1905).

Moseselfakharikukri eberhardti (Pellegrin, 1910).

Moseselfakharikukri melaneus (Wall, 1909).

Moseselfakharikukri lungshenensis (Zheng and Hung, 1978).

Moseselfakharikukri ornatus (Van Denburgh, 1909).

Moseselfakharikukri erythrorhachis (Wall, 1910).

Moseselfakharikukri nikhili (Whitaker and Dattatri, 1982).

GENUS *DANNYELFAKHARIKUKRI* GEN. NOV.

Type species: *Oligodon multizonatus* Zhao and Jiang, 1981

Diagnosis: Separated from all other genera in the tribe Oligodonini by the following suite of characters; the hemipenis is not forked, has no papilla and few spines; nasal divided, two internasals, loreal very long and touching the eye, one preocular placed high may be present or absent, two postoculars, temporals 2+3, sometimes only 1 anterior or 2 posterior temporals on one side, eight supralabials, third, fourth and fifth in contact with eye, sometimes fourth and fifth fused on one side, eight infralabials, sometimes 7 on one side, 17 dorsal mid-body rows, 190-195 ventrals, laterally angulate, divided anal and 68-75 subcaudals.

Dorsally, the main colour is a dull orange. Head markings are black in juveniles, fading in adults, consisting of 3 irregular, more or less confluent patches around the eye, frontal and parietals. On the neck there is a somewhat chevron shaped dark transverse blotch. The body has 54-47 black transverse stripes 1-3 scales wide, almost crossbar anteriorally, posteriorly increasingly broken. On the tail there are 14-19 black crossbars. The ventral colour is whitish with black quadrangular spots at the edges, alternating 2 ventrals spotted, 1-3 not spotted.

Distribution: China (west Sichuan).

Etymology: Named in honor of one of three brothers, Moses, Danny and Ackram El-Fahkri of Northcote, Melbourne, Victoria, Australia, in this case Danny, for numerous services to the Victorian Taxi Industry and for extremely brave efforts in fighting corruption within the Victorian Taxi Directorate (VTD) and predecessor Vicroads in the 1980's and 1990's including against corrupt VTD lawyers Terry O'Keefe, David Robby and John Connell, and their army of corrupt and dishonest "enforcement officers", better described as violent thugs, who broke every conceivable rule, including George Olsen, Roger Bowman, John Brentnall, John Perry, Len Hodgens, Gordon Alliston, Geoffrey Goodson, Derry Ashton, Andrew Pingo and Arnold Howard (see Hoser 1995 for details).

Content of *Dannyelfakharikukri* gen. nov.

Dannyelfakharikukri multizonatus (Zhao and Jiang, 1981).

FIRST REVISER NOTE:

In the event that any subsequent author seeks to revise the taxonomy within and merge any genera, subgenera, species or subspecies, then the order of priority of conservation should be in this order: *Hoserkukriae* gen. nov., *Oxykukrius* gen. nov.. *Funkikukri* gen. nov., *Smythkukri* gen. nov., *Cottonkukri* gen. nov., *Daviekukri* gen. nov., *Ninkukri* gen. nov., *Hugheskukri* gen. nov., *Moseselfakharikukri* gen. nov., *Dannyelfakharikukri* gen. nov., *Crottykukrius* gen. nov., *Sammykukriae* gen. nov., *Geddykukrius* subgen. nov. and *Harrigankukriae* subgen. nov..

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TRIBE OLIGODONINI TRIBE NOV.
LIST OF GENERA AND SPECIES

GENUS *COTTONKUKRI* GEN. NOV.
Cottonkukri taeniolatus (Jerdon, 1853)(Type species).
Cottonkukri sublineatus (Duméril, Bibron and Duméril, 1854).
Cottonkukri (*Sammykukriae*) *dorsalis* (Gray and Hardwicke, 1835).

GENUS *DANNYELFAKHARIKUKRI* GEN. NOV.
Dannyelfakharikukri multizonatus (Zhao and Jiang, 1981).

GENUS *DAVIEKUKRI* GEN. NOV.
Daviekukri cinereus (Günther, 1864) (Type species).
Daviekukri albocinctus (Cantor, 1839).
Daviekukri inornatus (Boulenger, 1914).
Daviekukri joynsoni (Smith, 1917).
Daviekukri splendidus (Günther, 1875).
Daviekukri (*Harrigankukriae*) *maculatus* (Taylor, 1918).

GENUS *FUNKIKUKRI* GEN. NOV.
Funkikukri octolineatus (Schneider, 1801) (Type species).
Funkikukri forbesi (Boulenger, 1883).
Funkikukri meyerinkii (Steindachner, 1891).
Funkikukri unicolor (Kopstein, 1926).
Funkikukri woodmasoni (Sclater, 1891).
Funkikukri trilineatus (Duméril, Bibron and Duméril, 1854).

GENUS *HOSERKUKRIAE* GEN. NOV.
Hoserkukriae modestum (Günther, 1864) (Type species).
Hoserkukriae ancorus (Girard, 1858).
Hoserkukriae waandersi (Bleeker, 1860).
Hoserkukriae vertebralis (Günther, 1865).
Hoserkukriae notospilus (Günther, 1873).
Hoserkukriae everetti (Boulenger, 1893).

GENUS *HUGHESKUKRI* GEN. NOV.
Hugheskukri purpurascens (Schlegel, 1837) (Type species).
Hugheskukri signatus (Günther, 1864).
Hugheskukri perkinsi (Taylor, 1925).
Hugheskukri booliati (Leong and Grismer, 2004).
Hugheskukri annulifer (Boulenger, 1893).
Hugheskukri pulcherrimus (Werner, 1909).
Hugheskukri praefrontalis (Werner, 1913).
Hugheskukri petronellae (Roux, 1917).

GENUS *MOSESELFAKHARIKUKRI* GEN. NOV.
Moseselfakharikukri catenatus (Blyth, 1854) (Type species).
Moseselfakharikukri ningshaanensis (Yuan, 1983).
Moseselfakharikukri mcdougalli (Wall, 1905).
Moseselfakharikukri eberhardti (Pellegrin, 1910).
Moseselfakharikukri melaneus (Wall, 1909).
Moseselfakharikukri lungshenensis (Zheng and Hung, 1978).
Moseselfakharikukri ornatus (Van Denburgh, 1909).
Moseselfakharikukri erythrorhachis (Wall, 1910).
Moseselfakharikukri nikhili (Whitaker and Dattatri, 1982).

GENUS *NINKUKRI* GEN. NOV.
Ninkukri cruentatus (Günther, 1868) (Type species).
Ninkukri planiceps (Boulenger, 1888).
Ninkukri theobaldi (Günther, 1868).
Ninkukri torquatus (Boulenger, 1888).
Ninkukri wagneri (David and Vogel, 2012).
Ninkukri erythrogaster (Boulenger, 1907).
Ninkukri hamptoni (Boulenger, 1900).
Ninkukri melanozonatus (Wall, 1922).

GENUS *OLIGODON* FITZINGER, 1826
Oligodon bitorquatus Boie, 1827 (Type species).

GENUS *OXYKUKRIUS* GEN. NOV.
Oxykukrius arnensis (Shaw, 1802)(Type species).
Oxykukrius venustus (Jerdon, 1853).
Oxykukrius calamarius (Linnaeus, 1758).
Oxykukrius travancoricus (Beddome, 1877).
Oxykukrius (*Crottykukrius*) *affinis* (Günther, 1862).

GENUS *SMYTHKUKRI* GEN. NOV.
Smythkukri taeniatus (Günther, 1861) (Type species).
Smythkukri barroni (Smith, 1916).
Smythkukri mouhoti (Boulenger, 1914).
Smythkukri pseudotaeniatus (David, Vogel and Van Rooijen, 2008).
Smythkukri deuvei (David, Vogel and Van Rooijen, 2008).
Smythkukri moricei (David, Vogel and Van Rooijen, 2008).
Smythkukri (*Geddykukrius*) *annamensis* (Leviton, 1953).

GENUS *TRILEPTIS* COPE, 1886
Trileptis brevicauda (Günther, 1862)(Type species).
Trileptis chinensis (Günther, 1888).
Trileptis cyclurus (Cantor, 1839).
Trileptis ocellatus (Morice, 1875).
Trileptis formosanus (Günther, 1872).
Trileptis kheriensis (Acharji and Ray, 1936).
Trileptis jintakunei (Pauwels, Wallach, David and Chanhome, 2002).
Trileptis lacroixi (Angel and Bourret, 1933).
Trileptis fasciolatus (Günther, 1864).
Trileptis juglandifer (Wall, 1909).
Trileptis saintgironsi (David, Vogel and Pauwels, 2008).
Trileptis macrurus (Angel, 1927).

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A review of Natricine genera *Tropidonophis* Jan, 1863 and *Amphiesma* Duméril, Bibron and Duméril, 1854 (Serpentes:Colubroidae:Natricinae).

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ABSTRACT

The taxonomy of the Natricine genera *Tropidonophis* Jan, 1863 and *Amphiesma* Duméril, Bibron and Duméril, 1854 is reassessed on the basis of all available information.

As a result the genus *Tropidonophis* as known is divided into two and there are a number of taxonomic acts made according to the Zoological Code.

The two Philippine species are placed within a newly named genus *Oxynatrix* gen. nov.. It is in turn divided into subgenera to accommodate each taxon.

The remainder of *Tropidonophis* is divided into four subgenera, including the nominate one retaining most species, *Stypohynchus* Peters, 1863 for *Tropidonophis truncatus* (Peters, 1863) with four similar species and two monotypic subgenera for the species *Tropidonophis doriae* (Boulenger, 1897) and *Tropidonophis elongatus* (Jan, 1865).

Tropidonophis elongatus (Jan, 1865), is divided into three species, and one of the newly named species is in turn divided into two subspecies.

The three New Guinea species *Tropidonophis multiscutellatus* (Brongersma, 1948), *Tropidonophis novaeguineae* (Lidth De Jude, 1911) and *Tropidonophis picturatus* (Schlegel, 1837) are each divided into two subspecies.

Amphiesma is reviewed and found to be paraphyletic. Available names are found for some species groups, but five groups lacking an available name are formally assigned to newly named genera and a single species to a newly named subgenus. These are *Greernatrix* gen. nov., *Wellsnatrix* gen. nov., *Wellingtonnatrix* gen. nov., *Elliottnatrix* gen. nov., *Asianatrix* gen. nov. and *Sundanatrix* subgen. nov. respectively.

Keywords: Taxonomic revision; new genera; new subgenera; new species; new subspecies; *Tropidonophis; Amphiesma*; *Oxynatrix*; *Kirnerea*; *Desburkeus*; *Desburkei*; *Alanbrygelus*; *alanbrygeli*; *smythi*; *sammywatsonae*; *cottoni*; *trioanoi*; *pillotti*; *Greernatrix*; *Wellsnatrix*; *Wellingtonnatrix*; *Elliottnatrix*; *Asianatrix*; *Sundanatrix*.

INTRODUCTION (*TROPIDONOPHIS*)

The genus *Tropidonophis* Jan, 1863 was for many years synonymised with *Amphiesma* Duméril, Bibron and Duméril, 1854. However as a result of monographs by Malnate in 1960 and 1962 and another with Underwood in 1988 formally defining both genera, most publishing herpetologists have adopted their classification without question.

Due in large part to the comprehensive detail in which the authors investigated these snakes and then published their results, the morphologically conservative water snakes from the Australasian region, genus *Tropidonophis* have since attracted little taxonomic interest.

While there had been several attempts to erect new genera for snakes within both genera in the 1800's, (generally rejected), no

new generic names have been proposed for species groups within each genus in recent years.

Notwithstanding this, recent phylogenetic studies by Pyron et. al. (2011) and Guo et. al. (2012) have shown the various morphologically conservative snakes in the Natricine genera to have deep rooted phylogenetic divisions.

Characters thought to be of little importance, have been shown to indicate major historical divergences between species.

As a result of a revisiting of the molecular and morphological data, several Natracine genera have been further divided, including: *Regina* and *Nerodia* (Hoser 2012b), *Natrix* (Hoser 2012c) and *Xenenochrophis* (Hoser 2012d) as well as other snake genera in the same region (e.g. Hoser 2012e).

I should note herein that claims circulated via SPAM e-mail by a little-known morbidly obese academic by the name of Hinrich Kaiser (Kaiser 2012) on 5 June 2012 alleging that the preceding papers made taxonomic judgments without evidence are false.

The same applies to all other claims adverse to myself within that publication. Most claims were systematically disproven by Hoser (2012) so it is scandalous that discredited allegations are being rehashed by an alleged academic.

In the context of snake species groups straddling the boundaries of the Asian and Australian regions, studies have consistently highlighted the ancient divisions between morphologically similar reptiles that have sometimes crossed the divide.

Rawlings et. al. (2008) confirmed that in pythons at least, minor morphological differences can conceal major differences in terms of common ancestry between species.

At a local level, DNA evidence provided by Harvey et. al. (2000), Rawlings and Donnellan (2003) and Schleip (2008) showed quite clearly that phenotypically similar species from either side of the New Guinea cordillera have been unable to breach the barrier in recent geological times and therefore evolved as separate species units.

In the case of Rawlings and Donnellan (2003), they were even unable to phenotypically separate what their molecular evidence confirmed were two well-separated species of Green Python (Genus *Chondropython*).

All three studies followed from Hoser (1998) which relying solely on morphological evidence divided species of Death Adder in New Guinea (*Acanthophis*) broadly in line with major geographical barriers, with species divisions in the same geographical regions.

In terms of island New Guinea, similar splits were demonstrated by McDowell in 1975 and 1984 in terms of various snake species as then defined, some of which have since been divided at the species level (Hoser 2012e).

Continuing the process of reassessing snake species within the New Guinea region, the most recent classification of the genus *Tropidonophis* Jan, 1863 has been revisited.

Effectively unchanged since 1988, the only taxonomic change for the *Tropidonophis* species group since 1988 has been the description of the morphologically divergent New Guinea species *T. dolasii* by Kraus and Allison in 2004.
While Malnate and Underwood (1988) accurately identified differences between their identified taxa (including the description of new species and subspecies), they chose not to take any actions in relation to several species (or species groups) that occurred across broad geographical areas and over known biological barriers.

This was in spite of their ability to document substantive differences between what are known to be morphologically conservative snakes.

Revisiting their data and the limited amount of new material published since, it is clear that the authors overlooked what were clearly well-identified species and/or subspecies.

In terms of the various groups of species within the genus *Tropidonophis* as they defined it, the authors failed to formally group them.

The two Philippines species are widely divergent of the others in the genus *Tropidonophis* with Malnate and Underwood even discussing the relative merits of whether or not to include them in the genus.

Revisiting their data, I have formed the view that these two species should not be in the genus *Tropidonophis* at all.

Because there is no available name for the species group, a new genus *Oxynatrix* gen. nov. is named and defined according to the Zoological Code (Ride et. al. 1999).

The two allopatric species within the Philippines are themselves sufficiently divergent to be placed in subgenera, which are formally named and defined, the second subgenus being *Kirnerea* subgen. nov., the nominate subgenus being effectively defined by default.

In terms of the remainder of the genus *Tropidonophis*, there seems little doubt that when molecular studies are done, deep divisions will be found between species groups warranting the erection of new genera, as I am sure will also occur for the Asian genus *Amphiesma*, which is why new genera are erected in terms of that group of snakes below.

Taking a conservative position, I herein place the relevant species groups within *Tropidonophis* within subgenera.

The nominate subgenus is the one retaining most species.

The name *Stypohynchus* Peters, 1863 is used to accommodate the type species *Tropidonophis truncatus* (Peters, 1863) with four similar species.

Two monotypic subgenera are erected, namely *Desburkeus* subgen. nov. for the species *Tropidonophis doriae* (Boulenger, 1897), and *Alanbrygelus* subgen. nov. for *Tropidonophis elongatus* (Jan, 1865).

At the species level, the relative differences between taxa as identified are reassessed and divisions are made along similar lines as done for other snake taxa in the New Guinea region.

While the divisions have been made herein solely on the basis of morphological characteristics, it should be noted that they consistently match the positions of major known geographical barriers.

Such barriers include the central cordillera of Island New Guinea, major habitat biomes and oceanic water bodies.

As a result of this reassessment of available information, *Tropidonophis doriae* (Boulenger, 1897), is divided into two subspecies, the second one named *T. doriae desburkei* subsp. nov..

Tropidonophis elongatus (Jan, 1865), is divided into three species, the two new ones named *T. smythi* sp. nov. and *T. brygeli* sp. nov.. In turn *T. brygeli* sp. nov. is divided into two subspecies, being the nominate form, *T. brygeli brygeli* subsp. nov. and *T. brygeli sammywatsonae* subsp. nov.

Three other New Guinea species are also divided on the basis of obvious consistent morphological differences.

In the first instance, I have taken the most conservative position and merely classified the divergent forms as subspecies as opposed to full species.

The species divided herein are; *Tropidonophis multiscutellatus* (Brongersma, 1948) with a new subspecies *T. m. cottoni* subsp. nov., *Tropidonophis novaeguineae* (Lidth De Jude, 1911) with new subspecies *T. n. trioanoi subsp. nov.* and *Tropidonophis picturatus* (Schlegel, 1837) with new subspecies *T. p. pillotti* subsp. nov..

The purpose of this paper is not to redefine the minute detail of all the taxa within the genera *Tropidonophis* and *Amphiesma.* This is more than adequately done by Malnate and Underwood 1988 and Malnate (1960, 1962) and Ota and Iwanaga (1997) and the definitions within those papers are relied upon for the purposes of this.

Furthermore these monographs are freely available on the internet for anyone interested in the detail.

Other important publications in terms of the snakes of the genus *Tropidonophis* include the following; Boettger (1895), Boulenger (1893, 1895, 1896, 1897), Brongersma (1948), Cogger and Lindner (1974), Daan and Hillenius (1966), De Haas (1950), De Jong (1927), de Rooij (1917), Duméril et. al. (1854), Ferner et. al. (2000), Gaulke (2001), Gray (1841), Günther (1877, 1893), Hediger (1934), Hoser (1989), How and Kitchner (1997), Jan (1863, 1865), Jan and Sordelli (1868), Kraus and Allison (2004), Laurent (1948), Lidth de Juede (1897, 1911a, 1911b), Loveridge (1948), Macleay (1877, 1884, 1885), Peters and Doria (1878), Perters and Hartwig (1863), Read (1998), Schlegel (1837), Shea (1990), Smith (1993), Sternfeld (1913), Taylor (1917), Werner (1899, 1900, 1925) and Worrell (1946).

In terms of the descriptions immediately below, the most divergent Philippine taxa are dealt with first, by formal removal from the genus *Tropidonophis*, including definitions of subgenera. This is followed by the diagnoses of subgenera within *Tropidonophis* as well as diagnoses of new taxa within these groups.

Pre-existing named subgenera within *Tropidonophis* are not defined herein, however component species are listed. Those for which subspecies are described are defined in terms of the formal descriptions of the subspecies in order to comply with the Zoological Code (Ride et. al. 1999).

Amphiesma is dealt with below the descriptions for the new taxa within *Tropidonophis* senso lato.

GENUS *OXYNATRIX* GEN. NOV.

Type species: *Natrix dendrophiops negrosensis* Taylor, 1917

Diagnosis: *Oxynatrix* gen. nov. are separated from all *Tropidonophis* by one or other character combinations: Two preocular scales, 19 mid-body scale rows and a pattern of dorsolateral light stripes (species *negrosensis*) or alternatively if without dorsolateral stripes, may have one or two pre-oculars, has 17 mid body scale rows for all or most of the body length and 9-10 infralabials (species *dendrophiops*).

All other *Tropidonophis* (as defined herein) lack these character combinations.

Oxynatrix gen. nov. are further separated from all *Tropidonophis* by a different hemipenal morphology. In this genus (*Oxynatrix* gen. nov.) the hemipenis for both species has small irregular tabs of tissue scattered among the small spines present, which is a trait not seen in *Tropidonophis* (as defined herein).

Detailed descriptions of both species within this genus (which could also be used to define the genus in total if desired, can be found in Malnate and Underwood (1968).

Distribution: A genus confined to the Philippines

Etymology: Named in honor of my eight year old dog, Great Dane, “Oxyuranus” or “Oxy” for short. In that time he protected the Snakebusters reptiles from numerous theft attempts in a way that only a loyal dog could do.

The Snakebusters reptiles gave millions of Victorians an opportunity they would otherwise never have had to learn about reptiles in hands-on education, where they were allowed to hold reptiles and where they got accurate factual information and education, rather than the lies, misinformation and half-truths available from alternative sources who teach people to demonize reptiles and to have an unrealistic fear of even the most innocuous species.

PS *Oxuranus* is a genus name for an Australasian elapid snake.

Content of genus *Oxynatrix* gen. nov.

Oxynatrix negrosensis (Taylor, 1917) (Type species).

Oxynatrix dendrophiops (Günther, 1883).

SUBGENUS *KIRNEREA* GEN. NOV.

Type species: *Tropidonotus dendrophiops* Günther, 1883

Diagnosis: *Kirnerea* is separated from other *Oxynatrix* gen. nov. by the following character combination; It is without dorsolateral stripes, may have one or two pre-oculars, has 17 mid body scale rows for all or most of the body length and 9 or 10 infralabials (species *dendrophiops*). In the subgenus *Oxynatrix* gen. nov. snakes are distinguished by the following character state: Two preocular scales, 19 mid-body scale rows and a pattern of dorsolateral light stripes.

Kirnerea subgen. nov. is monotypic for the type species *dendrophiops.*

All other *Tropidonophis* (as defined herein) lack these character combinations.

Kirnerea subgen. nov. and *Oxynatrix* subgen. nov. as defined herein can also be separated by the following: 1/ the reduction of dorsal scale rows to 17 occurs posterior to the midbody level in *Oxynatrix* subgen. nov. but on the neck in *Kirnerea* subgen. nov. 2/ the sum of the ventrals and the subcaudals is greater in *Oxynatrix* subgen. nov. (average 256.9 in males, 252.7 females, versus 252.8 in males and 239.3 in females in *Kirnerea* subgen. nov.) 3/ the supralabial apex is the penultimate scale of the series on *Oxynatrix* subgen. nov. and the ultimate on *Kirnerea* subgen. nov. 4/ A single preocular is common in *Oxynatrix* subgen. nov. versus usually divided (up to three) in *Kirnerea* subgen. nov. 5/ the number of maxillary teeth is lower in *Oxynatrix* subgen. nov. 6/ there are fewer palatine teeth and more pterygoid teeth in *Oxynatrix* subgen. nov. 7/ The retractor muscle of the hemipenis is longer in *Oxynatrix* subgen. nov.

Detailed descriptions of each species within this genus (which could also be used to define the genus in total) can be found in Malnate and Underwood (1968).

Kirnerea subgen. nov. is monotypic for the type species *dendrophiops.*

Oxynatrix subgen. nov. is monotypic for the species *negrosensis* and is the only species within the genera *Oxynatrix* gen. nov. or *Tropidonophis* to have 19 mid-body scale rows.

Distribution: The Philippines. This subgenus has an allopatric distribution to the subgenus *Oxynatrix* gen. nov.. *Kirnerea* subgen. nov. is found specifically on the southern and central Philippines islands of Leyte, Camiguin, Mindanao, Bohol and Basilan.

Etymology: Named in honor of Christine Kirner, in recent decades in Melbourne, Australia, for various assistances in terms of Snakebusters reptile shows and education, in turn assisting wildlife conservation in Australia.

SUBGENUS *OXYNATRIX* SUBGEN. NOV.

Type species: *Natrix dendrophiops negrosensis* Taylor, 1917

Diagnosis: As for the genus and by exclusion of the subgenus *Kirnerea* as defined above.

Kirnerea is separated from other *Oxynatrix* gen. nov. by the following character combination; It is without dorsolateral stripes, may have one or two pre-oculars, has 17 mid body scale rows for all or most of the body length and 9 or 10 infralabials (species *dendrophiops*). In the subgenus *Oxynatrix* gen. nov. snakes are distinguished by the following character state: Two preocular scales, 19 mid-body scale rows and a pattern of dorsolateral light stripes.

Kirnerea subgen. nov. and *Oxynatrix* subgen. nov. as defined herein can also be separated by the following: 1/ the reduction of dorsal scale rows to 17 occurs posterior to the midbody level in *Oxynatrix* subgen. nov. but on the neck in *Kirnerea* subgen. nov. 2/ the sum of the ventrals and the subcaudals is greater in *Oxynatrix* subgen. nov. (average 256.9 in males, 252.7 females, versus 252.8 in males and 239.3 in females in *Kirnerea* subgen. nov.) 3/ the supralabial apex is the penultimate scale of the series on *Oxynatrix* subgen. nov.and the ultimate on *Kirnerea* subgen. nov. 4/ A single preocular is common in *Oxynatrix* subgen. nov. versus usually divided (up to three) in *Kirnerea* subgen. nov. 5/ the number of maxillary teeth is lower in *Oxynatrix* subgen. nov. 6/ there are fewer palatine teeth and more pterygoid teeth in *Oxynatrix* subgen. nov. 7/ The retractor muscle of the hemipenis is longer in *Oxynatrix* subgen. nov.

Detailed descriptions of each species within this genus (which could also be used to define the genus in total) can be found in Malnate and Underwood (1968).

Kirnerea subgen. nov. is monotypic for the type species *dendrophiops.*

Oxynatrix subgen. nov. is monotypic for the species *negrosensis* and is the only species within the genera *Oxynatrix* gen. nov. or *Tropidonophis* to have 19 mid-body scale rows.

Distribution: Recorded by Malnate and Underwood (1968) as occurring on the central Philippines islands of Mindoro, Masbate, Panay, Sicogen, Pan de Azucar, Negros and Cebu. This subgenus has an allopatric distribution to the subgenus *Kirnerea* subgen. nov.

Etymology: See for the genus above.

GENUS *TROPIDONOPHIS* JAN, 1863

Type species: *Tropidonotus picturatus* Schlegel, 1837

Diagnosis: As currently recognized this is one of a number of Natricine genera from the south-east Asian region. It is a solid toothed non-venomous genus of snakes with strongly keeled scales on the body with 15 dorsal mid-body rows and without reduction on the neck or posterior trunk (the exceptional taxon is removed from this genus herein), most subcaudals have a single pit on the outer posterior edge, starting from the first subcaudal and reducing in size and prominence as one moves posteriorly.

All snakes possess a loreal scale.

According to Malnate (1968), *Tropidonophis* species are assigned when they have at least three of the following characters: 1/ pits in more than 10 per cent of the subcaudals, 2/ A uniform number of scale rows on the trunk, 3/ reduction of the number of caudal scale rows to four occurs posterior to the midnumber of subcaudals and the greatest length of the scale row sets is that of six rows, 4/ a subchoanal process on the palatine bone.

In none of the other Natracine genera is more than one of the four previous characters present in any species, (this obviously now not being the case for the two Philippine species herein removed from the genus and placed in a new genus in this paper).

Like *Amphiesma*, these species are most common near water.

Distribution: Australasia with the centre of distribution in New Guinea. Species occur in south-east Asia.

The two species from the Philippines formerly referred to this genus are herein placed in a new genus (see above).

SUBGENUS *DESBURKEUS* SUBGEN. NOV.

Type species: *Tropidonotus doriae* Boulenger, 1897.

Diagnosis: This subgenus is monotypic for the species *doriae.* Hence this diagnosis applies to this species as well as the subgenus.

Desburkeus subgen. nov. is easily separated from all other *Tropidonophis* by having 17 dorsal mid-body scale rows and just 8 supralabials with the third and fourth in contact with the eye. The other species within the genus *Tropidonophis* that have 17 dorsal mid-body scale rows have 9 supralabials with numbers 5 and 6 in contact with the eye.

Distribution: Known only from most regions on island New Guinea and the Aru Islands, south of New Guinea.

Etymology: *Desburkeus* is named in honor of Des Burke of Melbourne, Victoria, Australia as detailed in the book *The Hoser Files: The Fight Against Entrenched Official Corruption* (Hoser 1995). His crime was being a part-time taxi driver and being in the wrong place at the wrong time.

After giving evidence on behalf of corruption whistleblowers against corrupt Victorian Police and Vicroads officers, his life was totally trashed and destroyed by them.

The disgusting and hateful actions by the Victoria Police and Vicroads officers attacked Burke in ways only limited by their imagination. They harassed his employer to sack him, then they harassed and attacked his wife and young children, costing him his marriage and happy well-off suburban lifestyle.

Finally in their warped and perverse sense of evil and hatred, they took pride in finally making him homeless and destitute on the cold streets of Melbourne.

While many reptiles have been named in honor of despots and dictators and the thugs that work under them, few if any have been named in honor of victims of these crimes who have been left poor and homeless as a result.

***TROPIDONOPHIS* (*DESBURKEUS*) *DORIAE* (BOULENGER, 1897)**

Diagnosis: This species is easily separated from all other *Tropidonophis* by having 17 dorsal mid-body scale rows and just 8 supralabials with the third and fourth in contact with the eye. The other species within the genus *Tropidonophis* that have 17 dorsal mid-body scale rows have 9 supralabials with numbers 5 and 6 in contact with the eye.

This taxon is further diagnosed by the presence of 137-159 ventrals in males and 134-153 ventrals in females, 74-90 subcaudals in males and 71-86 subcaudals in females; 1-3 (usually 2) preoculars, 2-4 (usually 3) postoculars, 1-4 (usually 2) anterior temporals and 2-5 (usually 2) posterior temporals.

Distribution: Known only from most regions on island New Guinea and the Aru Islands, south of island New Guinea.

***TROPIDONOPHIS* (*DESBURKEUS*) *DORIAE DESBURKEI* SUBSP. NOV.**

Holotype: A specimen in the Zoologisches Museum Berlin (ZMB), from Seltutti, Kobroor, the Aru Islands, Indonesia, specimen number NMB 6226.

The Zoologisches Museum Berlin is a government owned facility that allows researchers access to their collection.

Paratype: A specimen from Seltutti, Kobroor, the Aru Islands, Indonesia, specimen number SMF 17192 in the Senckenbergische Museum, Frankfurt, Germany.

The Senckenbergische Museum, Frankfurt, Germany is a government owned facility that allows researchers access to their collection.

Diagnosis: The subspecies *desburkei* subsp. nov. is separated from the nominal form by higher ventral count in both sexes. On Aru Island, this is outside the range reported for the species anywhere else, being 158 in males (versus less than 155 everywhere else) and 152 in females versus up to 152 everywhere else, the higher counts being found in a region encompassing southern Irian Jaya and nearby areas.

Specimens from southern Irian Jaya and the adjacent parts of New Guinea Western Province, while not reporting scale counts as high as for Aru Island specimens are also referred to this subspecies due to their higher average ventral counts and other features in common including color and morphology.

Specimens from south-east New Guinea and north of the main central cordillera are referred to the nominal form.

The subspecies *desburkei* subsp. nov. as defined herein (including both Aru Islands and southwest island New Guinea specimens) is separated from the nominate form by the following suite of characters, a consistently higher subcaudal count (80-90, versus 74-79 in males and 79-86 in females versus 71-84), higher ventral count (152-159 versus 137-151 in males and 79-86 versus 74-79 in females) and higher ventral plus subcaudal counts.

desburkei subsp. nov. is further separated from the nominal form by having weak to distinct dorsal scale pits versus indistinct to absent in the nominal race.

desburkei subsp. nov. has 29-32 maxillary teeth, versus 23-30 in the nominal form.

The nominate form has prominent bands or spots (usually bands) whereas such markings are either absent or very

indistinct in *desburkei* subsp. nov..

The venter in *desburkei* subsp. nov. is sometimes immaculate, which is not seen in the nominate race.

The hemipenes of the nominal race differs in being longer and the enlarged basal spine is followed distally by a group of stout spines rather than a large spine as seen in *desburkei* subsp. nov..

Etymology: As for the subgenus.

SUBGENUS *ALANBRYGELUS* SUBGEN. NOV.

Type species: *Tropidonotus picturatus* var. *elongatus* Jan, 1863.

Known in most contemporary texts as *Tropidonophis elongatus.*

Diagnosis: Separated from all other *Tropidonophis* by the following suite of characters: 15 dorsal mid-body rows, 3 posterior temporals, rarely 2, 4 or more and 155-175 ventrals, 85-108 subcaudals.

Other features include, 8 (rarely7 or 9) postoculars, 10 supralabials, with numbers, 3-5 or 4-6 in contact with the eye, 9-10 (rarely 8) infralabials, 2 (rarely 1, 3, 4 or 5) anterior temporals, 2-3, rarely 1,4 or 5 posterior temporals.

This subgenus refers to all snakes previously recognized as the species taxon *Tropidonophis elongatus.*

As noted by the species name, this group of snakes are a relatively elongate form of *Tropidonophis*, reflected by their consistently higher ventral and subcaudal counts.

Distribution: Ambon, Ceram, Halmahera, Salawatti, Biak, Numfor and north-west Irian Jaya. The species *Tropidonophis elongatus* is herein restricted to Ambon (the type locality) and Ceram.

Etymology: Named in recognition of Alan Brygel as detailed in the books *The Hoser Files: The Fight Against Entrenched Official Corruption* and *Victoria Police Corruption* (1 and 2), (Hoser 1995, 1999a, 1999b).

As a humble taxi driver he worked 6 days a week for several years and after starting with nothing ended up with a large house in North Melbourne, Victoria, Australia and a magnificent property on Beach Road, Black Rock, Melbourne, Australia.

He then made what was in hindsight a serious error in attempting to expose corruption involving then head of the Vicroads Taxi Licencing branch, Terry O'Keefe and police officers who were using their positions to corruptly protect high-level criminal enterprises.

In terms of the relevant politicians and law enforcement officers supposed to be overseeing the corrupt bureaucrats, they too were corrupt. Therefore instead of dealing with the problems identified by Brygel, Brygel himself was bashed, robbed, seriously injured and then charged with threatening to kill three politicians (Spyker, Sandon and Roper).

Brygel was exonerated of the charges, but not because he was innocent.

He was cleared only because he managed to pass the original of a tape recording that cleared himself to me before the Victoria Police raided his house and took what was a copy of the original.

That tape of the alleged conversation where Brygel was alleged to have made the threats to kill showed quite clearly that nothing of the sort had been made.

In spite of being cleared, Brygel spent four months in jail and was subsequently financially destroyed, being forced to liquidate his assets and is now another destitute corruption whistleblower in Australia.

For the record, the corrupt police officer who fabricated the threat to kill charges against Brygel, John Cullen, was never punished. He did leave the police force after he was caught on video stealing a hairdryer from K-mart in East Burwood in Melbourne, for which he was subsequently charged and found guilty in the Melbourne Magistrate's court.

Also for the record, while the Rupert Murdoch owned newspaper the *Herald-Sun* prominently published details of the totally false claims against Brygel to destroy his good reputation in at least four different newspapers, at no stage did the same newspaper (or any other in Melbourne) ever report that Brygel had been falsely accused, falsely charged and totally exonerated.

While there are reptiles named in honor of corrupt and dishonest people and those who can "pay" for the naming rights, there are few if any named in honor of decent well-meaning people whose only crime was to speak out when they saw misconduct involving government officers who are supposed to operate in the trust of the public.

***TROPIDONOPHIS* (*ALANBRYGELUS*) *ELONGATUS* (JAN, 1863)**

Diagnosis: Separated from all other *Tropidonophis* (except for *T. alanbrygeli* sp. nov. and *T. smythi* sp. nov. as described below), by the following suite of characters: 15 dorsal mid-body rows, 3 posterior temporals, rarely 2, 4 or more and 155-175 ventrals, 85-108 subcaudals.

Other features include, 8 (rarely 7 or 9) postoculars, 10 supralabials, with numbers, 3-5 or 4-6 in contact with the eye, 9-10 (rarely 8) infralabials, 2 (rarely 1, 3, 4 or 5) anterior temporals, 2-3, rarely 1, 4 or 5 posterior temporals.

As noted by the species name, this group of snakes are a relatively elongate form of *Tropidonophis*, reflected by their consistently higher ventral and subcaudal counts.

The species *Tropidonophis elongatus* is separated from the taxa described below, namely *T. alanbrygeli* sp. nov. and *T. smythi* sp. nov. by the following suite of characters: stripes on the posterior dorsum, high subcaudal counts within the range given above, well-developed subcaudal pits, long eight and six subcaudal scale rows and a narrow subchoanal process.

Distribution: *Tropidonophis elongatus* is herein restricted to Ambon (the type locality) and Ceram.

Other related taxa (described immediately below) are found on Halmahera, Salawatti, Biak, Numfor and north-west Irian Jaya.

***TROPIDONOPHIS* (*ALANBRYGELUS*) *ALANBRYGELI* SP. NOV.**

Holotype: A specimen in the Naturhistorisches Museum Basel, Switzerland, from the entrance to Argoeni Bay, Irian Jaya, Indonesia, specimen number: NMB 19143.

The Naturhistorisches Museum Basel, Switzerland is a government owned facility that allows researchers access to their collection.

Paratype: A specimen at the Zoologisch Museum, Universiteit van Amsterdam, The Netherlands, from Fak Fak, Irian Jaya, Indonesia, specimen number: ZMA 11431.

The Zoologisch Museum, Universiteit van Amsterdam, The Netherlands is a government owned facility that allows researchers access to their collection.

Diagnosis: Separated from all other *Tropidonophis* except *T. elongatus and T. smythi* sp. nov. by the following suite of characters: 15 dorsal mid-body rows, 3 posterior temporals, rarely 2, 4 or more and 155-175 ventrals, 85-108 subcaudals.

Other features include, 8 (rarely 7 or 9) postoculars, 10 supralabials, with numbers, 3-5 or 4-6 in contact with the eye, 9-10 (rarely 8) infralabials, 2 (rarely 1, 3, 4 or 5) anterior temporals, 2-3, rarely 1,4 or 5 posterior temporals.

Separated from *T. elongatus* by having weakly developed head, caudal and subcaudal scale pits, level of reduction of dorsal scale rows and caudal scale row lengths as well as a tendency for the division of the posterior temporals.

There are a series of dark spots on the posterior body for the nominate form of this species from the north of New Guinea island (Irian Jaya), whereas specimens from Halmahera, described below as *T. smythi* sp. nov. are identifiable by dark dorsal cross-bands running across the rear of the body.

Specimens referable to the New Guinea species include those

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from the nearby islands of Noemfor and Biak, which have a reticulate or plain coloration on the posterior body respectively, but are otherwise essentially similar in most respects to mainland *alanbrygeli* sp. nov..

The Biak form is described as a subspecies below.

T. alanbrygeli sp. nov. is further separated from *T. smythi* sp. nov. by having a narrow subchoanal process, versus a prominent one in *T. smythi* sp. nov..

Distribution: North-west island New Guinea (Irian Jaya, Indonesia) and immediately adjacent islands, including Noemfor and Biak.

Etymology: See for subgenus *Alanbrygelus* gen. nov..

***TROPIDONOPHIS* (*ALANBRYGELUS*) *ALANBRYGELI SAMMYWATSONAE* SUBSP. NOV.**

Holotype: A specimen from the island of Biak, Irian Jaya, Indonesia, lodged at the Leiden Nationaal Natuurhistorische Museum (RMNH), Leiden, The Netherlands, Specimen number: RMNH 18160.

The Leiden Nationaal Natuurhistorische Museum (RMNH), Leiden, The Netherlands is a government owned facility that allows researchers access to their collection.

Diagnosis: As for the nominate form except for having a uniform posterior dorsal pattern as opposed to reticulate or spotted.

Compared to the nominate form, scale counts differ, including 168 ventrals average (both sexes) versus 161 for the nominate form and the reduction to 15 mid-body scale rows is delayed to the equivalent of the twelfth ventral which is further down the body than for all other described taxa within the subgenus *Alanbrygelus* subgen. nov.

Separated from all other *Tropidonophis* except *T. elongatus and T. smythi* sp. nov. by the following suite of characters: 15 dorsal mid-body rows, 3 posterior temporals, rarely 2, 4 or more and 155-175 ventrals, 85-108 subcaudals.

Other features include, 8 (rarely7 or 9) postoculars, 10 supralabials, with numbers, 3-5 or 4-6 in contact with the eye, 9-10 (rarely 8) infralabials, 2 (rarely 1, 3, 4 or 5) anterior temporals, 2-3, rarely 1,4 or 5 posterior temporals.

Separated from *T. elongatus* by having weakly developed head, caudal and subcaudal scale pits, level of reduction of dorsal scale rows and caudal scale row lengths as well as a tendency for the division of the posterior temporals.

Specimens from Halmahera, described below as *T. smythi* sp. nov. are identifiable by dark dorsal cross-bands running across the posterior of the body.

Specimens referable to the New Guinea species (the nominate form) include those from the nearby islands of Noemfor and Biak, which have a reticulate coloration on the posterior body respectively, but are otherwise essentially similar in most respects to mainland *alanbrygeli* sp. nov.

T. alanbrygeli sp. nov. (including this subspecies) is further separated from *T. smythi* sp. nov. by having a narrow subchoanal process, versus a prominent one in *T. smythi* sp. nov..

Distribution: Restricted to Biak Island, Indonesia.

Etymology: Named in honor of Sammy Watson of Croydon/ Bayswater, Victoria, Australia for services to Snakebusters reptile shows and wildlife education to the Victorian public over a two year period.

***TROPIDONOPHIS* (*ALANBRYGELUS*) *SMYTHI* SP. NOV.**

Holotype and paratypes: Three snakes in the Leiden Nationaal Natuurhistorische Museum (RMNH), from the Island of Halmahera, Indonesia, specimen number: RMNH 4800 (3 specimens). The holotype is the female. The paratypes are the males.

The Leiden Nationaal Natuurhistorische Museum (RMNH), Leiden, The Netherlands is a government owned facility that allows researchers access to their collection.

Diagnosis: Separated from all other *Tropidonophis* except *T. elongatus and T. alanbrygeli* sp. nov. by the following suite of characters: 15 dorsal mid-body rows, 3 posterior temporals, rarely 2, 4 or more and 155-175 ventrals, 85-108 subcaudals.

Other features include, 8 (rarely 7 or 9) postoculars, 10 supralabials, with numbers, 3-5 or 4-6 in contact with the eye, 9-10 (rarely 8) infralabials, 2 (rarely 1, 3, 4 or 5) anterior temporals, 2-3, rarely 1,4 or 5 posterior temporals.

Separated from *T. elongatus* by having weakly developed head, caudal and subcaudal scale pits, level of reduction of dorsal scale rows and caudal scale row lengths as well as a tendency for the division of the posterior temporals.

T. smythi sp. nov. are identifiable and separated from all forms of *T. alanbrygeli* sp. nov. by dark dorsal cross-bands running across the posterior of the body.

T. alanbrygeli sp. nov. is further separated from *T. smythi* sp. nov. by having a narrow subchoanal process, versus a prominent one in *T. smythi* sp. nov..

Distribution: Restricted to Halmahera Island, Indonesia.

Etymology: Named in honor of Michael Smyth, who spent 8 years educating many hundreds of thousands of Victorians through working with Snakebusters, Australia's best reptiles displays. He came to us as a young work-experience student and was too good to let go.

Content of subgenus *Alanbrygelus* subgen. nov.

Tropidonophis (*Alanbrygelus*) *elongatus* (Jan, 1863) (Type species).

Tropidonophis (*Alanbrygelus*) *alanbrygeli* sp. nov.

Tropidonophis (*Alanbrygelus*) *smythi* sp. nov.

SUBGENUS *STYPORHYNCHUS* PETERS, 1863

Content of subgenus *Styporchynchus* Peters, 1863.

Tropidonophis (*Styporchynchus*) *truncatus* (Peters, 1863) (Type species).

Tropidonophis (*Styporchynchus*) *dahlii* (Werner, 1899).

Tropidonophis (*Styporchynchus*) *halmahericus* (Boettger, 1895).

Tropidonophis (*Styporchynchus*) *hypomelas* (Günther, 1877) (Type for genus *Macropophis* Günther, herein synonymised with *Styporchynchus*).

SUBGENUS TROPIDONOPHIS JAN, 1863

Type species: *Tropidonotus picturatus* Schlegel, 1837

Diagnosis: As for the genus as diagnosed above and by removal of the subgenera *Alanbrygelus* subgen. nov. and *Desburkeus* subgen. nov. as diagnosed above.

Excluding the species identified above as being within *Styporchynchus*, all other species within the genus *Tropidonotus* are within this subgenus.

Tropidonotus and *Styporchynchus* are similar in most respects and an argument could be mounted to include both within a single subgenus (in which case *Tropidonotus* would take priority).

Both groups *Tropidonotus* and *Styporchynchus* are separated from the above defined new subgenera *Alanbrygelus* subgen. nov. and *Desburkeus* subgen. nov. by the diagnoses within each of these new subgenera.

***TROPIDONOPHIS* (*TROPIDONOPHIS*) *MULTISCUTELLATUS* (BRONGERSMA, 1948)**

Diagnosis: Separated from all other *Tropidonophis* by the following suite of characters:15 dorsal mid-body rows, 136-158 ventrals, 74-103 subcaudals, 2 (rarely 1 or 3) preoculars, 3 (rarely 2 or 4) postoculars, 8 (rarely 7 or 9) supralabials, with numbers 3-5 or 4-6 in contact with the eye, 9 (rarely 8 or 10) infralabials, 2 (rarely 1, 3, or 4) anterior temporals, 2 rarely (1, 3, or 4) posterior temporals.

Distribution: Island New Guinea and adjacent small islands, excluding the savannah regions in the south of the island.

***TROPIDONOPHIS* (*TROPIDONOPHIS*) *MULTISCUTELLATUS COTTONI* SUBSP. NOV.**

Holotype: A specimen from Matiska, Central province, Papua New Guinea in the American Museum of Natural History (AMNH), specimen number, AMNH 59074.

The American Museum of Natural History is a government owned facility that allows researchers access to their collection.

Paratypes: A specimen from Matiska, Fife Bay Milne Bay, Province, Papua New Guinea in the Australian Museum (Sydney), specimen number: R 6513.

The Australian Museum is a government owned facility that allows researchers access to their collection.

Two specimens from Matiska, Central province, Papua New Guinea in the American Museum of Natural History (AMNH), specimen numbers, AMNH 59075-76.

The American Museum of Natural History is a government owned facility that allows researchers access to their collection.

Diagnosis: Separated from the nominate form of the species *Tropidonophis m. multiscutellatus* by the general absence of a nuchal collar which is usually present in the nominate race.

T. m. cottoni subsp. nov. is also separated by the average shorter tails (both sexes) and lower average number of subcaudals as a result. This gives these snakes a lower average ventral plus subcaudal count; average of 234 in *T. m. cottoni* subsp. nov. versus 238 or higher in the nominate form (depending on region).

In the nominate race there is a tendency for there to be up to four postoculars and as a result lose contact between the upper postocular and the temporal. Such a condition is rare in *T. m. cottoni* subsp. nov..

Male *T. m. cottoni* subsp. nov. have well-developed subcaudal pits, a trait not seen in the nominate race.

Distribution: *T. m. cottoni* subsp. nov. is found in the south-east and nearby regions, generally in the zone east of the Sepik and Fly river basins. The nominate subspecies *T. m multiscutellatus* is found in the other parts of island New Guinea, excluding the savannah regions in the south of the island.

Etymology: In recognition of the excellent 8 years of work Tom Cotton has done educating many thousands of people with Snakebusters, Australia's best reptile shows and displays, by teaching people to be nice to reptiles and in particular pointing out the cruel and inhumane treatment of reptiles by so-called snake handlers using metal tongs.

***TROPIDONOPHIS* (*TROPIDONOPHIS*) *NOVAEGUINEAE* (LIDTH DE JUDE, 1911)**

Diagnosis: Separated from all other *Tropidonophis* by the following suite of characters: 15 dorsal mid body rows, 128-143 ventrals, 38-59 subcaudals, 2 (rarely 3-4) preoculars, 8 (rarely 7 or 9) supralabials with numbers 3-5 in contact with the eye, 9 (rarely 8 or 10) infralabials, 2, (rarely 1, 3 or 4) anterior temporal, 3 (rarely2, 4 or 5 posterior temporals).

Distribution: Most parts of island New Guinea.

***TROPIDONOPHIS* (*TROPIDONOPHIS*) *NOVAEGUINEAE TRIOANI* SUBSP. NOV.**

Holotype: A specimen in the Leiden Nationaal Natuurhistorische Museum (RMNH), Leiden, The Netherlands, from Missol Island, Irian Jaya, specimen number, RMNH4810a (female).

The Leiden Nationaal Natuurhistorische Museum (RMNH), Leiden, The Netherlands is a government owned facility that allows researchers access to their collection.

Paratype: A specimen in the Leiden Nationaal Natuurhistorische Museum (RMNH), Leiden, The Netherlands, from Missol Island, Irian Jaya, specimen number, RMNH4810b (female).

Diagnosis: *T. n. trioani* subsp. nov. is separated from *T. n. novaeguineae* by colouration and the fact that females have a lower subcaudal count than seen in the nominate race of *T. n. novaeguineae* (38-41 vs over 43 in the nominate subspecies). Tail length in these specimens is noticeably shorter than in the nominate form (12-15.9% versus 17.2-19.3%).

Development of subcaudal pits is also widely divergent for *T. n. trioani* subsp. nov. as opposed to the nominate form (22-47.4% versus 57.7% or higher).

Temporals are fragmented in *T. n. trioani* subsp. nov., especially the rear ones which have a configuration of 2+6/4+5 or 3+6/3+4.

Colouration in *T. n. trioani* subsp. nov. differs from the nominate subspecies in that there is a dark stripe extending from the nostril to the eye and it continues from the postoculars to the corner of the mouth expanding somewhat onto the posterior gular area then reducing in width and continuing on the first scale row to the level of the fifth ventral. The supralabials are dusted brown to the lip edge. On the underside the lip is heavily dusted with brown, which continues posteriorly in the form of spots to about the same level as the dorsal pattern.

Distribution: *T. n. trioani* subsp. nov. is presently only known from Missol Island, Irian Jaya. The nominate subspecies is thought to occupy the rest of the known range.

***TROPIDONOPHIS* (*TROPIDONOPHIS*) *PICTURATUS* (SCHLEGEL, 1837)**

Diagnosis: Separated from all other *Tropidonophus* by the following suite of characters:15 dorsal mid-body scale rows, 117-140 ventrals, 38-68 subcaudals, 2, (rarely 1 or 3) preoculars, 3 (rarely 4 or 5) postoculars, 8-9 (rarely 7) supralabials with numbers -45 or 4-6 in contact with the eye, 8-9 (rarely 7 or 10) infralabials, 2-3, rarely 1-4 anterior temporals, 2-3, rarely 1-4 posterior temporals.

Distribution: Island New Guinea and nearby offshore islands including Misool, Salwatti and Waigeau.

***TROPIDONOPHIS* (*TROPIDONOPHIS*) *PICTURATUS PILLOTTI* SUBSP. NOV.**

Holotype: A specimen from Haveri, Central Province, Papua New Guinea, specimen number, MCSN 42697b, lodged at the Museo Civico di Storia Natural, Génova, Itália (MCSN).

This is a government owned facility that allows researchers access to their collection.

Paratype: A specimen in the British Museum of Natural History from Morokoa, Central Province, Papua New Guinea, specimen number: BMNH 97.12.10.113. This is a government owned facility that allows researchers access to their collection.

The British Museum of Natural History is a government owned facility that allows researchers access to their collection.

Diagnosis: *T. pillotti* subsp. nov. is separated from the nominate form by the following traits, a relatively shorter tail (20.8-24.5% in males, 17.5-22.9% in females versus 23-27.8% in males, 20.6-26.3% in females), with a correspondingly lower ventral count (117-123 in males, 118-136 females, versus 122-136 in males and 122-140 in females) and ventrals plus subcaudals count (162-183 in males, 160-196 in females versus 179-204 in males and 177-203 in females), as well as a lower subcaudal count (44-60 in males, 38-60 in females versus 52-68 in males, 48-66 in females). The eye is relatively smaller (20% versus 21%), there are fewer maxillary teeth (average 30.3 versus 31.5) and there are usually fewer anterior and posterior temporals.

Distribution: The region east of the Fly and Sepik River basins. The nominate form occupies the rest of the range. Specimens from islands south-west of New Guinea may be of a different subspecies.

Etymology: Named in honor of Christian Pillott of Airlie Beach, Queensland, Australia for his magnificent work in ridding Australia of feral pest species of vegetation, specifically including *Pinus radiata* in the Melbourne suburb of Park Orchards.

Pillott also did a great job of alerting security at the Healesville Timber Festival in 2006, when a "Zoos Victoria" employee Mike Taylor attempted to create a public disturbance at a Snakebusters reptile display.

Taylor was clearly drunk at the time and was ejected from the event after he commenced yelling abuse at unformed Snakebusters staff, threatening to kill them.

On a separate occasion, Camilla Martin, another Zoos Victoria employee was busted trying to steal a snake from a Snakebusters display at Brunswick Shopping Mall.

Mention is made of these and other unlawful attempts by persons within the government-run Zoos Victoria business to attack companies they see as superior competitors to their own cruel and dysfunctional animal displays.

Content of genus *Tropidonophus* Jan, 1863.

Tropidonophis aenigmaticus Malnate and Underwood, 1988.

Tropidonophis (*Brygelus*) *brygeli* sp. nov.

Tropidonophis (*Styporchynchus*) *dahlii* (Werner, 1899).

Tropidonophis dolasii Kraus and Allison, 2004.

Tropidonophis (*Desburkeus*) *doriae* Boulenger, 1897.

Tropidonophis (*Brygelus*) *elongatus* Jan, 1863.

Tropidonophis (*Styporchynchus*) *halmahericus* (Boettger, 1895).

Tropidonophis (*Styporchynchus*) *hypomelas* (Günther, 1877) (Synomyous with *Macropophis* Boulenger, 1893).

Tropidonophis mairii (Gray, 1841) (Synonymous with *Katophis plumbea* Macleay 1877).

Tropidonophis mcdowelli Malnate and Underwood, 1988.

Tropidonophis montanus (Lidth De Jude, 1911).

Tropidonophis multiscutellatus (Brongersma, 1948).

Tropidonophis novaeguineae (Lidth De Jeude, 1911) <http://reptile-database.reptarium.cz/species?genus=Tropidonophis&species=novaeguineae&search_param=%28%28taxon%3D%27Natricinae%27%29%29>.

Tropidonophis parkeri Malnate and Underwood, 1988.

Tropidonophis picturatus (Schlegel, 1837) (Type species).

Tropidonophis punctiventris (Boettger, 1895).

Tropidonophis (*Brygelus*) *smythi* sp. nov.

Tropidonophis statistictus Malnate and Underwood, 1988.

Tropidonophis (*Styporchynchus*) *truncatus* (Peters, 1863).

INTRODUCTION *AMPHIESMA*

The paraphyletic nature of the genus *Amphiesma* Duméril, Bibron and Duméril, 1854 has been recognized by many authors who have either expressed this view directly (e.g. Guo et. al. 2012) or by referring to the various species groups (e.g. Malnate and Underwood 1988).

Reluctance to use the available genus names for given species groups has been due to several factors, not the least being that:

1/ These names were synonymized a long time ago by other authors and;

2/ If a recent author were to break up the genus, there would be no “naming rights” for the major groups and yet the author would get the notoriety among peers for breaking up a familiar genus.

Notwithstanding these ongoing issues, the fact remains that as of 2012 and in the light of a greater than ever raft of data showing the deep phylogenetic splits within the genus *Amphiesma* as presently understood, there remains a need to properly identify these units from a taxonomic viewpoint.

An ongoing problem remains in that the boundaries of many species remains uncertain and others are undescribed, making proper assignment of species to genera somewhat difficult.

Important studies published on snakes in this genus include, Alcala (1986), Boulenger (1887, 1893, 1899), Cox (1991), David and Das (2003), David and Vogel (1996, 2010), David et. al. (1998), David et. al. (2007), De Rooij (1917), Mumpuni (2001), Nguyen et. al. (2009), Ota and Iwanaga (1997), Schenkel (1901), Smith (1943), Stejneger (1907), Stuebing and Inger (1999), Thompson and Thompson (2008), Tweedie (1983), Wall (1925), Zhao and Adler (1993), Ziegler and Quyet (2006).

Within the genus *Amphiesma* as currently defined, there are available names for the following well-defined species groups.

Amphiesma Duméril, Bibron and Duméril, 1854 for the type species, *Coluber stolatus* Linnaeus, 1758 and closest related taxa.

Herpetoreas Günther, 1860 for *Herpetoreas sieboldii* Günther, 1860 and the similar *A. platyceps* (Blyth, 1854).

Paranatrix Mahendra, 1984 designated for *Tropidonotus modestus* Günther 1875 and related (mainly western) species, including the so-called *khasiensis* group as identified by Malnate (1960).

Due to the ongoing disputes in terms of which species within each group are valid and which are not, I shall not publish here a list of recognized species within each of these groups, but instead group them within a listing for *Amphiesma* sensu lato below, merely noting here that some recognized species may be synonymous with others, while others are clearly composite.

Five species groups do not however appear to have genus names for their species even though all five are perhaps the most divergent within *Amphiesma* as currently recognized.

Therefore they are defined and named below according to the Zoological Code (Ride et. al. 1999). A divergent taxon within the Indonesian (Sunda) *Amphiesma* is also placed in a subgenus (presently monotypic) in recognition of its divergence from the main *Amphiesma* stock.

The species groups formally placed in new genera include the following:

- Three divergent species from the Ryukyu Islands (Japan).
- The morphologically divergent taxon *viperinum* from Sumatra.
- Five species with 17 mid-body scale rows (versus the usual 19) found mainly in the Sundas and adjacent south-east Asian mainland.
- The so-called *bitaeniatum* group of species.
- The so-called *craspedogaster* group of species.

The divergent species taxon *flavifrons* is kept within the broader *Amphiesma* sensu lato but is placed within a new monotypic subgenus.

These new taxonomic units are *Greernatrix* gen. nov., *Wellsnatrix* gen. nov., *Wellingtonnatrix* gen. nov., *Elliottnatrix* gen. nov., *Asianatrix* gen. nov. and *Sundanatrix* subgen. nov. respectively.

GENUS *AMPHIESMA* DUMÉRIL, BIBRON AND DUMÉRIL 1854

Type species: *Coluber stolatus* Linnaeus, 1758.

Diagnosis: The diagnosis for the genus here is modified from those published by the sources cited herein. In this paper the diagnosis fits for the genus *Amphiesma* sensu lato and including the named and synonymized genera, *Herpetoreas* Günther, 1860 and *Paranatrix* Mahendra, 1984.

As currently recognized this is one of a number of Natricine genera from the south-east Asian region. It is a solid toothed non-venomous genus of snakes with strongly keeled scales on the body with 19 (less commonly 17) dorsal mid-body rows and generally with reduction on the neck or posterior trunk (in contrast to *Tropidonophis* diagnosed above), (although four species in *Amphiesma* do not have any reduction in scale row number on the neck or posterior trunk), anal usually divided and all subcaudals divided.

According to Malnate (1968), *Tropidonophis* species are assigned when they have at least three of the following characters: 1/ pits in more than 10 per cent of the subcaudals, 2/ a uniform number of scale rows on the trunk, 3/ reduction of the number of caudal scale rows to four occurs posterior to the midnumber of subcaudals and the greatest length of the scale

row sets is that of six rows, 4/ a subchoanal process on the palatine bone.

A list of recognized species within the genus *Amphiesma* as recognized herein is published after the formal description of *Asianatrix* gen. nov..

Snakes within the genus *Amphiesma* are most easily diagnosed by a process of exclusion for the genus *Tropidonophis* above and then comparing with the new diagnoses for the genera described within this paper.

Like *Tropidonophis*, these species are most common near water.

Amphiesma are found throughout most of the warmer parts of Asia from India to Japan and on the mainland in areas marginally north of there.

SUBGENUS *SUNDANATRIX* SUBGEN. NOV.

Type species: *Tropidonotus flavifrons* Boulenger, 1887

Diagnosis: This subgenus is monotypic for the species *flavifrons.*

It is separated from all other *Amphiesma* (including other genera defined within this paper) by the unique combination of having 19 mid-body scale rows and a single anal plate. The only other taxon within *Amphiesma* (including other genera defined within this paper) with a single anal plate is *groundwateri* but it has 17 dorsal mid-body rows.

The species *flavifrons* is also diagnosed by the following characters, 2 anterior temporals, 146-157 ventrals, 87-102 subcaudals, 8-9 supralabials, and a very distinct pattern of dorsolateral spots and crossbars on an olive-grey dorsum and a large distinctive white to yellowish-cream spot covering the snout. The belly has large dark spots. The last maxillary teeth are not greatly enlarged.

Distribution: Known only from the island of Borneo, Indonesia.

Etymology: Named after the region in which the genus occurs.

GENUS *GREERNATRIX* GEN. NOV.

Type species: *Tropidonotus pryeri* Boulenger, 1887

Diagnosis: Of note is that this genus is endemic to the Ryukyu Islands (Japan).

While these snakes are morphologically distinct from all other *Amphiesma*, the two species within this genus are separated from all other species genera within *Amphiesma* (including genera defined below) by their consistently higher ventral count, being 167-188 (both sexes), versus below 166 (both sexes) for all other taxa. Almost all other species within *Amphiesma* (including genera defined below) have a range of 120-150 ventrals (both sexes).

The only species within *Amphiesma* (including genera defined below) coming close to *Greernatrix* gen. nov. in ventral count is the taxon *frenatum* from the distant island of Borneo, also removed from *Amphiesma* herein. That species has a ventral count ranging up to 166 (David and Das 2003), and it should be noted that high-number counts are for males, with the minimum male count for *Greernatrix* gen. nov. being 172 (Malnate 1960).

Other characteristics diagnostic for *Greernatrix* gen. nov. are 94-132 subcaudals, a considerably higher average number than for any other species within *Amphiesma* (including genera defined below), see for example the table in Malnate (1960).

In terms of the above diagnosis, one species taxon is exceptional, namely *arguus* David and Vogel (2010), described within the genus *Amphiesma* (now placed in *Wellingtonnatrix* gen. nov.). It has vental and subcaudal ranges in line with *Greernatrix* gen. nov. but is easily separated from *Greernatrix* gen. nov. by having 17 as opposed to 19 mid body rows.

Distribution also separates the taxa, with *arguus* David and Vogel (2010) endemic to the island of Borneo, Indonesia.

The presence of 10-11 infralabials further separates the taxon from all other *Amphiesma* (including genera defined below), with the exception of the taxon *craspedogaster*, which shares this trait. Most other *Amphiesma* (including genera defined below) have 8-9 infralabials.

Greernatrix is a noticeably slender form by comparison to other *Amphiesma.*

Distribution: Endemic to the Ryukyu Islands (Japan). Found only on the Ishigaki-shima, Miyakojima and Yaeyama groups of the Ryukyu Islands, Japan.

Etymology: Named in honor of Allen E. Greer, formerly of the Australian Museum in recognition of a distinguished herpetological career.

Content of *Greernatrix* gen. nov.

Greernatrix pryeri (Boulenger, 1887) (Type species).

Greernatrix concelarum (Malnate, 1963).

Greernatrix ishigakiense (Malnate and Munstermann, 1960).

GENUS *WELLSNATRIX* GEN. NOV.

Type species: *Xenochrophis viperinus* Schenkel, 1901

(Seen in most contemporary texts as *Amphiesma viperinus*)

Diagnosis: This is a monotypic genus for a highly distinct species taxon that appears to have been placed in *Amphiesma* in recent years almost in recognition that this genus was the closest match for this taxon.

Wellsnatrix viperinus is most easily separated from all *Amphiesma* (including genera defined below) by its ventral count of 100-120, being lower than for the other species, all being over 134.

This relatively stout snake also has a lower average subcaudal count (59) as opposed to an average of about 80-120 for *Amphiesma* (including genera defined below).

Distribution: Known only from the region of the Indragiri River, Riau Province, Sumatra, Indonesia.

Etymology: Named in honor of Richard Wells of Sydney NSW, Australia, now of Lismore, northern NSW in recognition of a distinguished herpetological career.

Content of *Wellsnatrix* gen. nov.

Wellsnatrix viperinus (Schenkel, 1901) (Type species).

GENUS *WELLINGTONNATRIX* GEN. NOV.

Type species: *Amphiesma arquus* David and Vogel, 2010

Diagnosis: A group of species from the Sunda region formerly placed within *Amphiesma.*

They are separated from other *Amphiesma* (including genera defined above and below) by the fact that these species have 17 dorsal mid body rows, as opposed to 19.

They are further differentiated by a relatively high ventral count and relatively elongate bodies.

The species within the so-called *venningi* complex, specifically including *vennigi* and *sauteri* and which also have 17 mid-body rows (the only others within *Amphiesma sensu* lato to do so) are separated from *Wellingtonnatrix* by having strongly keeled dorsal scales in the region of the vent and on the tail and a dark venter and more stout build.

Males in the *venningi* complex have different hemipenal morphology to those in *Wellingtonnatrix* gen. nov., the obvious difference being that in the *venningi* complex the fully everted hemipenis goes beyond subcaudal 9, wheras it does not in *Wellingtonnatrix* gen. nov..

Distribution: *Wellingtonnatrix* are distributed in the islands of the Sundas and the nearby Asian Mainland that forms part of the same biogeographic region

Etymology: Named in honor of Cliff Ross Wellington of NSW, in recognition of a distinguished herpetological career.

Content of *Wellingtonnatrix* gen. nov.

Wellingtonnatrix arquus (David and Vogel, 2010) (Type species).

Wellingtonnatrix atemporale (Bourret, 1934.

Wellingtonnatrix frenata (Dunn, 1923).

Wellingtonnatrix groundwateri (Smith, 1922).

Wellingtonnatrix sarawacense (Günther, 1872).

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GENUS *ELLIOTTNATRIX* GEN. NOV.

Type species: *Natrix bitaeniata* Wall, 1925

Diagnosis: This new genus includes the species group consisting the three taxa, *bitaeniatum, parallelum, octolineatum.* They are separated from all other species within the genus *Amphiesma* (including genera defined above and below) by their unique patterning.

These species are characterized by a distinctly longitudinally striped pattern. They are also morphologically very similar with similar scale counts. All share a grey, greyish-brown, ochre brown or pale brown background, an overall striped pattern with at least a lighter, more or less distinct, black edged dorsolateral stripe, and 19 (unusually 17) mid-body scale rows.

The only *Amphiesma* likely to be confused with these species are the similar looking species *platyceps* and *sieboldi* and they are separated by having no dorsolateral stripe, or at best a row of white dots; a narrow, black or dark brown subocular and postocular streak; posterior maxillary teeth greatly and abruptly enlarged, twice as long as other maxillary teeth; versus, a distinct, broad, pale and continuous dorsolateral stripe from the neck to the end of tail; a conspicuous, wide black or dark brown postocular streak; posterior maxillary teeth distinctly enlarged, but less than twice as long as other maxillary teeth in *Elliottnatrix* gen. nov..

Distribution: Eastern Himalayas and neighbouring areas.

Etymology: Named in recognition of Adam Elliott of Hoppers Crossing, Victoria and his distinguished career in reptile husbandry, publications and the like, viciously destroyed by an illegal armed raid by Glenn Sharp now working as a so-called enforcement officer, who notably fails to enforce the law and instead uses his unfettered powers to stalk, harass and destroy the lives of decent people whom he takes a hatred to.

It should also be noted that in his thuggery Sharp has permanently traumatized and terrorized women and children including Adam's wife, Liz, who had to suffer the indecency of having loaded guns pointed at her and her two young children during one of the many illegal armed raids, Elliott and his family endured.

Content of *Elliottnatrix* gen. nov.

Elliottnatrix bitaeniatum (Wall, 1925) (Type species).

Elliottnatrix parallelum (Boulenger, 1890).

Elliottnatrix octolineatum (Boulenger, 1904).

GENUS *ASIANATRIX* GEN. NOV.

Type species: ***Tropidonotus craspedogaster* Boulenger, 1899**

Diagnosis: This genus is a moderately built group of species within the context of the *Amphiesma* sensu lato, in that there are no extreme forms within this group.

The genus is defined and separated from all other *Amphiesma* (including genera defined above) by the following suite of characters in combination:120-155 ventrals, divided anal, 70-98 all divided subcaudals, 19 mid-body rows, rarely 17, moderately keeled dorsal scales (as opposed to strongly keeled in most remaining *Amphiesma*), tail length (both sexes) averages 30% of body length, versus 27% in *Amphiesma* (species within the genus after species in genera defined herein are removed), 8-9 infralabials, 7-8 supralabials, pattern not consisting of longitudinal stripes.

Invariably specimens within this genus have a pattern of distinct dark and light vertical bars or similar markings on the upper labials, sometimes not reaching the level of the eye and considerably more prominent than any in other *Amphiesma*, which commonly have the same configuration, but noticeably less distinct.

Distribution: East Asia.

Etymology: Named in reflection of where these snakes originate.

Content of *Asianatrix* gen. nov.

Asianatrix craspedogaster (Boulenger, 1899) (Type species).

Asianatrix popei (Schmidt, 1925).

Asianatrix sauteri (Boulenger, 1909).

Asianatrix vibakari (Boie, 1826).

Species remaining within *Amphiesma* (includes genera *Herpetoreas* and *Paranatrix*).

Amphiesma andreae Ziegler and Le Khac Quyet, 2006.

Amphiesma beddomei (Günther, 1864).

Amphiesma boulengeri (Gressitt, 1937).

Amphiesma celebicum (Peters and Doria, 1878).

Amphiesma deschauenseei (Taylor, 1934).

Amphiesma (*Sundanatrix*) *flavifrons* (Boulenger, 1807).

Amphiesma inas (Laidlaw, 1901).

Amphiesma johannis (Boulenger, 1908).

Amphiesma kerinciense David and Das, 2003.

Amphiesma khasiense (Boulenger, 1890).

Amphiesma leucomystax David, Bain, Quang, Truong, Orlov, Vogel, Ngoc, Thanh and Zeigler, 2007.

Amphiesma metusia Inger, Zhao, Shaffer and Wu, 1990.

Amphiesma miyajimae (Maki, 1931).

Amphiesma modestum (Günther, 1875).

Amphiesma monticola (Jerdon, 1853).

Amphiesma nicobariense (Sclater, 1891).

Amphiesma optatum (Hu and Zhao, 1966).

Amphiesma pealii (Sclater, 1891).

Amphiesma petersii (Boulenger, 1893).

Amphiesma platyceps (Blyth, 1854).

Amphiesma sanguineum (Smedley, 1931).

Amphiesma sarasinorum (Boulenger, 1896).

Amphiesma sieboldii (Günther, 1860).

Amphiesma stolatum (Linnaeus, 1758).

Amphiesma venningi (Wall, 1910).

Amphiesma xenura (Wall, 1907)

FIRST REVISER NOTE:

In the event that any subsequent author seeks to revise the taxonomy within and merge any genera, subgenera, species or subspecies, then the order of priority of conservation should be the same order as they appear in this paper.

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A division of the Neotropical genus *Rhadinaea* Cope, 1863 (Serpentes:Colubridae).

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ABSTRACT

The Neotropical genus *Rhadinaea* had an unstable taxonomic history until 1974, when Myers (1974) defined the genus and subdivided it into eight well-defined species groups. Since then, three of these species groups have been moved to their own genera under the available names *Rhadinella* Smith, 1941, *Urotheca* Bibron, 1843 and *Taeniophallus* Cope, 1895, while the rest of the genus *Rhadinaea* as generally known has been neglected by taxonomists.

Relying on more recent molecular work on various species remaining within *Rhadinaea senso lato* and the original data of Myers and others, the remaining five species groups are herein subdivided into individual genera and three new subgenera. The genus groups are *Rhadinaea* for the *vermiculaticeps* group, and four new genera named and defined according to the Zoological Code. These are *Alexteesus* gen. nov. for the *flavilata* group, *Wallisserpens* gen. nov. for the *decorata* group, *Robvalenticus* gen. nov. for the *taeniata* group and *Barrygoldsmithus* gen. nov. for the taxon *calligaster*.

The taxon *pulveriventris* is placed in a subgenus namely *Desmondburkeus* subgen. nov. within *Rhadinaea*. The taxon *laureata* is placed in a subgenus *Dudleyserpens* subgen. nov. within *Alexteesus* gen. nov.. The genus *Wallisserpens* gen. nov. is divided into two species groups with a subgenus *Jockpaullus* subgen. nov. erected to accommodate four taxa.

Keywords: Taxonomic revision; new genera; genus; subgenus; *Alexteesus*; *Wallisserpens*; *Robvalenticus*; *Barrygoldsmithus; Rhadinaea*; *Rhadinella*; *Taeniophallus*; *Urotheca*; *Desmondburkeus*; *Dudleyserpens; Jockpaullus.*

INTRODUCTION

The Neotropical colubrid genus *Rhadinaea* had an unstable taxonomic history until 1974, when Myers (1974) defined the genus and subdivided it into eight well-defined species groups.

This lack of revisitation of this group of snakes is due largely to the excellent and clear manner in which Myers defined the genus, the species groups within and on the basis of the taxonomic judgments that followed from this, presumed by most others to be correct.

Notwithstanding this, since then, three of these species groups have been moved to their own genera under the available names.

These are *Rhadinella* Smith, 1941, currently accommodating 15 species, *Urotheca* Bibron, 1843, currently accommodating 8 species and *Taeniophallus* Cope, 1895, currently accommodating nine species.

As mentioned already, the remainder of the genus, now down to the five defined species groups has remained effectively unchanged since 1974.

Notably and in terms of each of the 8 species groups defined by

Myers and his taxonomic judgments in 1974 he wrote: "It would be possible to make a case for according separate generic status to some of these assemblages, but, considering the present state of colubrid systematics, I think it would only confuse rather than clarify relationships. The *godmani* group, for example, is quite distinctive, but its transfer out of *Rhadinaea* would remove a geographic, and seemingly phylogenetic, nucleus to which the other groups can be related (fig. 51). Without the *godmani* group, in fact, the whole scheme seems to fall apart, with little or no evidence of monophyly to hold the remaining groups together. Removal of any of the other groups would not cause so much of a problem, and it is conceivable that new interpretations or evidence might necessitate reducing (or increasing) the size of the genus."

The significance herein is that by 2011, the centrally important *godmani* group was transferred out of *Rhadinaea* by Myers himself, leaving the remainder of the genus as a group with little good evidence of monophyly.

This 2011 act followed earlier acts partitioning the genus as defined by Myers in 1974.

These included published studies by Cadle (1984a, 1984b, 1984c and 1985) which showed that *brevirostris* group species were immunologically more similar to "South American xenodontines" (i.e., Xenodontinae) than to "Central American xenodontines" (i.e., Dipsadinae). As a result, Myers and Cadle (1994) resurrected Cope's genus *Taeniophallus* for the *brevirostris* species group, which was further revised by Schargel et. al. (2005) and moved into the new Xenodontine tribe Echinantherini by Zaher et al. (2009).

The other group to be removed from *Rhadinaea* was the *lateristriga* group, characterized in part by a distinctive striped color pattern. However, in hemipenes and in the very long, disproportionately thick tail (see Myers 1974, Fig 5), the group was noted to share significant character states with the vividly ringed *Pliocercus*, leading to the statement by Myers that "it might be easier to show an ancestral-descendent relationship [with *Pliocercus*] than to convincingly demonstrate [relationship] with the other species groups of *Rhadinaea"* (Myers, 1974:230). Cadle (1984b: 28) also mentioned this as a case of interest after pointing out that immunological data suggested that "Central American *Rhadinaea* may be paraphyletic."

Hence Myers agreed when Savage and Crother (1989) resurrected *Urotheca* for the *lateristriga* group.

Of note is the continued disagreement in terms of whether or not the snakes in the genus *Pliocercus* should have been merged with *Urotheca*. Solórzano (2004) also agreed that the merging of the genera was likely to have been in error.

Another taxon, namely "*Rhadinaea obtusa*" is the type species for the genus *Psomophis*, erected by Myers and Cadle, 1994 to accommodate that and two other species (mis) placed in other genera, all most likely to be confused with species in the genus *Taeniophallus* (previously the *Rhadinaea brevirostris* group).

The lack of monophyly of the remainder of *Rhadinaea* was confirmed in part by the molecular results of Pyron et. al. (2011) who published results that showed the taxa *fulvicittus* and *flavilata* to be sufficiently divergent to warrant them being placed in their own separate genera if compared to other taxa subdivided between genera.

As a result, of the preceding series of events and the obvious morphological and biological differences between the various defined species groups, it becomes a matter of when, rather than if, these groups should be assigned their own genera.

This is done according to the Zoological Code (Ride et. al. 2009) below.

Key publications of note in terms of *Rhadinaea senso lato* include the following: Allen (1932), Amaral (1930), Auth et. al. (1999), Bailey (1937, 1940), Bauer et. al. (1995), Boulenger (1896), Canseco-Marquez et. al. (2000), Chaney and Liner (1986), Conant and Collins (1991), Cope (1860, 1864, 1871, 1877, 1886), Dixon and Lemos-Espinal (2010), Dugeès (1888), Dunn and Bailey (1939), Enge (1994), Flores-Villela (1993), Garcia and Quijano (1994), García-Vázquez et. al. (2009), Günther (1858, 1868, 1885), Hallermann (1998), Irwin et. al. (1993), Jan (1866), Liner (1994, 1996, 2007), Liner and Chaney (1987), Malnate (1939), McCranie (2011), Myers and Cadle (2003), Nelson (1994), Netting (1936), Nieto-Montes and Mendelson (1997), Pérez-Higareda et. al. (2002), Peters (1863), Peters et. al. (1970), Peterson et. al. (2004), Ramierez-Bautista (1998), Rossman (1965), Sauvage (1884), Savage (2002), Schmidt and Shannon (1947), Smith (1942a, 1942b, 1944), Smith and Langebartel (1949), Taylor (1949, 1951), Vázquez-Díaz (1999, 2005), Villa et. al. (1988), (Walley (1998), Whiteman et. al. (1995) and Zaldivar-Riverón and Pérez-Ramos (2001).

In terms of diagnoses of relevant genera, the following points should be noted. Genera *Rhadinaea* Cope 1863, *Rhadinella* Smith, 1941, *Urotheca* Bibron, 1843 and *Taeniophallus* Cope, 1895, have all been defined by several authors previously and these are relied upon for the purposes of this paper. The best diagnoses for each genus group are probably the most recent detailed ones published. These are: Myers (2011) for *Rhadinella* Smith, 1941; Savage and Crother (1989) and Myers (1974) for *Urotheca*, noting Myers (1974) effectively defined the genus under the title of the *lateristriga* group; and Myers and Cadle (2004), Schargel et al. (2005) and Myers (1974) for *Taeniophallus* Cope, 1895, noting Myers (1974) effectively defined the genus under the title of the *brevirostris* group.

Material provided herein is supplementary to this earlier published material.

The genus *Rhadinaea* Cope, 1863 as defined below would as a matter of course include those genera named for the first time within this paper. The definitions for each would as a matter of course remove those species from *Rhadinaea* Cope, 1863 and should therefore be treated as part of the description of *Rhadinaea* Cope, 1863 within this paper.

GENUS *RHADINAEA* COPE, 1863

Type species: *Taeniophis vermiculaticeps* Cope, 1860

Diagnosis: The genus is defined "senso lato" and including the new genera below as well as *Rhadinella* Smith, 1941, *Urotheca* Bibron, 1843 and *Taeniophallus* Cope, 1895, by the following suite of characters: Largely adapted from Myers (1974), the genus *Rhadinaea* is comprised of small to medium-sized snakes (maximum total lengths from under 300 mm. to about 900 mm., usually 400-600 mm.), of relatively slender proportions, with head slightly distinct from the neck, and with short to long tails (14-48 percent of total length). They are mostly some shade of brown above, some species being nearly unicolor but most having black or dark brown lines or stripes that extend the length of the body, fading or not on the tail. Small to medium-sized, terrestrial colubrids allied to *Taeniophis vermiculaticeps* Cope. Hemipenes symmetrical, distally calyculate, usually capitate, single or slightly bilobate (lobes entirely calyculate and contained in single capitulum), spinose; sulcus spermaticus bifurcate. Posterior vertebral hypapophyses absent. Pupil round. Enlarged rear maxillary teeth present, but rarely grooved. Full complement of colubrid head plates, most bearing minute scale organs (tubercles). Dorsal scales in 15, 17 (usually), 19, or 21 rows, without posterior reduction in most species, rarely with keels or apical pits; anal ridges present or not.

Usually brown with darker lines or stripes extending length of body. Head and neck usually with distinctive markings (e.g., pale temporal and canthal lines, ocelli, nuchal spots or collar, dark stripe through eye, or dark-edged pale stripe from eye to corner of mouth).

Coniophanes, *Conophis*, and *Tachymenis* differ from *Rhadinaea* in having a combination of grooved fangs and posterior scale-row reduction. *Leimadophis*, *Liophis*, *Lygophis* (sensu stricto), and *Umbrivaga* differ absolutely in presence of apical discs and

absence of calyces on hemipenis, and in general tendencies toward different color patterns (e.g., crossbands, anterior blotches and posterior stripes, dark-checkered venters). *Alsophis* and *Saphenophis* differ in having lobes of hemipenis noncapitate or semicapitate, lobes being not entirely calyculate and not confined within single capitulum, and in tendency toward larger body size and different color patterns. *Trimetopon* (sensu strict) differs in tendency toward *Tantilla*-like habitus and smaller size (maximum known total length less than 300 mm. in all *Trimetopon* but only some *Rhadinaea*), tendency toward loss of calyces and elimination of capitation of hemipenis, fewer maxillary teeth (less than 14 in all *Trimetopon* but only four *Rhadinaea*), and in general tendency toward fewer dorsal scale rows and fusion of prefrontals or other head plates. *Amastridium* differs in having a projected supraocular region partly concealing top of eye and in presence of hypapophyses on posterior vertebrae. South American *Tantilla*, sometimes confused with *Rhadinaea*, are readily distinguishable by combination of 15 scale rows, no loreal, and grooved fangs. West Indian Xenodontines (Maglio, 1970) formerly in *Dromicus* differ in various details, especially of the hemipenis (including more deeply forked sulcus, *Alsophis*-like structure of some [see above], apical projections of others).

The species of *Rhadinaea* are terrestrial snakes and are principally diurnal. Some are quite secretive and perhaps even semifossorial, but most are probably active foragers of the forest floor, where they are predators on small amphibians (including eggs) and lizards. All are oviparous.

The genus *senso lato* as defined by Myers 1974 is found in an arc from the Florida panhandle and nearby areas, with a gap in the south-west USA and then more-or-less continuously from Mexico to South America and including most of the northern half of the continent.

In terms of the new diagnosis for the genus *senso stricto* incorporated herein these snakes are separated from the existing genera *Rhadinella* Smith, 1941, *Urotheca* Bibron, 1843 and *Taeniophallus* Cope, 1895, and the five new genera diagnosed below by the following suite of characters: Scutellation is generalized; a subpreocular is present or absent. A broad middorsal dark stripe, or at least the hint of one in some individuals, in many cases encloses a paler vertebral line. The dark stripe diverges on the nape and, in two species (*R. sargenti* and *R. vermiculaticeps*), takes part in formation of a conspicuous, dark-edged, pale reticulum atop the head. There are only three species within this redefined genus, the third being *R. pulveriventris.*

They inhabit wet montane and hill forest from northern Costa Rica to central Panama.

Content of Genus *Rhadinaea* Cope, 1863

Rhadinaea vermiculaticeps Cope, 1860, (Type species), Common name: Vermiculate Graceful Brown Snake.

Rhadinaea pulveriventris Boulenger, 1896, Common name: Common Graceful Brown Snake.

Rhadinaea sargenti Dunn and Bailey, 1939, Common name: Sargent's Graceful Brown Snake.

SUBGENUS *DESMONDBURKEUS* SUBGEN. NOV.

Type species: *Rhadinaea pulveriventris* Boulenger, 1896

Diagnosis: In the two species remaining within the subgenus *Rhadinaea* the hemipenis has virtually straight spines, a basal naked pocket, and only soft papillae (no spinules) on the calyces. In the taxon *pulveriventris* the hemipenis lacks the unusual character of "virtually straight spines" seen in the other two species.

In the species *R. sargenti* and *R. vermiculaticeps* there is a broad mid-dorsal dark stripe, or at least the hint of one in some individuals and in many cases encloses a paler vertebral line. The dark stripe diverges on the nape and in *R. sargenti* and *R. vermiculaticeps* takes part in formation of a conspicuous, dark-edged, pale reticulum atop the head. This is not the case in the *Desmondburkeus* subgen. nov.

In *Desmondburkeus* subgen. nov. a median black streak extends forward a short distance on the neck and expands and bifurcates at the nape. Such a marking is found in no other species of *Rhadinaea* (*sensu-stricto* or *sensu-lato*).

In this subgenus a black stripe on the side of the head extends posteriorly as a diffused or narrow line along the side of the body. There is little or no indication of a vertebral stripe along most of the body, which is nearly uniformly brown. Some individuals have dark-speckled venters. The dorsal scales are in 17-17-17 rows, and there are sometimes weak anal ridges. Ventrals are 119-134 (119-124, males; 124-134, females), and subcaudals are 63-80 (71-80, males; 63-70, females). There are eight supralabials and a variable number of infralabials, usually 10 but ranging from eight to 11. There is one preocular, no subpreocular, two postoculars, and 1+2 temporals (rarely 1+1+2). The body is nearly uniform brown for its length. A short, median black streak extends anteriorly on the neck and widens and bifurcates at the nape, producing on each side a short branch, the lower edge of which may continue as a thin line to the posterodorsal edge of the eye. The black streak on the neck is three rows of scales wide, but the middle (vertebral) row is in some cases brown like most of the body. The black streak fades behind the neck, although on some specimens it re-forms as a dark vertebral line on the end of the body and base of the tail.

A black line across the rostral widens to form a black stripe that extends through the eye and crosses the corner of the mouth. This stripe then slants up to the neck and extends along the side of the body as either a black line on the adjacent edges of rows 4 and 5 or as a diffused line covering row 4 (and occasionally the top of row 3). A conspicuously pale brown or whitish stripe extends from the upper rear edge of the eye to the side of the neck, between the dorsal and lateral black stripes. The top of the head is uniform brown like the ground color of the body. The lateral black stripe edges the tops of the anterior supralabials and crosses the last two; otherwise the supralabials are white, being either immaculate or with a few black dots. Ventral surfaces are whitish, varying from immaculate to being heavily dotted with black; some individuals have slight concentrations of blackish pigment on the tips of the ventrals and subcaudals.

Body is golden brown with a yellowish tinge on lowest two scale rows. Supralabials pinkish white. Underside of head and throat white, turning slightly yellowish on the ventral surfaces posteriorly. Iris deep reddish brown, turning pale reddish tan on the extreme upper part. Tongue is typically reddish brown with black tips. The postocular light stripe, is pale brown, almost whitish.

There are 18+2, rarely 19+2 teeth on a maxilla. The ultimate prediastemal tooth is either anterior or posterior to the front edge of the ectopterygoid process.

The last fang is offset laterad.

Distribution: This subgenus is monotypic for the species *pulveriventris* and restricted to Central Costa Rica, in the Cordillera Central, and in the Cordillera de Talamanca to extreme western Panama. Known elevations are 1372-1600 meters and the habitat, at least in Panama, is lower montane rain forest (Myers 1974).

Etymology: Named in honor of Desmond (Des) Burke of Fairfield, Victoria, Australia and more recently Pascoe Vale, Victoria, for various services to herpetology in Australia and other largely unrecognized work he has done to improve the welfare of animals, as well as his excellent skills in breeding rats.

GENUS *ALEXTEESUS* GEN. NOV.

Type species: *Dromicus flavilatus* Cope, 1871

Diagnosis: *Alexteesus* gen. nov. is defined as containing the two species taxa formerly known as *Rhadinaea flavilata* and *R.*

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laureata.

The new genus *Alexteesus* gen. nov. is defined and separated from all other *Rhadinaea senso lato* (including those diagnosed and defined within this paper) by the following combination of characters: The branches of the sulcus spermaticus are of unequal length and a basal naked pocket is present on the unbilobated hemipenis. There are normally seven supralabials and a subpreocular is usually absent. Body coloration tends toward golden brown, and there has been great reduction in the intensity of dark stripes, which are diffused or even absent. Specimens from some populations of *A. flavilata* resemble *A. laureata* in having the lips intensely peppered with dark pigment, which gives an appearance seen elsewhere only in *Urotheca fulviceps* (identified in the past as part of the *lateristriga* group).

Alexteesus flavilata occurs from coastal regions in the southeastern United States and *A. laureata* from elevations of about 1500-3100 meters in the mountains west and south of the Mexican Plateau. The apparent relationship of these species was recognized by Malnate (1939), Bailey (1940), and Myers (1967) on the basis of features of the color pattern and number of supralabials.

A. laureata is sufficiently differentiated from *A. flavilata* to be further placed within its own nomotypic subgenus which is defined and named below.

Etymology: Named in honour of Alex Tees, who works in Sydney, NSW, Australia, as a lawyer who is unusual among lawyers in that money is not the only thing that motivates his activities. He was worked with a number of corruption whistleblowers on a pro-bono (labor for free) basis solely in the public interest, including on a number of important environmental law cases in Australia, fighting against corruption, tyranny and ecological destruction by public servants within the Australian government.

He played an important role in the “unbanning” of the book *Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia* in 1996 (Hoser 1996). It was only as a result of this book being un-banned and subsequently becoming a best-seller that State Governments across Australia had to lift decades old bans on the rights of private individuals to keep reptiles in captivity as pets.

Without the efforts of Tees and the other lawyers who assisted also on a “pro-bono” basis, notably Clive Evatt and Michael Rollinson, the entire print run of *Smuggled-2* would have been pulped and it would now be illegal for most if not all private citizens in Australia to be able to keep live reptiles in captivity.

SUBGENUS *DUDLEYSERPENS* SUBGEN. NOV.

Type species: *Dromicus laureates* Günther, 1868

Diagnosis: This monotypic subgenus is easily separated from taxon *Alexteesus flavilata* by the dramatically lower ventral scale count and subcaudal count in both sexes.

For *A.* (*Dudleyserpens*) *laureata* males have 112-134 ventrals (versus 150-167 in *A. flavilata*) and females have 118-139 ventrals (versus 160-176 in *A. flavilata*).

For *A.* (*Dudleyserpens*) *laureata* males have 68-83 subcaudals (versus 86-97 in *A. flavilata*) and females have 59-75 subcaudals (versus 73-92 in *A. flavilata*).

Interestingly both species within *Alexteesus* have tails of similar length when expressed as a percentage of the total length (see Myers 1974).

A. (*Dudleyserpens*) *laureata* is separated from *A. flavilata* by having a distinct darkish coloured mid-dorsal stripe running down the body of about 3 scales width.

A. (*Dudleyserpens*) *laureata* is found from elevations of about 1500-3100 meters in the mountains west and south of the Mexican Plateau.

Alexteesus flavilata is separated by distribution as it only occurs from coastal regions in the southeastern United States.

Etymology: Named in honor of Alex Dudley, formerly of Kenthurst, NSW, Australia but who has over the past 40 years resided at many locations and made an enormous but largely unrecognized contribution to Australian herpetology ongoing throughout most if not all that period.

Content of *Alexteesus* gen. nov.

Alexteesus flavilata (Cope, 1871) (Type species), Common name: Pine Woods Snake.

Alexteesus (*Dudleyserpens*) *laureata* (Günther, 1868), (Type species for subgenus), Common name: Crowned Graceful Brown Snake.

GENUS *WALLISSERPENS* GEN. NOV.

Type Species: *Coronella decorata* Günther, 1858

Diagnosis: The eleven species within this genus are separated from all other genera within *Rhadinaea senso lato* (including those diagnosed and defined within this paper) by the following suite of characters: The hemipenis is single and without special features (see table 2 Myers 1974). There is normally a subpreocular, and anal ridges are usually present on adult males. The body is variably striped or lined, but there is invariably at least a hint of a narrow, linear dark marking involving row 4 or 5, and this in some cases is bordered above by a pale streak or series of small pale spots. There is invariably a conspicuous, pale postocular marking extending from, or lying a short distance behind, the upper rear edge of the eye; this marking may be in the form of an ocellus or wedge, but in most species it is a broken or single line, which is in some cases confluent with a pale stripe on the side of the neck. The line may extend horizontally toward the neck or obliquely toward the corner of the mouth. These are prettily striped little snakes, but they are rather generalized and lack special features of the kind that set off other species groups of *Rhadinaea*.

The species *quinquelineata, montana*, *gaigeae* and *forbesi* forms one subgroup, herein defined as the subgenus *Jockpaullus* subgen. nov., and is characterized by a tendency for a pale grayish stripe or streak (absent in *forbesi*) on each side of a well-defined vertebral dark line. Often there is a short white line on the midline of the nape, in front of the vertebral dark line. Except for *forbesi*, there is a tendency for a relatively high number of ventrals and lack of encroachment of the dorsal ground color onto the ventral tips, which, however, may be dotted or spotted with dark pigment.

The nominate subgenus includes the remaining seven species which form another natural subgroup, but it is less well defined: They exhibit a tendency toward interruption and loss of the vertebral dark line (except in *hesperia*). There are lower numbers of ventrals than in the other subgroup, and often the lower sides (below the lateral dark line on row 4 or 5) are somewhat of a darker hue than the rest of the body.

Distribution: The species *decorata* ranges from San Luis Potosi Mexico to Ecuador, but the others within the genus are exclusively Mexican, occurring mainly in the area of the Sierra Madre Oriental to the Sierra Madre del Sur.

Etymology: Named in honor of Greg Wallis, formerly of Seaforth, NSW, Australia and more recently of Caulfield (Melbourne), Victoria, Australia, for contributions to herpetology in Australia spanning over 40 years.

Content: *Wallisserpens* gen. nov.

Wallisserpens decorata (Günther, 1858) (Type species), Common name: Adorned Graceful Brown Snake.

Wallisserpens bogertorum (Myers, 1974), Common name: Oaxacan Graceful Brown Snake.

Wallisserpens cuneata (Myers, 1974), Common name: Veracruz Graceful Brown Snake.

Wallisserpens forbesi (Smith, 1942), Common name: Forbes’ Graceful Brown Snake.

Wallisserpens gaigeae (Bailey, 1937), Common name: Gaige’s Pine Forest Snake.

Wallisserpens hesperia (Bailey, 1940), Common name: Western Graceful Brown Snake.

Wallisserpens macdougalli (Smith and Langebartel, 1949), Common name: MacDougall's Graceful Brown Snake.

Wallisserpens marcellae (Taylor, 1949), Common name: Marcella's Graceful Brown Snake.

Wallisserpens montana (Smith, 1944), Common name: Nuevo Leon Graceful Brown Snake.

Wallisserpens myersi (Rossman, 1965), Common name: Myers' Graceful Brown Snake.

Wallisserpens quinquelineata (Cope, 1886), Common name: Pueblan Graceful Brown Snake.

SUBGENUS *JOCKPAULLUS* SUBGEN. NOV.

Type species: *Rhadinaea quinquelineata* Cope, 1886

Diagnosis: The species *quinquelineata, montana*, *gaigeae* and *forbesi* forms the subgenus *Jockpaullus* subgen. nov., and is separated from the nominate subgenus by a tendency for a pale grayish stripe or streak (absent in *forbesi*) on each side of a well-defined vertebral dark line. Often there is a short white line on the midline of the nape, in front of the vertebral dark line. Except for *forbesi*, there is a tendency for a relatively high number of ventrals and lack of encroachment of the dorsal ground color onto the ventral tips, which, however, may be dotted or spotted with dark pigment.

W. forbesi is characterized by a sharply inclined white line, extending from the upper rear edge of the eye to behind the corner of the mouth (sometimes fusing with the pale throat color or with a white line on the side of the neck). *W. forbesi* lacks a white line across the nape.

It has a bold color pattern on the body, including usually a wide, vertebral dark line and conspicuously dark ventral tips.

The nominate subgenus includes the remaining seven species and form another natural subgroup, but it is less well defined: They exhibit a tendency toward interruption and loss of the vertebral dark line (except in *hesperia*). There are lower numbers of ventrals than in the other subgenus, and often the lower sides (below the lateral dark line on row 4 or 5) are somewhat of a darker hue than the rest of the body.

Comparative scale counts for all species within *Wallisserpens* gen. nov. as defined herein, including both subgenera is provided by Myers (1974), table 6.

Species within the subgenus *Jockpaullus* subgen. nov. are exclusively Mexican, occurring mainly in the area of the Sierra Madre Oriental to the Sierra Madre del Sur. Myers (1974) map 7, provides a distribution map for the subgenus.

Etymology: Named in honor of Jock Paull, of Hawthorn, Victoria, recently deceased from lung cancer in his early fifties, a casualty of the government backed drug of addiction, nicotine, freely sold in Australia and elsewhere in the form of sticks marketed as cigarettes.

While the government of Australia is directly responsible for the many annual smoking related deaths, no one is punished. Meanwhile in 2011, the same government closed down the successful Snakebusters reptile education business on the false claim they made that the company was a serious public hazard. Snakebusters had a perfect safety record, unlike the government's own dysfunctional wildlife business enterprises such as Melbourne Zoo/Healesville Sanctuary (trading under the business name "Zoos Victoria") that had had numerous near fatal snakebites in the previous 8 years.

Of course the driver of the attack on Snakebusters was a grab at the business and customers that the government enterprise could not attract due to their inferior education standards and lack of anything resembling a proper safety protocol.

Which brings back the reason the government lets people like Jock Paull get addicted to the heavily marketed killer drugs like nicotine. It's all about the money they make in cigarette taxes, political donations to individual lawmakers and so on.
Jock Paull gave joy to millions of people globally as a part of the acclaimed rock band TISM and his other music ventures. While he is now deceased his music lives on, as does his daughter Ella.

Content of subgenus *Jockpaullus* subgen. nov.

Wallisserpens (*Jockpaullus*) *quinquelineata* (Cope, 1886) (Type species), Common name: Pueblan Graceful Brown Snake.

Wallisserpens (*Jockpaullus*) *forbesi* (Smith, 1942), Common name: Forbes' Graceful Brown Snake.

Wallisserpens (*Jockpaullus*) *gaigeae* (Bailey, 1937), Common name: Gaige's Pine Forest Snake.

Wallisserpens (*Jockpaullus*) *montana* (Smith, 1944), Common name: Nuevo Leon Graceful Brown Snake.

GENUS *ROBVALENTICUS* GEN. NOV.

Type species: *Dromicus taeniatus* Peters, 1863

Diagnosis: The three species within the genus *Robvalenticus* subgen. nov. are separated from all other genera within *Rhadinaea senso lato* (including those diagnosed and defined within this paper) by the following suite of characters: The single hemipenis lacks notable, special features, except that spinules occur in a relatively wide and uniform band around the basal section of the distinct capitulum; the asulcate fold is doubled. Scutellation is generalized (except for 1+1 temporals in *Robvalenticus fulvivittis*); a subpreocular is usually present. The head and body tend to be continuously and conspicuously striped with wide brown or black stripes that set off a narrow, dorsolateral pale stripe of ground color. The dorsal ground color does not extend onto the tips of the ventrals (or only minutely and inconspicuously so).

Robvalenticus fulvivittis is not especially large (less than 500 mm.), but some individuals of *Robvalenticus omiltemana* probably exceed 600 mm. total length and individuals of *Robvalenticus taeniata* get to at least 880 mm (Myers 1974), making this taxon the largest species within *Rhadinaea* as previously defined.

Robvalenticus subgen. nov. is strictly Mexican, occurring in the highlands north and south of the Balsas basin in the Cordillera Volcanica, Sierra de Coalcomain, Sierra Madre de Oaxaca and principally in the Sierra Madre del Sur.

Etymology: Named in honour of Australian reptile photographer, Rob Valentic, in recognition of his various areas of expertise with reptiles spanning a period commencing the early 1990's.

That was when I convinced his reluctant parents to let him get reptiles as pets after he stalked me down in the middle of the city of Melbourne, Australia.

On the relevant date, he got me to sign his first ever reptile book, *Australian Reptiles and Frogs* (Hoser, 1989), after which he forced me to spend an hour with his very worried mother explaining why he should be allowed to keep reptiles.

Content of *Robvalenticus* gen. nov.

Robvalenticus taeniatus (Peters, 1863) (Type species), Common name: Pine-Oak Snake.

Robvalenticus fulvivittis (Cope, 1875), Common name: Ribbon Graceful Brown Snake.

Robvalenticus omiltemanus (Günther, 1893), Common name: Guerreran Pine Woods Snake.

GENUS *BARRYGOLDSMITHUS* GEN. NOV.

Type species: *Contia calligaster* Cope, 1876

Diagnosis: *Barrygoldsmithus* gen. nov. is a genus monotypic for the species *calligaster*.

This species is separated from all other genera within *Rhadinaea senso lato* (including those diagnosed and defined within this paper) by the following suite of characters: The hemipenis is bilobed, completely without capitation, and has only soft papillae (no spinules) on the calyces. There is no subpreocular and the temporal formula is 1+1. The supralabials

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are boldly margined with black, and there is a midventral series of black triangles or half-moons, or a fusion of such markings to form a midventral stripe.

B. calligaster has different features that are in line with other genera as defined herein.

The bilobated hemipenis, absence of a subpreocular, and the occasional tendency for a pale bar from the eye to the corner of the mouth are similar to *Rhadinella* species.
The characteristic midventral markings, and the dorsal green coloration of some individuals, are found only in occasional specimens of *Urotheca decipiens.* However, other key traits in *Barrygoldsmithus* are not in common with *Urotheca.*

The occurrence of the similar characteristics in two species from the same region is almost certainly a result of convergence rather than a close relationship.

The completely different hemipenes in the two genera, the elongated, thickened tail in the *Urotheca* and basic pattern differences (white versus dark lines) are too basic to ignore. *U. decipiens* is a very different appearing snake than *B. calligaster*. *U. decipiens* has a much longer tail, one or two thin white lines on each side of a basically brown or black body, and there often is a conspicuous nape collar.

The species *B. calligaster* is found in wet, montane forest, in the Cordillera Central of middle Costa Rica and in the Cordillera de Talamanca to extreme western Panama. The known elevational range is 1220-2439 meters.

Etymology: Named in honor of Melbourne, Australia snake catcher Barry Goldsmith who has spent many years rescuing snakes from houses in Melbourne's outer south-east suburbs before safely relocating them elsewhere. I note herein that he has not had to resort to the cruel, illegal and barbaric use of metal "Killer Tongs" used since about 2004 by novice snake handlers in Melbourne, which invariably break snake's bones and lead to snakes dying slow agonizing deaths from internal injuries.

The snakes attacked by tongs would die more humanely if whacked on the head with a shovel!

It is a serious indictment of the Victorian State Wildlife department (DSE) and another in Queensland and their staff that not only have they not stopped snake handlers using these tongs to catch, handle and kill snakes, but worse still they have actually worked for some of these inexperienced snake handlers by unlawfully cancelling snake catching permits of so-called "business rivals" who actually like snakes and prefer to catch them by hand and without injuring the reptiles.

First reviser or subsequent reviser note:

In the event that any subsequent worker seeks to merge or join named groups within this paper, as in genera or subgenera, the order of usage and conservation should be in the order of publication by page priority, as in that first published in the body of the paper takes precedence over that published later in the same paper.

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A Division of Central American Snake genera, *Coniophanes* Hallowell *in* Cope, 1860 into six subgenera and *Conophis* Peters, 1860 into two genera (Serpentes: Colubridae: Dipsadinae).

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ABSTRACT

The black-striped snakes of North, Central and South America have had a relatively stable taxonomic history at the genus level. The genus *Coniophanes* Hallowell *in* Cope, 1860 has been well accepted by herpetologists since being defined.

Notwithstanding this, six divergent and well-defined species groups are known.

To better identify them, six subgenera are erected and defined to accommodate them according to the Zoological Code.

The available names are *Coniophanes* for the *fissidens* species group and *Hydrocalamus* Cope, 1885 for the *quinquevittatus* group.

The four newly named subgenera are, *Smythserpens* gen.nov., *Cottonserpens* gen.nov., *Laidlawserpens* gen.nov. and *Daraninserpens* gen.nov..

Relatively recent studies into the genus *Conophis* Peters, 1860 has seen species removed from this genus and placed elsewhere (e.g. Hoge 1958 and Villa 1971). Further to this, the most divergent member of the genus and type species *C. vittatus* Peters, 1860 is left in the genus and the others are placed in a new subgenus *Whittonserpens* gen. nov..

Keywords: *Coniophanes; Conophis*; *Hydrocalamus*; *Smythserpens*; *Cottonserpens*; *Laidlawserpens*; *Daraninserpens*; *Whittonserpens;* new subgenera; taxonomy; snake; colubrid.

INTRODUCTION

The Black-striped Snakes are found from the southern United States through Central America to Peru. Originally placed in *Coluber*, the genus *Coniophanes* was erected Hallowell in Cope, 1860.

Various synonyms were used to describe these snakes in the late 1800's and early 1900's including, *Tachymenis* (now used for other snakes), *Taeniophis* (a genus name which was the same as a genus for fish), *Erythrolamprus* (now used for other snakes), *Glaphyrophis* (now used for other snakes), *Homalopsis* (now used for other snakes), *Hydrops* (now used for other snakes) and *Dromicus* (now used for other snakes).

Hydrocalamus Cope, 1885 was barely used by anyone except Cope himself, but has now been resurrected herein for a subgenus as indicated below.

The number of described species within what has been generally called *Coniophanes* has steadily increased to 17 recognized forms as of the current date.

Notwithstanding this steady increase in species number, there have been no attempts for many years to split the genus in any way, due to several factors, the most obvious being the morphological similarities of relevant species.

Furthermore a number of major studies published in the latter part of the 1900's looked into these snakes and failed to make

any taxonomic moves on given species groups.

What needs to be considered at the present time is not just the conclusions by the relevant authors, but the facts and circumstances leading to them.

Numerous authors have recognized well-defined species groups within *Coniophanes*, each of which are potentially recognizable at either genus or subgenus level.

Contradicting this is the context of the major studies or publications involving the genus (e.g. Myers 1966, 1969 or Bailey 1939) being in a period when herpetologists were merging genera into synonymy rather than looking at erecting new ones as had been the case in the 1800's.

Since 2000, there has been a major shift in taxonomic thinking among herpetologists with a renewed surge in terms of descriptions of taxa at all levels.

Paraphyletic genera have been broken up (e.g. *Elaphe* sensu lato) and at the species level, the underlying rate of descriptions of new species has increased as reported on the websites for *Zootaxa*, *Zoological Record* and the ICZN.

Coniophanes presents an unusual case in that while the genus is large and divided into distinct species groups, the question begs whether or not it is wise to divide the genus into its most obvious six subgroups by creating five new genera.

Because the component taxa are divergent from one another, it is effectively inevitable that *Coniophanes* as presently understood must be split in some way.

Taking a most conservative position, I have decided to split the species groups along the logical lines of division into subgenera.

The use of subgenera in this context allows for the nomenclatural stability of the group to be preserved, while at the same time allowing herpetologists to recognize the given phylogenetic units.

While the species of *Coniophanes* are generally small and innocuous and not in high demand by snake keepers and other reptile hobbyists, professionally employed government-funded herpetologists have done a number of important studies into these snakes.

This reflects in the fact that the majority of important publications in terms of *Coniophanes* are by these people as opposed to those by so-called amateurs, who have often made major contributions into our general knowledge of other snake genera.

Important publications relating to the genus *Coniophanes* and the relevant species include; Alvarez (1982), Andersson (1901), Bailey (1937, 1939), Baird (1859), Bauer et. al. (1995), Cadle (1989), Campbell (1989), Canseco-Marquez et. al. (2000), Conant (1955, 1965), Conant and Collins (1991), Cope (1860, 1862, 1866, 1868, 1870, 1871, 1885), Dixon (2000), Dixon and Lemos-Espinal (2010), Duméril et. al. (1854), Flores-Villela and Canseco-Márquez (2004), Flores-Villela and Smith (2009), Goldberg and Bursey (2007), Günther (1858), Hall (1951), Jan (1863, 1865), Koller (2005), Lee (2000), Lehr (2002), Liner (2007), Mahrdt (1969), Martin (1958), McCoy et. al. (1986), McCranie (2011), McCranie and Castañeda (2005), McDiarmid (1963), Mejenes López (1999), Minton et. al. (1960), Myers (1966, 1969), Pérez-Santos (1986), Pérez-Santos and Moreno (1988), Peters (1950), Peters (1863, 1864, 1870), Peters et. al. (1970), Ponce-Campos and Smith (1981), Savage (2002), Schmidt and Andrews (1936), Schwartz and Henderson (1991), Smith (1940, 1941a), Smith and Taylor (1950a), Stejneger (1891), Stuart (1935), Taylor (1949), Urbina-Cardona et. al. (2006), Valdivieso and Tamsitt (1963), Vences et. al. (1998), Wellman (1959), Wilson and McCranie (2003), Wilson and Meyer (1985), Wright and Wright (1957), Zug et. al. (1979) and Zweifel (1959).

Relying on these publications, I have divided *Coniophanes* six ways as seen below.

Relatively recent studies into the superficially similar Central American Dipsadine genus *Conophis* Peters, 1860 has seen species removed from this genus and placed elsewhere (e.g. Hoge 1958 and Villa 1971).

Wellman (1963) provided evidence for the removal of the species *Conophis nevermanni* from the genus, by stating that it "differs so much from the other species that it might be placed in a separate group."

Villa did this in 1971 when he erected the genus *Crisantophis* to accommodate the species. Interestingly however, Wellman (1963) actually identified the species *C. Vittatus* Peters, 1860 as being the most divergent member of the genus, meaning it should probably have been the first to be split from the rest. Besides differences in hemipenal detail, Wellan (1963) wrote: "*Conophis vittatus* is readily set apart from other members of the genus on the basis of the universal presence of seven supralabials. In basic coloration it also differs, having no stripe on the 1st scale-row, or spots on the venter, and a maximum of four broad stripes on the body."

In order to rectify the obvious inconsistency of one divergent taxon being removed from the genus and not another, this is corrected here.

However as *C. vittatus* is the type species, it is the remainder of the genus that must be removed from *Conophis*. These are the three species, *lineatus*, *morai* and *pulcher*.

So within this paper, the most divergent member of the genus and type species *C. vittatus* Peters, 1860 is left in the genus *Conophis* and the others placed in a new subgenus *Whittonserpens* gen. nov. named and defined according to the Zoological Code (Ride et. al. 1999).

Important publications in terms of *Conophis* as currently recognized include, Auth et. al. (1998), Boulenger (1896), Conant (1965), Cope (1861, 1867, 1871, 1876, 1895, 1900), Ditmars (1931), Dowling (2002), Duellman (1958), Duméril et. al. (1854, 1909), Garman (1884a, 1884b), Goyenechea and Flores-Villela (2006), Günther (1858), Hoge (1958), Jan and Sordelli (1866, 1881), Mertens (1952a, 1952b), Mittleman (1944), Neill and Allen (1961), Pérez-Higareda et. al. (2002), Peters (1860), Savage (1949), Schmidt (1928), Schmidt and Inger (1957), Smith (1939, 1941b, 1942), Smith and Taylor (1950), Smith et. al. (1993), Stuart (1948, 1950a, 1950b), Taylor (1955), Taylor and Smith (1939), Thomas et. al. (2006), Webb (2001), Wellman (1963) and Wettstein (1934).

GENUS *CONIOPHANES* HALLOWELL IN COPE, 1960

Type species: *Coronella fissidens* Günther, 1858

Diagnosis: A generalized colubrid genus containing about 17 recognized species with the basic arrangement of enlarged head shields, nasal partially or completely divided; a loreal; one or two preoculars; round pupil, two pairs of chin shields; smooth dorsal scales;without apical pits in 17-25 dorsal mid-body rows, with a reduction anterior to the vent; anal and subcaudals divided; 8-15 subequal maxillary teeth separated by a diastema from two grooved fangs.

No hypapophases on the dorsal vertebrae. The combination of a loreal, divided anal, smooth scales without apical pits, scale row reduction anterior to the vent and striped colour pattern will separate this genus from any other central American genus.

Hemipenal morphology varies between species groups within the genus and is diagnostic for them. Bailey (1939) was apparently the first to divide the genus into well-defined species groups.

Distribution: Extreme southern Texas and Sinaloa Mexico through Central America and Western South America to Northwestern Peru.

SUBGENUS *CONIOPHANES* SUBGEN. NOV.

Type species: *Coronella fissidens* Günther, 1858

Diagnosis: This subgenus is separated from all other subgenera defined within this paper by the lack of a temporal stripe, immaculate ventrals, or alternatively with only tiny black spots, and hemipenes that are single, spinous and capitate.

Comment: In literature, this subgenus should be attributed to Hallowell in Cope, 1860, even though this is the first formal diagnosis of the group as a subgenus.

Distribution: Mexico to Colombia.

Content of subgenus *Coniophanes*

Coniophanes (*Coniophanes*) *fissidens* (Günther, 1858) (Type species).

Coniophanes (*Coniophanes*) *alvarezi* Campbell, 1989.

Coniophanes (*Coniophanes*) *andresensis* Bailey, 1937.

SUBGENUS *HYDROCALAMUS* COPE, 1885

Type species: *Homalopsis quinque-vittatus* Duméril, Bibron and Duméril, 1854

Diagnosis: *Hydrocalamus* are separated from all other subgenera defined in this paper by the lack of a light temporal stripe, the presence of large irregular spots on the ventrals, and the hemipenes are slightly bilobed, spinous and capitate.

Distribution: Veracruz Mexico, south to northern Guatemala.

Content of subgenus *Hydrocalamus* Cope, 1885

Coniophanes (*Hydrocalamus*) *quinquevittatus* (Duméril, Bibron and Duméril, 1854) (Type species).

Coniophanes (*Hydrocalamus*) *bipunctatus* (Günther, 1858).

SUBGENUS *SMYTHSERPENS* SUBEN. NOV.

Type species: *Coniophanes lateritius* Cope, 1862

Diagnosis: *Smythserpens* gen. nov. are separated from all other subgenera defined in this paper by the usual lack of any trace of longitudinal striping, 17-19 dorsal mid-body rows, over 110 ventrals and 84-99 subcaudals.

Distribution: Mexico only.

Etymology: Named in honour of Michael Smyth of Croydon, Victoria, Australia in recognition of eight years valuable work with Snakebusters, Australia's best live reptile shows, educating countless people about reptiles and animal welfare.

Content of subgenus *Smythserpens* gen. nov.

Coniophanes (*Smythserpens*) *lateritius* Cope, 1862.

Coniophanes (*Smythserpens*) *melanocephalus* (Peters, 1869).

Coniophanes (*Smythserpens*) *sarae* Ponce-campos and Smith, 2001.

SUBGENUS *COTTONSERPENS* SUBGEN. NOV.

Type species: *Coniophanes piceivittis* Cope, 1869

Diagnosis: Separated from all other subgenera defined within this paper by the following suite of characters, 25 scale rows at midbody, 9-10 infralabials, a small sub-preocular scale, and a pattern of three dark brown stripes over a pale brown body, including a broad mid-dorsal one.

The small subpreocular scale is unique to this subgenus within *Coniophanes* (absent from the rest).

Distribution: Mexico through central America to Costa Rica.

Etymology: Named in honour of Thomas Cotton of Ringwood, Victoria, Australia in recognition of eight years valuable work with Snakebusters, Australia's best live reptile shows, educating countless people about reptiles and animal welfare.

Content of subgenus *Cottonserpens* gen. nov.

Coniophanes (*Cottonserpens*) *piceivittis* Cope, 1869 (Type species).

Coniophanes (*Cottonserpens*) *michoacanensis* Flores-Villela and Smith, 2009.

Coniophanes (*Cottonserpens*) *schmidti* Bailey, 1937.

Coniophanes (*Cottonserpens*) *taylori* Hall, 1951.

SUBGENUS *LAIDLAWSERPENS* SUBGEN. NOV.

Type species: *Tachymenis dromiciformis* Peters, 1863

Diagnosis: Snakes in this subgenus are separated from the other subgenera described in this paper by having 17-21 mid-body rows, 132-141 ventrals and a deeply bifurcated hemipenis. The belly is diffused with brown pigment and with a dark smudge across base of each ventral plate.

Distribution: East Panama (*C. joanae*), South Ecuador and Peru (*C. dromiciformis*) and Peru (*C. longinquus*).

Etymology: Named in honour of Michael Laidlaw of Ringwood, Victoria, Australia in recognition of eight years valuable work with Snakebusters, Australia's best live reptile shows, educating countless people about reptiles and animal welfare.

Content of subgenus *Laidlawserpens* gen. nov.

Coniophanes (*Laidlawserpens*) *dromiciformis* (Peters, 1863).

Coniophanes (*Laidlawserpens*) *joanae* Myers, 1966.

Coniophanes (*Laidlawserpens*) *longinquus* Cadle, 1989

GENUS *DARANINSERPENS* SUBGEN. NOV.

Type species: *Taeniophis imperialis* Baird, 1859

Diagnosis: Separated from all other subgenera described in this paper by having 15-19 dorsal mid-body rows and different hemipenal morphology. All *Coniophanes* hemipenes except those of this subgenus have basal hooks, abundant gross ornamentation, and either are not bilobed or are capitate.

In this subgenus the hemipenes are long and slender, without spines, deeply bifurcate and calyculate but not capitate; 118-143 ventrals and 67-94 subcaudals.

Other diagnostic features of this subgenus include a buff brown dorsum with 3 dark stripes of purplish grey or dull violet (a wide middorsal one of 1 and 2 half scales), a lateral one on the second to half of fourth row, a pinkish buff or cream line from muzzle over eye to the upper border of the second upper temporal scale, the venter is capucine buff on the chin to peach red on the rear, anals are never keeled, 8 supralabials.

The species *Coniophanes meridanus* Schmidt and Andrews, is separated from *Coniophanes imperialis*, by lacking the sharply defined dorsolateral lines and ventral spots, and more reddish in general coloration, as well as having 17-15 dorsal mid-body rows as opposed to 19-17 in *Coniophanes imperialis.*

Distribution: South Texas (USA) to Honduras in Central America.

Etymology: Named in honour of Dara Nin of Ringwood, Victoria, Australia in recognition of eight years valuable work with Snakebusters, Australia's best live reptile shows, educating countless people about reptiles and animal welfare.

Content of *Daraninserpens* subgen. nov.

Coniophanes (*Daraninserpens*) *imperialis* (Baird, 1859) (Type species).

Coniophanes (*Daraninserpens*) *meridanus* Schmidt and Andrews, 1936.

GENUS *CONOPHIS* PETERS, 1860

Type species: *Conophis vittatus* Peters, 1860

Diagnosis: This genus is now monotypic for the species *vittatus*, with the common name of "Striped Road Guarder".

It is diagnosed by the following suite of characters: The hemipenes of *Conophis* are slightly bifurcate having forked sulcus spermaticus, moderately caliculate, having spines covering the surface from the base to near the apex. These spines are largest near the base and are reduced to small papillate projections near the apex. The apex terminates in a small disc having three to five laminae in *C. vittatus* (one laminae in *Whittonserpens* gen. nov.). The sulcus is bifurcate; the fork is near the base and almost gives the appearance of two sulci on some specimens. Distally the apices are widely separated, and the intervening space gives the hemipenis a slightly bilobed appearance in this species (compared with a deeply bilobed appearance in *Whittonserpens* gen. nov.).

In *C. vittatus* there are 8-12 prediastemal maxillary teeth, subequal in length, and followed by short diastema and one enlarged fang or two; fangs grooved, only one functional at any one time, unless snake is in process of shedding teeth; teeth 6-

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10 on palatine, 15 to 19 on pterygoid, 15 to 21 on dentary; teeth on dentary decreasing in size posteriorly; large parotid (venom) gland on either side of head in temporal region; head shields of basically unmodified colubrid type excepting decurved rostral; rostral concave below and therein modified for burrowing; internasals and prefrontals paired; nasals divided; loreal single; preocular one, rarely two; postoculars, two; supralabials, 7-8, 3rd and 4th or 4th and 5th under eye; infralabials, 8-11, usually 9 or 10; temporals, normally 1 plus 2 plus 3; chin-shields subequal in length; ventrals, 149-183, rounded and overlapping; caudals, 55-89, paired and imbricate; anal divided; dorsal scales smooth and in 19 rows at mid-body with no apical pits or keels; scale reduction normally involving fusion of 3rd and 4th rows, resulting in 17 scale-rows near tail; tail length more than 20 per cent of body length; maximum total length exceeding 1.1 meters; dorsal color pattern consisting of dark stripes, or no darkening, on paler ground-color; ventral surfaces immaculate pale yellowish or white, except on specimens having single lateral dark spots on some or all ventrals; pupil round; The supralabials are immaculate white or pale tan, except that in some specimens the dorsal most part of some supralabials are dark brown or black as they are included in the ventral boundary of the dark stripe that passes through the eye. There are no dusky markings on the chin or on any of the ventral scales. The presence and position of the three or four dark stripes on the body and the absence of brown on the 1st scale-row or on the ventral scales, in combination with the generic characters, distinguish *Conophis vittatus* from all other Méxican snakes. The only other snake that occurs in western México that has been confused with *C. vittatus* is the superficially similar looking *Coniophanes piceivittus taylori*, which has 25, instead of 19, mid-body scale-rows.

The species *Conophis vittatus* is diurnal or crepuscular; feeding primarily on small lizards, sometimes on small mammals or other snakes. The preceding was essentially adapted and modified from the diagnosis given by Wellman (1963).

Distribution: Semi-arid regions of southern México and Central America as far south as Costa Rica.

GENUS *WHITTONSERPENS* GEN. NOV.

Type species: *Tomodon lineatum* Duméril, Bibron and Duméril, 1854

Diagnosis: This genus comprises three species, namely *lineatus*, *morai* and *pulcher*.

Conophis vittatus (now monotypic for that genus) is readily set apart from *Whittonserpens* gen. nov. on the basis of the universal presence of seven supralabials. In basic coloration it also differs, having no stripe on the first scale-row, or spots on the venter, and a maximum of four broad stripes on the body.

Whittonserpens gen. nov. is also separated from *Conophis* by hemipenal morphology. The hemipenes of *Conophis* are slightly bifurcate having forked sulcus spermaticus, moderately caliculate, having spines covering the surface from the base to near the apex. These spines are largest near the base and are reduced to small papillate projections near the apex. The apex terminates in a small disc having three to five laminae in *C. vittatus* (one laminae in *Whittonserpens* gen. nov.). The sulcus is bifurcate; the fork is near the base and almost gives the appearance of two sulci on some specimens. Distally the apices are widely separated, and the intervening space gives the hemipenis a slightly bilobed appearance in this species (compared with a deeply bilobed appearance in *Whittonserpens* gen. nov.).

Other distinctive features of *Whittonserpens* gen. nov. are in the account above for *Conophis.*

Distribution: Semi-arid regions of southern México and Central America as far south as Costa Rica.

Etymology: *Whittonserpens* gen. nov. is named in honour of Evan Whitton of Sydney, Australia a leading investigative author in Australia. His books detailing endemic and systemic corruption in the Australian legal system and government should be mandatory reading for all Australians as well as people in other countries interested as to how corrupt things really are in the "Lucky Country".

Content of genus *Whittonserpens* gen. nov.

Whittonserpens lineatum (Duméril, Bibron and Duméril, 1854)(Type species).

Whittonserpens morai (Pérez-Higareda, López-Luna and Smith, 2002).

Whittonserpens pulcher (Cope, 1869).

First Reviser Note: Should any reviser decide to merge or synonymise genera or subgenera as named herein, the order of priority for retention should be as published herein (in the order as published).

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A Division of the Asian Reed Snakes, Genus *Calamaria* Boie, 1827 (Serpentes: Colubridae: Calamariinae).

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ABSTRACT

The largest (by species number) genus within the Colubrid subfamily Calamariinae is *Calamaria* Boie, 1827. In spite of the superficial similarity of the 70-odd recognized members within the genus, differences between species groups have long been recognized (Inger and Marx 1965).

This paper removes what may be the most divergent of these species *schmidti* Marx and Inger, 1955 and *leucogaster* Bleeker, 1860 from *Calamaria* and places them in a new genus *Crottyreedus* gen. nov..

The genus *Typhlocalamus* Günther, 1872 is recognized for the species from Borneo, *gracillima* as a subgenus and two new subgenera, *Freudreedus* subgen. nov. and *Oxyreedus* subgen. nov. are erected to accommodate divergent Asian taxa

Keywords: *Calamaria*; *Crottyreedus*; *Freudreedus*; *Oxyreedus*; *Typhlocalamus*; *schmidti*; *leucogaster*; *linnaei; concolor*; *septentrionalis*; Taxonomy; new genus.

INTRODUCTION

The so-called Reed Snakes of the genus *Calamaria* Boie 1827, haven't attracted the interests of a lot of herpetologists beyond the point of finding, naming and describing species, save for some definitive studies by Inger and Marx, most notably being their monograph of 1965.

Notwithstanding this study, two species within the group were identified by the same authors in1955 as being divergent from the rest of the genus.

These taxa, including formally named by the same authors in 1955 as *Calamaria schmidti* differed from the others in the genus as then defined in its typical dentition.

They wrote:

"Two levels of maxillary tooth specialization are found in the species we have examined. The less modified condition occurs in *schmidti*, which has seven, widely spaced, unmodified ophidian teeth,

and in *leucogaster*, in which only the last two of its seven maxillary teeth are slightly enlarged at the base (fig. 22). The more specialized condition is characteristic of all the others. In these last, all of the

maxillary teeth are modified as illustrated. There is no space between successive teeth, and all are enlarged at the base."

The taxa *schmidti* and *leucogaster* are both from Borneo and are divergent from all others within the genus as presently defined.

Molecular studies including that published by Pryon et. al. (2011) has shown that the genus *Calamaria* as defined has an ancient divergence from other groups and that the genus as currently defined would be paraphyletic.

While several potential splits within the genus are likely in the future, I herein take the most conservative position and only remove the two most divergent species, by placing them within a new genus *Crottyreedus* gen. nov, defined and named according to the Zoological Code (Ride et. al. 1999).

Inger and Marx (1965) provide an excellent bibliography and summary of the group *Calamaria* as then defined and so it is not necessary for me to rehash this monograph.

Some of the key publications relating to the relevant species include the following; Bleeker (1860), Boie (1827), Boulenger (1890, 1894, 1895), Duméril and Bibron (1854), David and Vogel (1996), Eydoux and Gervais (1837), Fischer (1835), Günther (1858, 1865), Haas (1950), Haas (1930), Inger and Marx (1965), Inger and Voris (2001), Jan and Sordelli (1865), Malkmus et. al. (2002), Manthey and Grossmann (1997), Marx and Inger (1955), Mertens (1930), Orlov (2009), Pope (1955), Rooij (1917), Savage and Myers (2005), Smith (1930, 1931, 1943), Taylor (1917, 1922), Tweedie (1950) and van Rooijen and van Rooijen (2007).

GENUS *CROTTYREEDUS* GEN. NOV.
Type species: *Calamaria schmidti* Marx and Inger, 1955

Diagnosis: The following characters define the external morphological divergence of *Calamaria* and *Crottyreedus* gen. nov. from the generalized, freely ranging colubrid stock: (1) no internasals; (2) prefrontals broadly in contact with supralabials; (3) reduction in size of nasal; (4) loreal absent (except in *C. tropica* Taylor); (5) reduction or loss of oculars; (6) reduction in size of eye; (7) reduction in number of labials; (8) parietals in contact with supralabials; (9) reduction in overall size; (10) reduction of tail. These characters add up to consolidation of head shields, proportional reduction of head and tail, and reduction of overall size; in short, the modifications commonly associated with burrowing snakes.

The genus *Crottyreedus* gen. nov. is most easily separated from all other *Calamaria* by dentition.

In the type species *schmidti*, there are seven, widely spaced, unmodified ophidian maxillary teeth, in the second species of the genus *leucogaster*, the last two of its seven maxillary teeth are slightly enlarged at the base. By contrast, the more specialized condition of the maxillary teeth (enlargement at the base) is characteristic of all species within *Calamaria*. There is no space between successive teeth, and all are enlarged at the base.

In terms of the species, *Schmidti*, the following diagnostic information is applicable.

It is a species with the eye much smaller than its distance from the mouth; 4 supralabials, the first three subequal; no preocular; frontal about five to six times as wide as supraocular; maxillary teeth conical; first pair of infralabials in contact behind mental.

The rostral broader than high, visible from above; prefrontals squarish, maximum length subequal to length of frontal, posterior border transverse, in contact with first and second labial and eye; nasal large, slightly larger than eye; eye small, diameter one-half its distance from the mouth; no preocular; one small

postocular, not as high as eye; supraocular small, about equal to nasal; frontal about as wide as long, pentagonal, 5 to 6 times width of supraocular, about two-thirds length of parietals; 4 supralabials, first three subequal, fourth twice length of second, second and third entering eye; 5 infralabials, first pair in contact behind mental, fourth largest; two pairs of chin shields, both pairs in contact, anterior in contact with three infralabials, anterior pair larger than posterior pair; parietals bordered posteriorly by three nuchals; vertebral row of nuchals distinctly smaller than para-vertebral rows.

Maxilla with 7 conical, slightly curved teeth widely spaced at the base.

Scales in 13 dorsal midbody rows; about 144 ventrals; 14 subcaudals; anal entire; tail ending in a blunt point; position of reduction to 4 dorsal scale rows, counting subcaudals forward from terminal scute 6.

Color is purplish gray above, uniform; head without markings; supralabials same color as back; anterior infralabials and first pair of chin shields purplish gray, remainder of underside of head yellowish; ventral surface without markings; anterior ventrals yellowish, belly becoming increasingly more purple posteriorly, but lighter than dorsal color; under side of tail darker than belly but slightly lighter than dorsal surface.

Distributed in Borneo, Indonesia/Malaysia.

In terms of the species, *leucogaster*, the following diagnostic information is applicable.

The following being based on female specimens only: 146-155 ventrals; 16-18 subcaudals; 5 supralabials, the third and fourth entering eye; 5 infralabials, first three pairs in contact with anterior chin shields; oculars 1+1; position of reduction to 4 dorsal scale rows, counting subcaudals forward from terminal scute 4-8; maxilla with 7 conical teeth.

Distributed in Borneo, Indonesia/Malaysia.

Distribution: This genus is known only from the island of Borneo, Indonesia/Malaysia.

Etymology: Named in recognition of a Great Dane cross Rottweiller dog, that I owned for nearly 13 years, named Crotalus, or “Crotty” for short, as well as the name of the kind of snake being identified, (common name: Reed Snake).

The loyal dog guarded my house and files for nearly 13 years from thefts by evil persons trying to stop truth being exposed in several books about wildlife crime, police and endemic judicial corruption in the Australian state of Victoria.

Without his loyal and uncomplaining work guarding the house while I spent long hours earning money to pay bills and debts, the various books, including “*Smuggled*” and “*Smuggled-2*” (Hoser 1993, 1996) would never have been published. Had those books not been published, it would still be illegal for most Australian citizens to be able to keep live reptiles in captivity.

I also note online criticisms by serial complainers and “trolls” of my naming taxa after animals, and reject them in total.

I happily concede to being an animal lover and one who detests animal cruelty in all its forms. If by naming a genus of snakes after an animal assists humans in appreciating animals, their vital role in maintaining our society and our need to care about their welfare, then I will be happy and satisfied.

PS *Crotalus* is a genus name for some well-known American Pitvipers.

Content of genus *Crottyreedus* gen. nov.

Crottyreedus schmidti (Marx and Inger, 1955) (Type species)

Crottyreedus leucogaster (Bleeker, 1860)

GENUS *CALAMARIA* BOIE, 1827.

Type species: *Calamaria linnaei* Boie, 1827

Diagnosis: The following characters define the external morphological divergence of *Calamaria* (and *Crottyreedus* gen. nov.) from the generalized, freely ranging colubrid stock: (1) no internasals; (2) prefrontals broadly in contact with supralabials; (3) reduction in size of nasal; (4) loreal absent (except in *C. tropica* Taylor); (5) reduction or loss of oculars; (6) reduction in size of eye; (7) reduction in number of labials; (8) parietals in contact with supralabials; (9) reduction in overall size; (10) reduction of tail. These characters add up to consolidation of head shields, proportional reduction of head and tail, and reduction of overall size; in short, the modifications commonly associated with burrowing snakes.

The genus *Crottyreedus* gen. nov. is most easily separated from all other *Calamaria* by dentition. In the type species *schmidti*, there are seven, widely spaced, unmodified ophidian maxillary teeth, in the second species of the genus *leucogaster*, the last two of its seven maxillary teeth are slightly enlarged at the base. By contrast, the more specialized condition of the maxillary teeth (enlargement at the base) is characteristic of all species within *Calamaria*. There is no space between successive teeth, and all are enlarged at the base.

Within *Calamaria*, three subgenera are herein recognized. These are: *Typhlocalamus* Günther, 1872 and two new subgenera, *Freudreedus* subgen. nov. and *Oxyreedus* subgen. nov., all presently monotypic.

Distribution: *Calamaria* is distributed throughout the Sundas and nearby south-east Asia.

SUBGENUS *TYPHLOCALAMUS* GÜNTHER, 1872

Type species: *Typhlocalamus gracillima* Günther 1872

Diagnosis: Easily separated from all other *Calamaria* by the much longer thinner physique, reflected in the considerably higher ventral count. In this monotypic subgenus the ventral count is 300-320, while for all other *Calamaria* it is well under this number. There is no preocular, a tiny supraocular and the first lower labials are in contact.

Distribution: Known only from Sarawak, Borneo (Malaysia).

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SUBGENUS *FREUDREEDUS* SUBGEN. NOV.

Type species: *Calamaria septentrionalis* Boulenger, 1890

Diagnosis: *Freudreedus* subgen. nov. is a monotypic subgenus which is separated from all other *Calamaria* by its tail which does not thin in the same manner as all other snakes in the genus, but rather it stays of similar thickness, ending in a rounded tip. In all other species within *Calamaria* the number of dorsal scale rows on the tail is usually reduced to four shortly before the terminal scute. The point at which the reduction to four scale rows occurs, as located by the number of subcaudals counted forward from the terminal scute, is relatively constant within species and a diagnostic feature.

The position of this reduction seems to depend more on the shape of the tail than on its length. While this point is somewhere between the second and fifteenth subcaudal on the tail for all other species in *Calamaria* (usually 8-9), this is not the case for the single species within this subgenus.

The species *septentrionalis* also has a shorter tail than for all other species and with subcaudal counts lower than for all other *Calamaria*, being 18 in males and 10-11 in females. The only other *Calamaria* with subcaudal counts approaching (and occasionally equalling) these are *pendleburyi* and *lautensis*, both of whom are easily distinguished by their noticeably thinning tail (as opposed to one that does not), reflected by the reduction of dorsal scale rows to four at subcaudals 8-9.

Other diagnostic features of this subgenus are, ventrals around 160 (males), subcaudals 18 (males),

ventrals 179-180 (females), subcaudals 10-11 (females), supralabials 4, second and third entering eye; infralabials 5, first pair in contact behind mental, first three pairs in contact with anterior chin shields; oculars 1+1; dorsal scale rows reduce from 6 to 1 abruptly at end of tail (see above); maxilla with 8 modified teeth.

Distribution: Known only from south-east China and adjacent North Vietnam.

Etymology: Named in recognition of a Dachshund cross Doberman dog that I had for about nine years until I was aged 16, whom I grew up with and had trained to sniff out and find snakes and lizards, enabling me to find quantities of reptiles other collectors could only dream of.

The dog was named by my parents Sigmund Freud (they called him “Freud” for short) in recognition of the famous psychologist, due to the fact that the dog looked intelligent and actually was!

For some years before his death from a bite from a Red-bellied Black Snake near Oxford Falls, NSW, Australia, I would hitch-hike to all parts of Australia with the dog and catch reptiles.

In fact the day he was bitten, myself and friend had hitch-hiked to Oxford Falls to go in search of reptiles and had to hitch-hike home with the dead body.

I also note online criticisms by serial complainers and “trolls” of my naming taxa after animals, and reject them in total.

I happily concede to being an animal lover and one who detests animal cruelty in all its forms. If by naming a subgenus of snakes after an animal assists humans in appreciating animals, their vital role in maintaining our society and our need to care about their welfare, then I will be happy and satisfied.

SUBGENUS *OXYREEDUS* SUBGEN. NOV.

Type species: *Calamaria concolor* Orlov et. al., 2010

Diagnosis: This monotypic subgenus differs from all known species of the genus *Calamaria* by combination of pholidosis characters and by uniform coloration of the body. The species has the following characters: tail tip thick, obtusely rounded, and slightly flattened laterally; maxillary teeth eight, modified; loreals absent; preocular present; supralabials 5/5, second and third entering orbit; infralabials 5/5; paraparietal surrounded by five shields; midbody scales in 13 rows, reducing to 11 rows at the level of single anal plate; ventrals 3 + 209; subcaudals 19, divided; body uniform light brown above and without color pattern; belly cream.

Oxyreedus subgen. nov. can be distinguished from all the Indochinese species by its relatively wide and flat head and monochrome coloration.

In terms of Indochinese forms it is separated by the following characteristics: *Oxyreedus* subgen. nov. differs from *C. buchi* by having fewer ventrals (3 + 209 vs. 221 - 236) and more supralabials (5 vs. 4) (Inger and Marx 1965); from *C. lovii gimleti* by the presence of a preocular (which is absent in the latter subspecies), fewer number of ventrals (3 + 209 vs. 215 -249) and more subcaudals (19 vs. 10 - 12), as well as F > PF (contrary condition in *C. lovii gimleti*) (Inger and Marx, 1965); from *C. lovii ingermarxorum* by the presence of a preocular and more supralabials (5 vs. 4) (Darevsky and Orlov 1992); from *C. pavimentata* by having more supralabials (5 vs. 4) and lacking body color pattern (dorsum uniform brown vs. dorsum with narrow, dark, longitudinal stripes, and with solid black color immediately behind the neck in *C. pavimentata*) (Inger and Marx 1965, Ziegler and Le 2005); from *C. Septentrionalis* by having more supralabials (5 vs. 4) and mental in contact with anterior chin shields (vs. mental separated from anterior chin shields) (Inger and Marx, 1965); from *C. thanhi* by the presence of a preocular and the absence of color pattern (vs. preocular absent and dorsum dark, with 4 - 6 light body bands in *C. thanhi*) (Ziegler and Le 2005); from *C. sangi* by having more ventrals and supralabials (V 3 + 209, Supralab 5 vs. V 2 + 190,

Supralab 4) (Nguyen et. al. 2010b); from *C. Gialaiensis* by having more ventrals and supralabials (V 3 + 209, Supralabials 5 vs. V 3 + 191, Supralabials 4), and color pattern on body (uniform brown above vs. dorsum light grayish brown with few dark blotches along posterior vertebral region) (Ziegler et al. 2009).

*Oxyreedus subgen. nov.*differs from *C. Yunnanensis* by the presence of a preocular; from *C. lumbricoidea*

in having more ventrals (3 + 209 vs. 144 - 196 in males) (Inger and Marx 1965), greater body length

(SVL 536 mm vs. 144 - 196 in males) (Inger and Marx 1965), and different type of coloration; from *C. Albiventer* by having larger body size (SVL 536 mm vs. 205 in males), more ventrals (3 + 209 vs. 3 + 143 - 144), and second and third supralabials entering orbit (third and fourth entering orbit in *C. albiventer*) (Inger and Marx 1965); from *C. schlegeli schlegeli* by having greater body length (SVL 536 mm vs. 125 - 391 in males), more ventrals (3 + 209 vs. 3 - 4 + 129 - 161 in males), and supralabials entering orbit (second and third scales vs. third and fourth), mental in contact with anterior chin shields (contrary condition in *C. schlegeli schlegeli*) (Inger and Marx 1965); from *C. prakkei* by having larger body length (SVL 536 mm vs. 172 - 245 mm), second and third supralabials entering orbit (vs. Third and fourth entering orbit), more ventrals (3 + 209 vs. 3 + 126 - 132 in males), and the difference of coloration (body uniform brown without pattern above vs. Scattered mid-dorsal scales with a dark central spots, scales of first row yellow in centers forming longitudinal stripes) (Inger and Marx, 1965); from *C. ingeri* by having second and third supralabials entering orbit (third and fourth entering orbit in latter species), mental in contact with anterior chin shields (separated in *C. ingeri*), and the difference of color pattern on back (uniform brown without pattern above vs. 26 incomplete light transverse bands on body and tail) (Grismer et al. 2004).

The previous diagnosis was taken, with minor alterations directly as quoted from Orlov et. al. (2010).

Distribution: Known only from a single specimen collected in the tropical rain forest, Thua Thien - Hue Province, Vietnam (Orlov et. al. 2010).

Etymology: Named in honour of my Great Dane dog Oxyuranus (called “Oxy” for short) who for eight years protected the Snakebusters reptiles safe from numerous attempted thefts by DSE (wildlife) officers acting outside their legal jurisdiction and inexperienced rival demonstrators seeking to undermine our position as the best reptile shows in Australia.

I also note online criticisms by serial complainers and "trolls" of my naming taxa after animals, in particular the ever complaining Mark O'Shea and reject them in total.

I happily concede to being an animal lover and one who detests animal cruelty in all its forms. If by naming a subgenus of snakes after an animal assists humans in appreciating animals, their vital role in maintaining our society and our need to care about their welfare, then I will be happy and satisfied.

PS *Oxyuranus* is a scientific name for a well-known Australian elapid snake.

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