

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 *RHINOPECEPHALUS* 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 crutchfieldi* sp. nov. is the Australian form of the species.

The two forms are easily separated by the fact that in *Unechis boschmai crutchfieldi* 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 crutchfieldi* sp. nov. the prefrontal is flat at the bottom where it contacts the upper labials, whereas 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 crutchfieldi* 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* or *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 subspecies 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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