Australasian Journal of Herpetology

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

ISSUE 47, PUBLISHED 9 JULY 2020

Australasian Journal of Herpetology

Issue 47, 9 July 2020.

Contents

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

Australasian Journal
***of Herpetology* ®**

Publishes original research in printed form in relation to reptiles, other fauna and related matters, including classification, ecology, public interest, legal, captivity, "academic misconduct", etc. It is a peer reviewed printed journal published in hard copy for permanent public scientific record in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), with sizeable print run and global audience and high impact.

Full details at:

http://www.herp.net

Online journals (this issue) do not appear for a month after the actual and listed publication date of the printed journals. Minimum print run of first printings is at least fifty hard copies.

Australasian Journal of Herpetology 47:3-31.
Published 9 July 2020.

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

Before they get wiped out! Formal descriptions of 15 new species of Monitor Lizard in the *Euprepiosaurus* (AKA *Varanus*) *indicus* (Daudin, 1802) and the *Shireenhosersaurea* (AKA *Varanus*) *prasinus* (Schlegel, 1839) species groups.

LSIDURN:LSID:ZOOBANK.ORG:PUB:80127B71-87E4-4384-87AE-004BF1C934C0

RAYMOND T. HOSER
LSIDurn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.
Phone: +61 3 9812 3322 ***Fax***: 9812 3355 ***E-mail***: snakeman (at) snakeman.com.au
Received 28 May 2020, Accepted 5 July 2020, Published 9 July 2020.

ABSTRACT

The Mangrove Monitor "*Varanus indicus*" (Daudin, 1802) and Green Monitor "*Varanus prasinus*" (Schlegel, 1839) were each long thought of as being single widespread species *sensu* Cogger *et al.* (1983) within the genus *Varanus* Merrem, 1820.

In 2013, Hoser resurrected the name *Euprepiosaurus* Fitzinger, 1843 as a full genus for the *Tupinambis indicus* Daudin, 1802 species group, excluding *Varanus indicus spinulosus* Mertens, 1941, in turn placed in the genus *Oxysaurus* Hoser, 2013 and the group including *Monitor prasinus* Schlegel, 1839, was placed in the new genus *Shireenhosersaurea* Hoser, 2013.

A group known as the Wolfgang Wüster gang of thieves, did via Kaiser *et al.* (2013) falsely accuse Hoser of "taxonomic vandalism".

They then themselves committed a despicable act of taxonomic vandalism when via Bucklitsch, Böhme and Koch, (2016) they illegally coined new names in the PRINO (peer reviewed in name only) onlne journal *Zootaxa* for exactly the same genera. Lifting material directly from the Hoser (2013) paper, Bucklitsch *et al.* coined unlawful new names, *Solomonsaurus* and *Hapturosaurus* for the same genera in order to clutter zoology with unnecessary objective synonyms.

As of 2020 about 17 distinctive forms previously associated with the putative taxon *Euprepiosaurus indicus* are widely recognized within herpetology as being separate species and have been formally named.

Following an audit of the species complex, this paper formally names twelve other hitherto unnamed forms from Australia, New Guinea and the Solomon Islands as new species on the basis of morphological and reproductive divergence from the 17 forms currently as of 2020 recognized as species.

In terms of the genus *Shireenhosersaurea.* three populations of putative *S. prasinus* (Schlegel, 1839) are also formally named for the first time. This makes 12 recognized species in the genus.

All species within the genera *Oxysaurus* and *Shireenhosersaurea* are probably in decline and some may be in imminent danger of extinction.

Formally naming new species is the critically important first step in their conservation as outlined by Hoser (2019a, 2019b).

Keywords: Herpetology; taxonomy; nomenclature; Varanidae; *Varanus*; *Euprepiosaurus*; *Oxysaurus*; *Shireenhosersaurea*; taxonomic vandalism; *Hapturosaurus*; *Solomonsaurus*; Monitor Lizards; Mangrove monitors; New Guinea; Australia; Solomon Islands; Papua; ICZN; *indicus*; *jobiensis*; *doreanus*; *finschi*; *semotus*; *spinulosus*; *prasinus*; new species; *oxyi*; *adelynhoserae*; *jackyhoserae*; *lenhoseri*; *matteoae*; *elfakhariorum*; *allengreeri; dorisioi*; *paulwoolfi*; *sloppi*; *powi*; *scottgranti*; *shireenhoserae*; *satis*; *clara*.

Hoser 2020 - Australasian Journal of Herpetology 47:3-31.

INTRODUCTION

The Iconic Mangrove Monitor "*Varanus indicus*" (Daudin, 1802) has been a popular reptile among reptile keepers and reptile scientists since it was first formally named back in 1802.

This is on account of its large size, spectacular colouration, often being dark grey or black and with sometimes bright yellow spots, combined with a generally docile temperament in captivity.

While various forms were described over the following 200 years, putative "*Varanus indicus*" was for many years thought of as a single widespread species *sensu* Cogger *et al.* (1983) within the genus *Varanus* Merrem, 1820.

At the time Cogger *et al.* (1983) synonymised no less than nine other previously named forms. They also omitted at least one other (*Varanus karlschmidti* Mertens, 1951).

That taxon has been treated by most authors, including myself as a junior subjective synonym of "*Varanus indicus jobiensis* Ahl 1932", which remained the case as of the completion of the current audit.

As of 2020, most of the described putative taxa synonymised by Cogger *et al.* (1983) have been resurrected from synonymy as full species and others formally named, meaning that as of 2020 about 17 distinctive forms previously associated with the putative taxon *Euprepiosaurus indicus sensu lato* are widely recognized within herpetology as being separate species.

In 2013, Hoser resurrected the name *Euprepiosaurus* Fitzinger, 1843 as a full genus for the "*Varanus indicus*" *sensu lato* species group, excluding *Varanus indicus spinulosus* Mertens, 1941, in turn placed in the genus *Oxysaurus* Hoser, 2013 and the group including *Monitor prasinus* Schlegel, 1839, placed in the new genus *Shireenhosersaurea* Hoser, 2013.

Notwithstanding theft of a draft paper in 2011 on the same subject but of far wider scope and detail, (see below), this paper has arisen as a result of an audit of the *Euprepiosaurus* Fitzinger, 1843 and *Shireenhosersaurea* Hoser, 2013 genera with a view to formally naming a sizeable number of obviously unnamed forms.

Post-dating 2011 and predating 2020, at least two further forms have been formally named, these being "*Varanus semotus* Weijola, Donnellan and Lindqvist, 2016" and "*Varanus bennetti* Weijola, Vahtera, Koch, Schmitz and Kraus, 2020".

Notwithstanding this, it has been well-known for many years that putative *Euprepiosaurus indicus* (Daudin, 1802) and consists of several more obviously unnamed species level taxa (e.g. Sprackland 1995, Ziegler *et al.* 2007a, Weijola 2017).

With some of these species-taxa confined to relatively small islands and currently being mis-labelled as populations of a widespread species, it is important that they be named before any risk of local extinction occurs.

It appears that some of these species may have already declined.

See for example Hoser (1995), McCoid *et al.* (1994), McCreless *et al.* (2015), Pianka (2012) and Pimm *et al.* (2006). However sometimes for a given species of large monitor, human activity may see an increase in numbers as detailed by Soler (2013).

A similar audit was conducted with respect of the species within the *Shireenhosersaurea prasinus* (Schlegel, 1839) species complex, a group which as of 2020 had nine widely recognized species. Putative *S. prasinus* in particular were inspected in order to identify any potentially unnamed forms and three were readily identified as unnamed species.

NOTES ON THE NOMENCLATURE OF THE RELEVANT GENERA AND SPECIES

A group known as the Wolfgang Wüster gang of thieves, did via Kaiser *et al.* (2013) falsely accuse myself, Raymond Hoser of "taxonomic vandalism".

Taxonomic vandalism is the deliberate act of renaming a biological entity that one knows is already named (usually species or genus) combined with the reckless and deliberate promotion of the incorrect "synonym" name in favour of the earlier name that is known to be correct and in accordance with the *International Code of Zoological Nomenclature.* Taxonomic Vandalism is anti-science and a direct attack on the *International Code of Zoological Nomenclature*. It also has serious negative consequences for wildlife conservation and public safety as detailed by Hoser (2015a-f) and Hoser (2019a-b).

I can state as a matter of fact, that I have never engaged in taxonomic vandalism in any way, shape or form, and thoroughly detest the act and any person who engages in it.

The Wolfgang Wüster gang of thieves, did after falsely accusing myself of taxonomic vandalism did then themselves commit a despicable act of taxonomic vandalism.

This was when via Bucklitsch, Böhme and Koch, (2016) they illegally coined new names for exactly the same varanid genera *Shireenhosersaurea* Hoser, 2013 and *Oxysaurus* Hoser, 2913 in a PRINO (peer reviewed in name only) online journal *Zootaxa*. Lifting material directly from the Hoser (2013) paper, in an act of theft or plagiarisation, Bucklitsch *et al.* coined illegal new names, *Solomonsaurus* and *Hapturosaurus* for the same genera in order to clutter zoology with unnecessary objective synonyms.

Overuse of these illegal names and self-citation by the Wolfgang Wüster gang of thieves in the online PRINO (Peer reviewed in name only) journal "*Zootaxa*" that they control, led to that journal being blackballed by Clarivate, the company behind the widely touted "Impact Factor", widely used by academics to measure credibility of scientific journals (Oransky, 2020).

The Wolfgang Wüster gang of thieves have been at war against the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) for decades (see Hoser 2007).

Their more recent war cry manifesto known as "Kaiser *et al.* (2013)", although in fact written by Wolfgang Wüster (see Kaiser 2012a) as frequently amended (see also Kaiser 2012, 2012b, 2013, 2014a and 2014b) has been discredited numerous times (e.g. Cogger (2014), Dubois (2014), Dubois *et al.* (2019), Eipper (2013), Hoser (2009a, 2012a, 2012b, 2015a-f, 2019a-b), Mutton (2014a, 2014b), Shea (2013a-d), Thorpe (2013, 2014a, 2014b), Wellington (2013, 2014a, 2014b), Wells (2013, 2014) and sources cited therein).

Notwithstanding these setbacks the Wolfgang Wüster gang remain undeterred and continue to commit acts of internet trolling, running countless fake accounts online for peddling hatred and lies, as well as engaging in overt scientific fraud, property theft, assault, vandalism, money fraud, money laundering, rapes, child sex offences, trafficking of amphetamines, animal abuse and cruelty, wildlife smuggling, shooting people (yes, two of the group have been convicted of this) and other serious crimes (Supreme Court of Western Australia 2009, Hobbs 2010, Goodman 2019).

Some members of the group have been charged and jailed for various crimes, including for example David John Williams, convicted and fined $7,500 for animal cruelty and wildlife smuggling at the Cairns Magistrates Court, Damien Mark Harding jailed for child sex offences, Seth Pywell fined for his role in the shooting two people, Matthew Gatt fined $8,000 for the theft of a snake and Andrew Browne jailed for child sex offences, but the group ring leaders Wolfgang Wüster, Mark O'Shea and Wulf Schleip have managed to avoid criminal sanctions to date.

Wolfgang Wüster and Mark O'Shea even post images of themselves committing crimes online, but have somehow managed to avoid criminal sanctions.

As of 2020, members of the Wolfgang Wüster gang of thieves had plagiarised works of other scientists and in breach of the *International Code of Zoological Nomenclature* illegally renamed nearly 100 species and genera previously formally named by other ethical scientists.

Keeping count of their acts of taxonomic vandalism and theft is an extremely difficult task, but lists of these acts are regularly published!

The gang have then by use of countless false accounts and false identities, created a false veneer online that their illegal names are the correct names and that the earlier proper names should not be used.
Noting that Wolfgang Wüster gang of thieves members Bucklitsch, Böhme and Koch did in 2016 illegally create objective junior synonyms of *Oxysaurus* Hoser, 2013 and *Shireenhosersaurea* Hoser, 2013, people should be mindful of almost certain further acts of taxonomic vandalism by this gang of thieves in PRINO journals they control, including the PRINO Online *Zootaxa*, in terms of new names erected in this paper.

PRINO is an acronym for “Peer reviewed in name only” which is the term best described for the online journals that that Wolfgang Wüster gang of thieves members publish their fraudulent papers in.
The journals such as the predatory PRINO journal “*Zootaxa*” have near zero respect for the principles of science, or ethics and significantly papers published in them are either not peer reviewed in any way, or alternatively the process is shambolic as to be non-existent in any meaningful way.
See also Oransky (2020).

While peer review is not a mandatory requirement of the *International Code of Zoological Nomenclature*, it is regarded as the gold standard in scientific publishing and therefore is generally expected in such publications.

I (Raymond Hoser) have worked with the Varanidae for decades and was due to publish a major monograph on the entire Family Varanidae in 2010. It and a number of other major publications constituting the major part of three decades of full-time work was delayed due to several factors.

On 17 August 2011, our facility was subjected to an illegal armed raid by the Australian State Police (Victoria) and the State Wildlife Department. This raid was initiated by a cohort including members of the Wolfgang Wüster gang of thieves.

The draft manuscript of the Varanidae monograph, dozens of drafts of other major papers, three near comple book manuscripts, production materials for a series of wildlife documentaries, data, slides and almost all other relevant materials were stolen.

I also note that, notwithstanding the theft of relevant materials from this author in the illegal armed raid on 17 August 2011, which were not returned in breach of undertakings to the court (Court of Appeal Victoria 2014 and VCAT 2015), I have made a decision to publish this paper.

This is in view of the conservation significance attached to the formal recognition of unnamed taxa at all levels and on the basis that further delays may in fact put these presently unnamed or potentially improperly assigned taxa at greater risk of extinction as outlined by Hoser (2019a, 2019b).

This comment is made noting the extensive increase in human population in Australia, New Guinea and the Solomon Islands, with a conservative forecast of a four-fold increase in human population in the next 100 years, being from 25 million to 100 million in Australia and an even more dramatic increase in New Guinea (both sides) and the Solomon Islands.

This is coupled with the general environmental destruction across the continental region as documented by Hoser (1991), including low density areas without a large permanent human population.

I also note the abysmal environmental record of various Australian National, State and Local governments in the relevant part of the Australasian region over the past 200 years as detailed by Hoser (1989, 1991, 1993 and 1996) and a record no better in other nearby countries, which without exception are promoting policies of rapid human population growth.

MATERIALS AND METHODS

Specimens of most species were inspected either live or dead as was all relevant and available literature. This included all previous descriptions of taxa, including known synonyms as cited at the end of this paper. This is an expanded list over and above that published by Cogger *et al.* (1983), that also includes most recently described forms.

Of particular relevance to this review, were phylogenetic and morphological studies that helped identify morphologically similar species and/or those most closely related.

Significantly phylogenetic studies that identified species level taxa within *Euprepiosaurus* Fitzinger, 1843 showed lineages separated by well-known biogeographical barriers, such as the New Guinea central Cordillera and sea barriers present in the Solomon Islands at the height of recent glacial maxima.

These same barriers were relevant to species of snakes, lizards, crocodiles, frogs and mammals that were formally identified and named by myself in northern Australia, New Guinea and the Solomon Islands in the following 22 papers: Hoser (1998a, 2000a, 2000b, 2013a, 2013c, 2014, 2015g, 2016a-g, 2018, 2019c-f, 2020).

The following is noted in as much as the morphological and biogeographical evidence on its own and in the absence of molecular studies would have inevitably led to the same species concepts.

Included in the audit were photos of species with good locality data and distribution maps from State Museums, based on specimens in their collections, noting that for some species, the historical distributions were very different to the extant distributions.

Where available and applicable, fossil specimens and records were also reviewed.

Past descriptions and synonymies were reviewed with a view to using available names for species identified herein if they had been properly proposed in the past.

Publications relevant to the taxonomic and nomenclatural conclusions in terms of the genus *Euprepiosaurus* in this paper are as follows: Ahl (1932), Allison (1996, 2007a, 2007b), Allison and Leisz (2009), Amer and Kumazawa (2008), Ast (2001), Barts *et al.* (2006), Ávalos and Martínez Carrión (1997), Bayless and Dwer (1997), Bennett (1995, 1998, 2017), Böhme (1991a, 1991b, 2003, 2014), Böhme and Koch (2010), Böhme and Ziegler (1997, 2005, 2007), Böhme *et al.* (1994, 2004, 2016, 2009), Boulenger (1885, 1886), Brandenburg (1983), Brongersma (1948), Brown (2014), Brygoo (1987), Buden (2015a, 2015b), Buden and Taboroši (2016), Bucklitsch *et al.* (2016), Cogger (2014), Cogger *et al.* (1983), Cota (2008), Daudin (1802), De Lisle (1996, 2009), De Rooij (1915), Dryden (1965), Dubois *et al.* (2019), Earley *et al.* (2002), Eidenmüller and Philippen (2007), Ellis (2018), Emerson (2008), Fitch *et al.* (2006), Frydlova and Frynta (2010), Frýdlová *et al.* (2011, 2013), Good et al. (1993), Grabbe (2014), Grabbe and Koch (2014), Gray (1831), Gregorovicova *et al.* (2012), Günther (1879), Hagen *et al.* (2012), Harvey and Barker (1998), Hediger (1934), Holmes (2010), Horn (1977), Hoser (1989, 1998, 2007, 2012b, 2013c, 2014, 2015g, 2016a-g, 2018, 2019c-f, 2020a-b), How and Kitchener (1997), Ianucci *et al.* (2019), ICZN (2020), Kirschner and Koschorke (1998), Kishida (1929), Koch (2012), Koch and Böhme (2005), Koch *et al.* (2007, 2009, 2010a, 2010b, 2013), Kok (1995), Kraus (2013), Lesson (1830), McCoid *et al.* (1994), McCreless *et al.* (2015), McCoy (1980, 2015), Merrem (1820), Mertens (1924, 1941, 1942, 1951, 1963), Meyer (1874), Milenkaya and Lindley McKay (2016), Natusch and Lyons (2017), Oliver *et al.* (2016), Oliver *et al.* (2017), Peters and Doria (1878), Philipp (1999), Philipp *et al.* (1999, 2007), Pianka (2012), Pianka and King (2004), Pianka and Sweet (2016), Pianka and Vitt (2003), Pimm *et al.* (2006), Rese (1988), Ride *et al.* (1999), Rowe *et al.* (2011), Schmidt (1932), Setiadi and Hamidy (2006), Smith and Filiardi (2007), Soler (2013), Somma and Koch (2012), Sprackland (1993, 1994, 1995, 2004, 2007), Steadman (1995), Steadman *et al.* (1999), Stefani (2008), Strickland *et al.* (2016), Sweet and Pianka (2003, 2007), Switak (2006), Toussaint *et al.* (2016), Vidal *et al.* (2012), Voris (2000), Wallace (1858, 1876, 1881), Wells and Wellington (1984, 1985), Weijola (2010, 2015, 2017), Weijola and Sweet (2010, 2015), Weijola *et al.* (2016, 2019, 2020), Welton *et al.* (2014), Werning (2010), Wesiak (2009), Wesiak and Koch (2009), Wilson (2015), Wilson and Swan (2017), Woods (2007), Ziegler and Minh (2018), Ziegler *et al.* (1999, 2001, 2007a, 2007b, 2016), and sources cited therein.

These papers as a group also effectively include and contain a near complete summary of all that is currently known to science of the ecology, captive husbandry and conservation status of the relevant species (the entirety of the genus *Euprepiosaurus*) and to that extent form an important and near complete bibliography as of 2020.

As already stated, a similar audit was conducted with respect of the species within the *Shireenhosersaurea prasinus* (Schlegel, 1839) species complex, a group which as of 2020 had nine widely recognized species. Putative *S. prasinus* in particular were inspected in order to identify any potentially unnamed forms and all specimens were reconciled with existing species allocations based on current taxonomy.

Publications relevant to the taxonomic and nomenclatural conclusions in terms of the genus *Shireenhosersaurea* Hoser, 2013 in this paper are as follows: Akeret (2014), Ávalos and Martínez Carrión (1997), Bennett (1995, 1998, 2015), Bleeker (1856), Böhme (2003, 2014), Böhme and Jacobs (2001), Böhme and Koch (2010), Bosch (1996), Boulenger (1885, 1895), Brown (2014), Bucklitsch *et al.* (2016), Canto (2013), Cogger (2014), Cogger *et al.* (1983), Cooper *et al.* (2019), Czechura (1980), Davis (2014), Dawson (2018), De Lisle (1996, 2009), Dedlmar (2007a, 2007b, 2008), De Rooij (1915), De Vis (1887), Doria (1875), Eidenmüller (2007a, 2007b), Eidenmüller and Philippen (2007), Eidenmüller and Wicker (1992, 2005), Eidenmüller *et al.* (2017), Frýdlová and Frynta (2010), Good *et al.* (1993), Gray (1831), Hartdegen *et al.* (1999), Hörenberg and Koch (2013), Hoser (1989, 1998, 2007, 2012b, 2013c, 2014, 2015g, 2016a-g, 2018, 2019c-f, 2020a-b), Iannucci *et al.* (2019), ICZN (2001), Jacobs (2002, 2003, 2008), Koch (2016, 2018), Koch and Eidenmüller (2019), Koch *et al.* (2010a, 2010b, 2013, 2014), LiVigni (2013), Mann (1976), McCurry *et al.* (2015), Mendyk (2007, 2011, 2015), Mendyk and Horn (2011), Mertens (1941, 1942, 1950, 1959, 1963), Meyer (1874), Moldovan (2009), Mundhenk (2008), O'Shea (1991), Pianka (2012), Pianka and King (2004), Polleck (2004), Rauhaus et al. (2014), Reisinger (2014), Reisinger and Reisinger-Raweyai (2007a, 2007b), Schlegel (1839), Schneider (2016a, 2016b, 2016c), Shuter (2014), Sprackland (1991, 1995, 2010), Spranger (2012), Switak (2006), Weijola *et al.* (2019), Werning and Lutzmann (2014), Whittier and Moeller (1993), Wilson (2015), Wilson and Swan (2017), Ziegler and Böhme (1996, 1998), Ziegler (2012), Ziegler *et al.* (2007, 2009, 2016), including sources cited therein. These papers as a group also effectively include and contain a near complete summary of all that is currently known to science of the ecology, captive husbandry and conservation status of the relevant species (being the entirety of the genus *Shireenhosersaurea*) and to that extent form an important and near complete bibliography as of 2020.

RESULTS

The morphological and molecular evidence based on the literature combined with the inspection of specimens tended to match to seventeen readily identifiable named and unnamed species within the genus *Euprepiosaurus*.

As mentioned previously, phylogenetic studies that identified species level taxa within *Euprepiosaurus* Fitzinger, 1843 showed hitherto unnamed lineages separated by well-known biogeographical barriers, such as the New Guinea central Cordillera and sea barriers present in the Solomon Islands at the height of recent glacial maxima.

These same barriers were relevant to taxa of snakes, lizards, crocodiles, frogs and mammals that were formally identified and named by myself in northern Australia, New Guinea and the Solomons in the 22 following papers: Hoser (1998a, 2000a, 2000b, 2013a, 2013c, 2014, 2015g, 2016a-g, 2018, 2019c-f, 2020).

In those papers, single putative species were split along near identical lines to the splits proposed herein for *Euprepiosaurus* (and *Shireenhosersaurea* Hoser, 2013) or accepted herein from previous species divisions. See for example Hoser (2016e), that separated one putative species within the putatively monotypic genus *Corucia* Gray, 1855, (the Giant Skink, from the Solomon Islands), into five geographically separated species. That division coincided entirely with sea barriers during glacial maxima in recent geological times. That division also wholly matched the molecular data of Hagen *et al.* (2012).

The preceding is noted, because in the case of *Euprepiosaurus*, the morphological and biogeographical evidence on its own and in the absence of molecular studies would have inevitably led to the same species concepts for the genus *Euprepiosaurus.*

Twelve hitherto unnamed species of *Euprepiosaurus* are formally named for the first time within this paper.

These are in addition to the seventeen currently (as of 2020) recognized species.

In terms of the genus *Shireenhosersaurea* Hoser, 2013, three new species were identified and are named herein.

Putative *S. prasinus* (Schlegel, 1839) from northern New Guinea, were very different to the nominate form from west New Guinea.

This taxon appears to be found at least in the region generally east of Teba and the Mamberano River in Irian Jaya at least as far east as the Huon Peninsula in Papua New Guinea. It is herein formally named as a new species.

A population centred around the Popondetta/Mount Victory area of Papua New Guinea was also found to be divergent and distinctive and is herein named as a new species, being morphologically most similar to *S. bogerti* (Mertens, 1950).

Specimens from Papua New Guinea, extending from the Milne Bay region of south-east New Guinea to the east of the Trans-Fly region of New Guinea, generally south of the central cordillera, were also found to be distinct and are also formally named herein as a new species. While generally green in colour, this taxon shares morphological traits with *S. keithhornei* (Wells and Wellington, 1985) and *S. beccari* (Doria, 1874).

In early 2020, an Opinion was published by the International Commission of Zoological Nomenclature, following a successful and unopposed application by Wiejola (2015) seeking to replace the (then) current neotype of *Varanus indicus* to one originating from the type locality Ambon.

This action resulted in two nomenclatural changes which were as follows: the name *E. cerambonensis* (Philipp *et al.*, 1999) was effectively synonymised with *E. indicus* (Daudin, 1802) and also *E. chlorostigma* (Gray, 1831) becomes the valid name for the species previously known as *E. indicus* from the Arafura Region. The genus name of the *E. indicus* Group (*Euprepiosaurus*) remains unchanged.

The diagnostic material within this paper incorporates this nomenclatural action and so effectively post dates that.

The 17 currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E.*

melinus (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998) and *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

There is no conflict of interest in terms of this paper or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked as are relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal descriptions, spellings should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature (ICZN).

In the unlikely event two or more newly named taxa are deemed to be the same by a first reviser, then the name to be used and retained is that which first appears in this paper by way of page priority and as listed in the abstract keywords.

Some material in descriptions for taxa may be repeated for other taxa in this paper and this is necessary to ensure each fully complies with the provisions of the *International Code of Zoological Nomenclature* (Fourth edition) (Ride *et al.* 1999) as amended online since.

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 4 July 2020 (including if also viewed prior), unless otherwise stated and was accurate in terms of the content cited herein as of that date.

Unless otherwise stated explicitly, colour and other descriptions apply to living adult specimens of generally good health and not under any form of stress by means such as excessive cool, heat, dehydration, excessive ageing, abnormal skin or reaction to chemical or other input.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant species or subspecies has already been spelt out and/or is done so within each formal description and does not rely on material within publications not explicitly cited herein.

CONSERVATION

In terms of conservation of each population of each species as described in this paper, the relevant comments in Hoser (1989, 1991, 1993, 1995, 1996, 2019a and 2019b) apply.

Several of the previously cited publications cited in the "Materials and Methods" section of this paper talk extensively about declines in relevant species caused by human factors.

Wildlife laws as currently enforced in Australia, Indonesia, Papua New Guinea and the Solomon Islands are not in a materially significant way enhancing the long-term survival prospects of any of the relevant species.

Over breeding of humans, wholly in line with government policy and the environmental problems associated with this overpopulation are by far the greatest long term threat to each and every relevant species, noting that already liberated feral pest species continue to cause ongoing stress and decline of some relevant species as explicitly detailed in Hoser (1991).

In line with the Australian Federal Government's "Big Australia" policy, that being to increase the human population of 25 million (2020), from 13 million in around 1970, to over 100 million within 100 years "so that we can tell China what to do", as stated by the former Prime Minister, Kevin Rudd in 2019 (Zaczek 2019), the human pressure on the relevant ecosystems has increased in line with the human populations nearby and will clearly continue to do so.

This paper formally names a total of 15 hitherto unnamed forms from Australia, New Guinea and the Solomon Islands as new species on the basis of morphological and reproductive divergence.

All forms are probably in decline and some may be in imminent danger of extinction caused by imported pest species.

See for example Hoser (1995), McCoid *et al.* (1994), McCreless *et al.* (2015), Pianka (2012) and Pimm *et al.* (2006). However sometimes for a given species of large monitor, human activity may see an increase in numbers as detailed by Soler (2013).

Formally naming new species is the critically important first step in their conservation as outlined by Hoser (2019a, 2019b).

In accordance with the recommendations in the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), this is being done as soon as is practicable.

EUPREPIOSAURUS OXYI SP. NOV.

LSIDurn:lsid:zoobank.org:act:7BD0940B-4D14-415F-B0DD-6364F46AA8F1

Holotype: A preserved specimen at the Queensland Museum in Brisbane, Queensland, Australia, specimen number J18103 collected from Claudie River, Cape York, Queensland, Australia, Latitude -12.7667 S., Longitude 143.2833 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Queensland Museum in Brisbane, Queensland, Australia, specimen number J32020 collected at 10 km from the mouth of the Pascoe River, far North Queensland, Australia, Latitude -12.5667 S., Longitude 143.2167 E.

Diagnosis: Until now, *Euprepiosaurus oxyi sp. nov.* has been treated as an Australian population of *E. doreanus* (Meyer, 1874), with a type locality of Doreh, Berou peninsula, northwestern New Guinea and until now would key out as that species using the key in Ziegler *et al.* (2007a).

However *E. doreanus* from north and west of the central cordillera of New Guinea are significantly different to those putative lizards from northern Australia and nearby parts of southern New Guinea.

Euprepiosaurus oxyi sp. nov. is readily separated from all other species within the genus *Euprepiosaurus* Fitzinger, 1843 (named previously and those named within this paper) by the following unique suite of characters: Entire tongue light, pinkish and without with an ill-defined dark pigmentation in the anteriormost part; Temporal band absent; Dorsum may range from nearly black to dark greyish-brown to blue-grey, with a dorsum covered with well-spaced tiny spots or dots on a dark background. Less than thirteen well defined light cross bands across the posterior part of the (full) tail. There is a strong bluish tinge to the posterior part of the tail, extending towards the anterior and losing intensity as it progresses forewards, the bluish tinge sometimes including the rear of the body and hind feet.

E. oxyi sp. nov. is only likely to be confused with *E. doreanus*, but can be separated from that species by having less than 13 well defined light cross bands on the posterior part of the tail, versus more than 14 in *E. doreanus.*
The dorsal colouration of both *E. oxyi sp. nov.* and *E. doreanus* also differs. Adult *E. oxyi sp. nov.* are dark and blackish on the dorsal surface of the body, with numerous discrete small, evenly spaced bright yellow spots that are circular in nature and well separated from one another by the blackish background.

By contrast *E. doreanus* have a dorsum where the yellow spots join one another to form a pattern of irregular shapes and broken lines, but not one of discrete yellow spots on black background and evenly spaced from one another as seen in *E. oxyi sp. nov.*

Juvenile *E. oxyi sp. nov*. are generally blackish in colour with evenly spaced yellow spots, whereas juvenile *E. doreanus* are of dark but uneven colouration with a pattern of small ocelli along with other lighter markings across the dorsum, forming an indistinct reticulum.

Adult *E. oxyi sp. nov.* in life is depicted in Wilson (2015) on page 211, on left; Wilson and Swan (2017) at page 463, middle left, or online at:
https://spinelesswonders.smugmug.com/Reps-Aust-N-Guinea-SE-Asia/New-Guinea-Reptiles/New-Guinea-Lizards-Varanidae/

Young *E. oxyi sp. nov*. in life is depicted in Brown (2014) on page 903 bottom right.

Adult *E. doreanus* in life is depicted in Cogger (2014) on page 768.

Young *E. doreanus* in life is depicted in Bennett (1998) on page 103 at top of page.

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *Euprepiosaurus oxyi sp. nov.* occurs on the northern parts of Cape York, Queensland as well as proximal parts of southern New Guinea.

Etymology: The new species *Euprepiosaurus oxyi sp. nov.* is named in honour of a (now deceased) Great Dane, dog, owned by the author for eight years who guarded the research facility and reptile education reptile display business Snakebusters: Australia's best reptiles, from acts of theft and other potential attacks (e.g. Goodman 2019). The species name is short and easy to remember.

EUPREPIOSAURUS ADELYNHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:40642E86-21D8-46B4-801B-1CF0F33D7161

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R115341 collected at Diodo, Chimbu Province, Papua New Guinea, Latitude 6.55 S., Longitude 144.833 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.122689, collected from Namosado, Southern Highlands District, Papua New Guinea, Latitude -6.250 S., Longitude 142.783 E.

Diagnosis: *Euprepiosaurus adelynhoserae sp. nov.* from south of the central cordillera in New Guinea has until now been treated as putative *E. jobiensis* (Ahl, 1932) with a type locality from north of the central cordillera.

However *E. jobiensis* with a type locality of Jobi Island (= Japen = Yapen), Irian Jaya, Indonesia, and including specimens from north and west of the central cordillera of New Guinea are significantly different to lizards of the same putative species from nearby parts of southern New Guinea, south of the main central cordillera.

Likewise for specimens assigned to *E. jobiensis* from the Milne Bay and Central Province region of Papua New Guinea, which are herein described as *E. jackyhoserae sp. nov.*.

E. adelynhoserae sp. nov. is readily separated from all other species within the genus *Euprepiosaurus* Fitzinger, 1843 (including those named previously and those named within this paper) by the following unique suite of characters: Entire tongue light, pinkish; temporal band present; throat whitish yellow, with a pinkish, reddish or orange tinge (hence the name, "peach-throated monitor lizard"), the light colouring extending to the rear upper labial area and to the side of the head posterior to the eye; anterior labial scales are purple in colour and etched with white, but fading somewhat with age; a distinct pointed, angular head that is blackish in colour with numerous well-defined yellow spots; it is a slender species with a long neck; dark brownish dorsum with dense dark yellow transversal spotting to form a distinctive banding pattern (7-8 bands); limbs are densely spotted with yellow; posterior of tail is a blue-turquoise in colour and banded.

E. jackyhoserae sp. nov. is similar in most respects to *E. adelynhoserae sp. nov.* as described above, but is readily separated from that species by having pale whitish-yellow on the throat and without an obvious pink or red tinge, spots on the back tending to form small occeli, limbs that are spotted with tiny occeli that are well scattered or spaced (as opposed to spots in both *E. adelynhoserae sp. nov.* and *E. jobiensis*) and minimal if any blueing of colour at the posterior end of the banded tail in mature adults.

The only species likely to be confused with *E. adelynhoserae sp. nov.* or *E. jackyhoserae sp. nov.* is *E. jobiensis* and that species is readily separated from both *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.* by having a greyish dorsum (not dark brown), with dense white (not yellow) spotting on the dorsum forming the distinctive banding pattern (7-8 bands); legs while spotted with white, are not densely spotted as in *E. adelynhoserae sp. nov.* or *E. jackyhoserae sp. nov.*.

In *E. jobiensis* the upper labials both anterior to and posterior to the eye, including the temporal region are grey. Underneath the jaw and throat, the colouration is generally an intense dark yellow, with slight red tinge, versus whitish yellow in *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*.

E. jobiensis E. adelynhoserae sp. nov. and *E. jackyhoserae sp. nov.* are separated from all other species of *Euprepiosaurus* by the following unique suite of characters: Entire tongue light, pinkish; Temporal band present; Throat whitish-yellow or intense dark yellow, with a pinkish, reddish or orange tinge ("peach-throated monitor lizard"); angular head; slender species with long neck and distinct pointed head; dark grey or brown dorsum with dark transversal banding and numerous tiny light spots (white or yellow), potentially forming tiny occeli, forming a distinctive pattern of 7-8 crossbands across the body; posterior of tail is usually blue-turquoise in colour and banded.
The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. adelynhoserae sp. nov.* appears to be restricted to the mainland of New Guinea south of the central cordillera, generally in the region between the generalized Trans Fly area of PNG, commencing near the type locality, west to about the Lorentz River System area, Irian Jaya.

E. jackyhoserae sp. nov. is confined to the Milne Bay and Central Provinces region of Papua New Guinea, mainly south of the Owen Stanley Range, but apparently extending north as far west as Popondetta.

E. jobiensis is restricted to New Guinea and Irian Jaya, north of the central Cordillera and west of the Huon Peninsula and includes the form originally described as *Varanus karlschmidti* Mertens, 1951, occurring within this range.

Etymology: The new species *E. adelynhoserae sp. nov.* is named in honour of my eldest daughter, Adelyn Hoser, aged 21 in 2020 in recognition of a lifetime's work involved in wildlife research, conservation and education via Snakebusters:Australia's best reptile shows and other associated activities.

EUPREPIOSAURUS JACKYHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:316EC905-16A1-4ACD-BEA4-E3AB148D4A52

Holotype: A preserved specimen at the Bernice P. Bishop Museum, Honolulu, Hawaii, USA, specimen number BPBM 17250 collected at Omunsa, Milne Bay Province, Papua New Guinea. This facility allows access to its holdings.

Paratype: A preserved specimen at the Bernice P. Bishop Museum, Honolulu, Hawaii, USA, specimen number BPBM 19510 collected from Dorobisoro, Central Province, Papua New Guinea.

Diagnosis: Specimens assigned to *Euprepiosaurus jobiensis* from the Milne Bay and Central Province region of Papua New Guinea, are herein described as *E. jackyhoserae sp. nov.*.

E. adelynhoserae sp. nov. from south of the central cordillera in New Guinea has until now been treated as putative *E. jobiensis* (Ahl, 1932) with a type locality from north of the central cordillera.

However *E. jobiensis* with a type locality of Jobi Island (= Japen = Yapen), Irian Jaya, Indonesia, and including specimens from north and west of the central cordillera of New Guinea are significantly different to lizards of the same putative species from nearby parts of southern New Guinea, south of the main central cordillera and the Milne Bay/Central Province animals, which are different again.

E. adelynhoserae sp. nov. is readily separated from all other species within the genus *Euprepiosaurus* Fitzinger, 1843 (including those named previously and those named within this paper) by the following unique suite of characters: Entire tongue light, pinkish; temporal band present; throat whitish yellow, with a pinkish, reddish or orange tinge (hence the name, "peach-throated monitor lizard"), the light colouring extending to the rear upper labial area and to the side of the head posterior to the eye; anterior labial scales are purple in colour and etched with white, but fading somewhat with age; a distinct pointed, angular head that is blackish in colour with numerous well-defined yellow spots; it is a slender species with a long neck; dark brownish dorsum with dense dark yellow transversal spotting to form a distinctive banding pattern (7-8 bands); limbs are densely spotted with yellow; posterior of tail is a blue-turquoise in colour and banded.

E. jackyhoserae sp. nov. is similar in most respects to *E. adelynhoserae sp. nov.* as described above, but is readily separated from that species by having pale whitish-yellow on the throat and without an obvious pink or red tinge, spots on the back tending to form small occeli, limbs that are spotted with tiny occeli that are well scattered or spaced (as opposed to spots in both *E. adelynhoserae sp. nov.* and *E. jobiensis*) and minimal if any blueing of colour at the posterior end of the banded tail in mature adults.

The only species likely to be confused with *E. adelynhoserae sp. nov.* or *E. jackyhoserae sp. nov.* is *E. jobiensis* and that species is readily separated from both *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.* by having a greyish dorsum (not dark brown), with dense white (not yellow) spotting on the dorsum forming the distinctive banding pattern (7-8 bands); legs while spotted with white, are not densely spotted as in *E. adelynhoserae sp. nov.* or *E. jackyhoserae sp. nov.*.

In *E. jobiensis* the upper labials both anterior to and posterior to the eye, including the temporal region are grey. Underneath the jaw and throat, the colouration is generally an intense dark yellow, with slight red tinge, versus whitish yellow in *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*.

E. jobiensis E. adelynhoserae sp. nov. and *E. jackyhoserae sp. nov.* are separated from all other species of *Euprepiosaurus* by the following unique suite of characters: Entire tongue light, pinkish; Temporal band present; Throat whitish-yellow or intense dark yellow, with a pinkish, reddish or orange tinge (“peach-throated monitor lizard”); angular head; slender species with long neck and distinct pointed head; dark grey or brown dorsum with dark transversal banding and numerous tiny light spots (white or yellow), potentially forming tiny occeli, forming a distinctive pattern of 7-8 crossbands across the body; posterior of tail is usually blue-turquoise in colour and banded.

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus “*Varanus*”.

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. adelynhoserae sp. nov.* appears to be restricted to the mainland of New Guinea south of the central cordillera, generally in the region between the generalized Trans Fly area of PNG, commencing near the type locality, west to about the Lorentz River System area, Irian Jaya.

E. jackyhoserae sp. nov. is confined to the Milne Bay and Central Provinces region of Papua New Guinea, mainly south of the Owen Stanley Range, but extending on the north side about as far west as Popondetta.

E. jobiensis is restricted to New Guinea and Irian Jaya, north of the central Cordillera and west of the Huon Peninsula and includes the form originally described as *Varanus karlschmidti* Mertens, 1951, which was sourced from within this range.

Etymology: The new species *E. jackyhoserae sp. nov.* is named in honour of my youngest daughter, Jacky Hoser, aged 19 in 2020 in recognition of a lifetime’s work involved in wildlife research, conservation and education at Snakebusters: Australia’s best reptile shows and other associated activities.

EUPREPIOSAURUS LENHOSERI SP. NOV.

LSIDurn:lsid:zoobank.org:act:21D81D7B-EFF2-4A20-9AFA-DEDDDA971750

Holotype: A preserved specimen at the Zoological Museum of the University of Turku, Finland, specimen number: ZMUTSa197 from Misima Island, Louisiades Islands, Milne Bay Province, Papua New Guinea. This facility allows access to its holdings.

Paratype: A preserved specimen at the Zoological Museum of the University of Turku, Finland, specimen number: ZMUTSa200 from Sudest Island, Louisiades Islands, Milne Bay Province, Papua New Guinea.

Diagnosis: *Euprepiosaurus lenhoseri sp. nov.* from the Louisiades islands, Milne Bay Province, Papua New Guinea, is quite unlike any other species in the genus *Euprepiosaurus* Fitzinger, 1843 and no others are likely to be confused with it. *E. lenhoseri sp. nov.* is readily separated from all other species in the genus *Euprepiosaurus* by the following unique suite of characters:

An appearance in many ways reminiscent of a Perentie *Titanzius giganteus* Gray, 1845 in that in this species the dorsum of the body and hind limbs has a well defined pattern of yellow occeli in cross-bands running across the body, separated by wider areas of yellow-grey, which at the centre have a semiformed line of similar occeli creating a mid-space line. Each row of (full) ocelli across the body contains about 6 fully formed dark centred occeli and there are between 6-10 such rows across the body from neck to pelvic region. Yellow spotting on forelimbs is dense, prominent and tending towards forming crossbands on the upper parts and closely spaced large yellow spots on the top of the hands, with fingers mainly yellow.

On the hind limbs spots are larger, more widely spaced and tending towards forming occeli with dark centres, with the toes having a black and yellow banded appearance.

Upper labials from snout to below eye are yellow, then brownish after that. Upper surface of head is brownish with a few scattered and irregularly shaped spots.

There is a distinctive elongate patch of yellow anterior to the ear (length being vertically orientated), the rest of the back of the side of the head being generally brownish grey in colour. Chin and gular region yellow with scattered grey spots. There is an indistinct light streak running from behind the eye to the mid-ear.

Iris is dark orange.

A photo of *E. lenhoseri sp. nov.* in life can be found in Weijola (2017), page 14 at bottom right.

Weijola (2017) also carries images of 13 other (then recognized) species of *Euprepiosaurus* on pages 13 and 14 and none look anything remotely like *E. lenhoseri sp. nov.* (and same applies for the other taxa depicted in images listed below, or formally named in this paper) and none have characters (in total) in any way like the suite for *E. lenhoseri sp. nov.* as described herein.

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *Euprepiosaurus lenhoseri sp. nov.* is evidently restricted to the Louisiades islands, Milne Bay Province, Papua New Guinea, including Misima, Sudest and Rossell islands.

The Rossell Island form is divergent and may even warrant subspecies-level designation: (Also see Hoser (2020) on pages 81-82).

Etymology: The new species *E. lenhoseri sp. nov.* is named in honour of my now deceased father, Leonard (Len) Donald Hoser, born in the United Kingdom of England, Scotland and Wales, being the former British Empire, but mainly living in one of the Royal Family's colonies, best known as Australia, in recognition of his many contributions to herpetology in his 69 years of life.

EUPREPIOSAURUS MATTEOAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:26C199B7-7978-4DEB-9C15-B74621C94A44

Holotype: A preserved specimen at the Museum of Natural History, London, United Kingdom, specimen number 83.6.28.24 collected from Santa Ana Island, Solomon Islands, Latitude -10.8833 S. Longitude 162.4666 E. This facility allows access to its holdings.

Paratype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J2148 collected from Santa Ana Island, Solomon Islands, Latitude -10.8833 S. Longitude 162.4666 E.

Diagnosis: The following eight species, *Euprepiosaurus matteoae sp. nov.* from Santa Ana and San Cristobal (Solomon Islands), *E. elfakhariorum sp. nov.* from Malaita (Solomon Islands), *E. allengreeri sp. nov.* from Guadalcanal (Solomon Islands), *E. dorisioi sp. nov.* from the New Georgia group of islands (Solomon Islands), *E. paulwoolfi sp. nov.* from Santa Isabel (Solomon Islands), *E. sloppi* from Shortland Island (Solomon Islands), *E. powi sp. nov.* from Manus Island (Papua New Guinea) and *E. scottgranti sp. nov.* from Tanimbar Island (West Maluku Tenggara Regency, Maluku, Indonesia) have until now all been treated as populations of putative *E. indicus* (Daudin, 1802).

In his PhD Thesis in 1995, Robert George Sprackland headed his account of the putative taxon as "Mangrove Monitor, metaspecies", knowing that several species-level taxa were within this group (Sprackland 1995). Similar views have been expressed by other authors since 1995 including most recently (Ziegler *et al.* 2007a, Weijola 2017).
Both before and since 1995, various species have been formally described.

Prior to the publication of this paper 17 were recognized as being specifically distinct (excluding the descriptions of forms synonymised, which has been agreed by myself).

Species including *E. doreanus* (Meyer, 1874), *E. finschi* (Böhme, Horn and Ziegler, 1994), and *E. jobiensis* (Ahl, 1932), and associated species including *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. yuwonoi* (Harvey and Barker, 1998), *E. oxyi sp. nov.*, *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*, all of a divergent lineage and separated from the *E. indicus* group *sensu-stricto* by not having a mainly dark bluish-grey tongue and some obvious bluish colour on the tail are excluded from the diagnosis that follows.

The eight new species formally described herein continue this process of the break up of this species complex.

All are reproductively, genetically and morphologically divergent from one another. All are clearly evolving as separate biological entities and therefore all warrant treatment as full species.

Due to confusion relating to type specimens and a ruling by the ICZN in 2020 (ICZN 2020), the description for the species complex immediately below is based on the nominate taxon, *E. chlorostigma* (Gray, 1831) as the standard form and not *E. indicus.*

The putative species, *E. chlorostigma* including the eight species formally named herein, do unless specified otherwise conform to the following unique diagnosis: Entirely dark tongue (blueish or dark purple), except for the rear which is purple or pink. Dorsum dark brownish-black, with small whitish-yellow spots, mostly smaller than an area covered by five scales; lack of blue pigmentation, even on the tail of juveniles; light, patternless throat; absence of a well-defined light, dark-bordered postocular/supratemporal stripe; snout flat dorsally, scales smooth or very slightly keeled, very low midbody scale counts usually within the range of 106-137.

All other species within the genus *Euprepiosaurus* Fitzinger, 1843 are separated from *E. chlorostigma* and the eight new species named above by having one or other of the four character states:

1/ Tongue dark violet, with light lines, or:

2/ Tongue dark bluish or greyish pigmented anteriorly, becoming distinctly lighter laterally and posteriorly, or:

3/ Light coloured tongue, with an ill-defined dark pigmentation in the anteriormost part, or:

4/ Entire tongue light, pinkish in colour.

Exceptional to the preceding is the following two taxa.

E. tsukamotoi Kishida, 1929, which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and covered with evenly distributed yellow scales, (ii) yellow temporal stripe usually absent, (iii) low scale counts around the head (P: 31-40), tail base (Q: 54-74) and midbody (S: 101-126), and (iv) usually prominent dark pigmentation in the gular region (derived from Weijola *et al.* 2020).

E. bennetti (Weijola *et al.* 2020), which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and evenly speckled with yellow scales, sometimes arranged in small groups of yellow scales, (ii) venter cream coloured with pale grey crossbands, (iii) tail exceptionally long (F/SVL mean = 1.76, range = 1.60-1.89), high XY scale counts (148-160), (iv) a clear yellow temporal stripe present in about half of the studied specimens, and (v), in life, peach colouring on the throat (derived from Weijola *et al.* 2020).

For the record as a result of the ICZN ruling of 2020, *E. indicus* of the type form from the Mollucas, Indonesia is characterised by a tongue that is entirely pink.

E. matteoae sp. nov. is readily separated from all other species within *Euprepiosaurus* by the following suite of characters: Those mentioned previously for the putative species, *E. chlorostigma* and: Dark, black coloured head with well spaced scattered yellow circular spots on the upper surface; dark yellow upper labials (broken by black at the rear) and yellow tip of snout. Nostrils yellow. The dorsum of the body is greyish-black with a semi-distinct pattern of yellow markings consisting of broken rows of single yellow scales running across the body, usually 2-3 scales for each row before being broken by dark scales and usually no more than one scale wide (in an anterior-posterior direction), but with about 11 sections where the broken rows of yellow scales are 2 scales wide, giving an appearance of semi-distinct cross-bands. This condition amplifies on the anterior 25 per cent of the tail, with the latter two thirds of the tail being obviously well banded with blackish and yellowish cross-bands. The darker bands are strongly peppered with yellow and the lighter ones with blackish-grey. Iris yellowish.

There are more than ten (usually 12) well defined light bands on the posterior end of the tail. Upper surfaces of limbs are greyish-black with numerous tiny yellow spots, almost all being formed by a single yellow scale, surrounded by dark ones. Exceptionally clusters of 2 or 3 joined yellow scales may occur. Beneath the yellow labials, the throat is peppered with grey. Between the eye and ear, there are two broken lines of yellow spotted scales, which may appear as an indistinct temporal streak from a distance, but nothing of the sort either posterior to the ear or anterior to the eye. Iris is yellow.

A photo of *E. matteoae sp. nov.* in life can be found in McCoy (2006) plate 94 (adult) and plate 95 (juvenile).

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows: Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

The morphologically similar species *Oxysaurus spinulosus* (Mertens, 1941) is depicted in life in plate 96 of McCoy (2006).

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. matteoae sp. nov.* occurs on Santa Ana and nearby mainland island San Cristobal in the Solomon Islands.

Etymology: Named in honour of Cathryn Matteo of Hawthorn, Victoria, Australia in recognition of services to herpetology.

EUPREPIOSAURUS ELFAKHARIORUM SP. NOV.

LSIDurn:lsid:zoobank.org:act:57E8AC66-9E8A-48B2-931F-299765912C75

Holotype: A preserved specimen at the California Academy of Sciences, San Francisco, California, 94118, USA, specimen number CAS 72046 collected from Malaita Island, Solomon Islands. This facility allows access to its holdings.

Diagnosis: The following eight species, *Euprepiosaurus matteoae sp. nov.* from Santa Ana and San Cristobal (Solomon Islands), *E. elfakhariorum sp. nov.* from Malaita (Solomon Islands), *E. allengreeri sp. nov.* from Guadalcanal (Solomon Islands), *E. dorisioi sp. nov.* from the New Georgia group of islands (Solomon Islands), *E. paulwoolfi sp. nov.* from Santa Isabel (Solomon Islands), *E. sloppi* from Shortland Island (Solomon Islands), *E. powi sp. nov.* from Manus Island (Papua New Guinea) and *E. scottgranti sp. nov.* from Tanimbar Island (West Maluku Tenggara Regency, Maluku, Indonesia) have until now all been treated as populations of putative *E. indicus* (Daudin, 1802).

In his PhD Thesis in 1995, Robert George Sprackland headed his account of the putative taxon as "Mangrove Monitor, metaspecies", knowing that several species-level taxa were within this group (Sprackland 1995). Similar views have been expressed by other authors since 1995 including most recently (Ziegler *et al.* 2007a, Weijola 2017).

Both before and since 1995, various species have been formally described. Prior to the publication of this paper 17 were recognized as being specifically distinct (excluding the synonymised forms, which has been agreed by myself).

Species including *E. doreanus* (Meyer, 1874), *E. finschi* (Böhme, Horn and Ziegler, 1994), and *E. jobiensis* (Ahl, 1932), and associated species including *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. yuwonoi* (Harvey and Barker, 1998), *E. oxyi sp. nov.*, *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*, all of a divergent lineage and separated from the *E. indicus* group *sensu-stricto* by not having a mainly dark bluish-grey tongue and usually having blue colour on the posterior tail, are excluded from the diagnosis that follows.

The eight new species formally described herein continue this process of the break up of this species complex.

All are reproductively, genetically and morphologically divergent from one another. All are clearly evolving as separate biological entities and therefore all warrant treatment as full species.

Due to confusion relating to type specimens and a ruling by the ICZN in 2020 (ICZN 2020), the description for the species complex immediately below is based on the nominate taxon, *E. chlorostigma* (Gray, 1831) as the standard form and not *E. indicus.*

The putative species, *E. chlorostigma* including the eight species formally named herein, do unless specified otherwise conform to the following unique diagnosis: Entirely dark tongue (blueish or dark purple), except for the rear which is purple or pink. Dorsum dark brownish-black, with small whitish-yellow spots, mostly smaller than an area covered by five scales; lack of blue pigmentation, even on the tail of juveniles; light, patternless throat; absence of a well-defined light, dark-bordered postocular/supratemporal stripe; snout flat dorsally, scales smooth or very slightly keeled, very low midbody scale counts usually within the range of 106-137.

All other species within the genus *Euprepiosaurus* Fitzinger, 1843 are separated from *E. chlorostigma* and the eight new species named above by having one or other of the four character states:

1/ Tongue dark violet, with light lines, or:

2/ Tongue dark bluish or greyish pigmented anteriorly, becoming distinctly lighter laterally and posteriorly, or:

3/ Light coloured tongue, with an ill-defined dark pigmentation in the anteriormost part, or:

4/ Entire tongue light, pinkish in colour.

Exceptional to this is the following two taxa.

E. tsukamotoi Kishida, 1929, which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and covered with evenly distributed yellow scales, (ii) yellow temporal stripe usually absent, (iii) low scale counts around the head (P: 31-40), tail base (Q: 54-74) and midbody (S: 101-126), and (iv) usually prominent dark pigmentation in the gular region (derived from Weijola *et al.* 2020).

E. bennetti (Weijola *et al.* 2020), which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and evenly speckled with yellow scales, sometimes arranged in small groups of yellow scales, (ii) venter cream coloured with pale grey crossbands, (iii) tail exceptionally long (F/SVL mean = 1.76, range = 1.60-1.89), high XY scale counts (148-160), (iv) a clear yellow temporal stripe present in about half of the studied specimens, and (v), in life, peach colouring on the throat (derived from Weijola *et al.* 2020).

For the record as a result of the ICZN ruling of 2020, *E. indicus* of the type form from the Mollucas, Indonesia is characterised by a tongue that is entirely pink.

E. elfakhariorum sp. nov. is readily separated from all other species within *Euprepiosaurus* by the following suite of characters: Those mentioned previously for the putative species, *E. chlorostigma* and: Dark, black coloured head with well spaced scattered yellow circular spots on the upper surface; dark yellow upper labials (broken by black at the rear) and yellow tip of snout. Light bluish, pink nostrils and immediately posterior to them. The dorsum of the body is greyish-black with a semi-distinct pattern of yellow markings consisting of broken rows of single yellow scales running across the body, usually 2-3 scales for each row before being broken by dark scales and usually no more than one scale wide (in an anterior-posterior direction), but with about 11 sections where the broken rows of yellow scales are 2 scales wide, giving an appearance of semi-distinct cross-bands. This condition amplifies on the anterior 25 per cent of the tail, with the latter two thirds of the tail being obviously well banded with blackish and yellowish cross-bands. The darker bands are strongly peppered with yellow and the lighter ones with blackish-grey. A line of yellow scales runs across the upper eye, forming a supraciliary band. Iris yellowish.

There are more than ten (usually 12) well defined light bands on the posterior end of the tail. Upper surfaces of limbs are greyish-black with numerous tiny yellow spots, almost all being formed by a single yellow scale, surrounded by dark ones. Exceptionally clusters of 2 or 3 joined yellow scales may occur. Beneath the yellow labials, the throat is peppered with grey. Between the eye and ear, there are two broken lines of yellow spotted scales, which may appear as an indistinct temporal streak from a distance, but nothing of the sort either posterior to the ear or anterior to the eye.

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

The morphologically similar species *Oxysaurus spinulosus* (Mertens, 1941) is depicted in life in plate 96 of McCoy (2006).

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. elfakhariorum sp. nov.* occurs on Malaita Island, Solomon Islands.

Etymology: Named in honour of Daniel, Akram and Moses El-Fakhari of Northcote, Victoria, Australia and their magnificent wives and children for many services to the Taxi Industry of

Victoria for many decades, services to wildlife conservation in Australia for many decades and services in the fight against police and judicial corruption in Victoria for many decades.

EUPREPIOSAURUS ALLENGREERI SP. NOV.

LSIDurn:lsid:zoobank.org:act:41DDCD3C-2E87-48EF-BA49-9168ED656040

Holotype: A preserved specimen at the Museum of Natural History, London, United Kingdom, specimen number 88.1.7.1 collected from Guadalcanal, Solomon Islands. This facility allows access to its holdings.

Paratype: A preserved specimen at the Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany, specimen number ZMFK 52818 collected from Guadalcanal, Solomon Islands.

Diagnosis: The following eight species, *Euprepiosaurus matteoae sp. nov.* from Santa Ana and San Cristobal (Solomon Islands), *E. elfakhariorum sp. nov.* from Malaita (Solomon Islands), *E. allengreeri sp. nov.* from Guadalcanal (Solomon Islands), *E. dorisioi sp. nov.* from the New Georgia group of islands (Solomon Islands), *E. paulwoolfi sp. nov.* from Santa Isabel (Solomon Islands), *E. sloppi* from Shortland Island (Solomon Islands), *E. powi sp. nov.* from Manus Island (Papua New Guinea) and *E. scottgranti sp. nov*. from Tanimbar Island (West Maluku Tenggara Regency, Maluku, Indonesia) have until now all been treated as populations of putative *E. indicus* (Daudin, 1802).

In his PhD Thesis in 1995, Robert George Sprackland headed his account of the putative taxon as “Mangrove Monitor, metaspecies”, knowing that several species-level taxa were within this group (Sprackland 1995). Similar views have been expressed by other authors since 1995 including most recently (Ziegler *et al.* 2007a, Weijola 2017).
Both before and since 1995, various species have been formally described. Prior to the publication of this paper 17 were recognized as being specifically distinct (excluding the descriptions of forms synonymised, which has been agreed by myself).

Species including *E. doreanus* (Meyer, 1874), *E. finschi* (Böhme, Horn and Ziegler, 1994), and *E. jobiensis* (Ahl, 1932), and associated species including *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. yuwonoi* (Harvey and Barker, 1998), *E. oxyi sp. nov.*, *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*, all of a divergent lineage and separated from the *E. indicus* group *sensu-stricto* by not having a mainly dark bluish-grey tongue and usually having blue colour on the posterior tail, are excluded from the diagnosis that follows.

The eight new species formally described herein continue this process of the break up of this species complex.

All are reproductively, genetically and morphologically divergent from one another. All are clearly evolving as separate biological entities and therefore all warrant treatment as full species.

Due to confusion relating to type specimens and a ruling by the ICZN in 2020 (ICZN 2020), the description for the species complex immediately below is based on the nominate taxon, *E. chlorostigma* (Gray, 1831) as the standard form and not *E. indicus.*

The putative species, *E. chlorostigma* including the eight species formally named herein, do unless specified otherwise conform to the following unique diagnosis: Entirely dark tongue (blueish or dark purple), except for the rear which is purple or pink. Dorsum dark brownish-black, with small whitish-yellow spots, mostly smaller than an area covered by five scales; lack of blue pigmentation, even on the tail of juveniles; light, patternless throat; absence of a well-defined light, dark-bordered postocular/supratemporal stripe; snout flat dorsally, scales smooth or very slightly keeled, very low midbody scale counts usually within the range of 106-137.

All other species within the genus *Euprepiosaurus* Fitzinger, 1843 are separated from *E. chlorostigma* and the eight new species named above by having one or other of the four character states:

1/ Tongue dark violet, with light lines, or:

2/ Tongue dark bluish or greyish pigmented anteriorly, becoming distinctly lighter laterally and posteriorly, or:

3/ Light coloured tongue, with an ill-defined dark pigmentation in the anteriormost part, or:

4/ Entire tongue light, pinkish in colour.

Exceptional to this is the following two taxa.

E. tsukamotoi Kishida, 1929, which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and covered with evenly distributed yellow scales, (ii) yellow temporal stripe usually absent, (iii) low scale counts around the head (P: 31-40), tail base (Q: 54-74) and midbody (S: 101-126), and (iv) usually prominent dark pigmentation in the gular region (derived from Weijola *et al.* 2020).

E. bennetti (Weijola *et al.* 2020), which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and evenly speckled with yellow scales, sometimes arranged in small groups of yellow scales, (ii) venter cream coloured with pale grey crossbands, (iii) tail exceptionally long (F/SVL mean = 1.76, range = 1.60-1.89), high XY scale counts (148-160), (iv) a clear yellow temporal stripe present in about half of the studied specimens, and (v), in life, peach colouring on the throat (derived from Weijola *et al.* 2020).

For the record as a result of the ICZN ruling of 2020, *E. indicus* of the type form from the Mollucas, Indonesia is characterised by a tongue that is entirely pink.

E. allengreeri sp. nov. is readily separated from all other species within *Euprepiosaurus* by the following suite of characters: Those mentioned previously for the putative species, *E. chlorostigma* and: Dark, black coloured head with well spaced scattered yellow circular spots on the upper surface; dark yellow upper labials and tip of snout. The yellow of the upper labials forms a distinctive unbroken yellow line running the entire length of the upper lip (versus broken by black in both *E. matteroae sp. nov*. and *E. elfakhariorum sp. nov.*). Light bluish, pinkish-yellow nostrils and immediately posterior to them. The dorsum of the body is greyish-black with a semi-distinct pattern of yellow markings consisting of broken rows of single yellow scales running across the body, usually 2-3 scales for each row before being broken by dark scales and usually no more than one scale wide (in an anterior-posterior direction), but with about 11 sections where the broken rows of yellow scales are 2 scales wide, giving an appearance of semi-distinct cross-bands. This condition amplifies on the anterior 25 per cent of the tail, with the latter two thirds of the tail being obviously well banded with blackish and yellowish cross-bands. The darker bands are strongly peppered with yellow and the lighter ones with blackish-grey. A line of yellow scales runs across the upper eye, forming a supraciliary band. Iris yellowish-orange.

There are more than ten (usually 12) well defined light bands on the posterior end of the tail. Upper surfaces of limbs are greyish-black with numerous tiny yellow spots, almost all being formed by a single yellow scale, surrounded by dark ones. Exceptionally clusters of 2 or 3 joined yellow scales may occur. Beneath the yellow labials, the throat is peppered with grey. Between the eye and ear, there are two broken lines of yellow spotted scales, which may appear as an indistinct temporal streak from a distance, but nothing of the sort either posterior to the ear or anterior to the eye.

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus*

(Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

The morphologically similar species *Oxysaurus spinulosus* (Mertens, 1941) is depicted in life in plate 96 of McCoy (2006).

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. allengreeri sp. nov.* occurs on Guadalcanal, Solomon Islands.

Etymology: Named in honour of Allen E. Greer, of Mudgee, New South Wales, Australia, formerly of Sydney, Australia, where he worked for many years as curator of herpetology at the Australian Museum. He is recognized also for fighting taxonomic vandalism by the Wolfgang Wüster gang of thieves in the 1980's through his ultimately successful petition to the ICZN to stop their actions.

The Wolfgang Wüster gang of thieves had applied to the ICZN to formally suppress all nomenclatural actions by Richard Wells and Cliff Ross Wellington (including Wells and Wellington, 1984, 1985), in order to enable their cohort to steal their works and rename hundreds of species and genera of reptile and frog. In 1991 the ICZN formally squashed the application by the Wolfgang Wüster gang of thieves.

EUPREPIOSAURUS DORISIOI SP. NOV.

LSIDurn:lsid:zoobank.org:act:A1FFD7B0-42DE-4100-B582-45046D756DA3

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number: R.134949 collected from Marovo Lagoon, Tamaneke Village, New Georgia, Solomon Islands, Latitude -8.316 S., Longitude 157.816 E.

This government-owned facility allows access to its holdings.

Paratypes: Three preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers: R.134950, R.134953 and R.134954 all collected from Marovo Lagoon, Tamaneke Village, New Georgia, Solomon Islands, Latitude -8.316 S., Longitude 157.816 E, and:
Two preserved specimens at the the Field Museum of Natural History, Chicago, Illinois, USA, specimen numbers FMNH 41315 and FMNH 41316 both collected from New Georgia, Solomon Islands.

Diagnosis: The following eight species, *Euprepiosaurus matteoae sp. nov.* from Santa Ana and San Cristobal (Solomon Islands), *E. elfakhariorum sp. nov.* from Malaita (Solomon Islands), *E. allengreeri sp. nov.* from Guadalcanal (Solomon Islands), *E. dorisioi sp. nov.* from the New Georgia group of islands (Solomon Islands), *E. paulwoolfi sp. nov.* from Santa Isabel (AKA Ysabel) (Solomon Islands), *E. sloppi* from Shortland Island (Solomon Islands), *E. powi sp. nov.* from Manus Island (Papua New Guinea) and *E. scottgranti sp. nov.* from Tanimbar Island (West Maluku Tenggara Regency, Maluku, Indonesia) have until now all been treated as populations of putative *E. indicus* (Daudin, 1802).

In his PhD Thesis in 1995, Robert George Sprackland headed his account of the putative taxon as "Mangrove Monitor, metaspecies", knowing that several species-level taxa were within this group (Sprackland 1995). Similar views have been expressed by other authors since 1995 including most recently (Ziegler *et al.* 2007a, Weijola 2017).
Both before and since 1995, various species have been formally described. Prior to the publication of this paper 17 were recognized as being specifically distinct (excluding the descriptions of forms synonymised, which has been agreed by myself).

Species including *E. doreanus* (Meyer, 1874), *E. finschi* (Böhme, Horn and Ziegler, 1994), and *E. jobiensis* (Ahl, 1932), and associated species including *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. yuwonoi* (Harvey and Barker, 1998), *E. oxyi sp. nov.*, *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*, all of a divergent lineage and separated from the *E. indicus* group *sensu-stricto* by not having a mainly dark bluish-grey tongue and usually having blue colour on the posterior tail, are excluded from the diagnosis that follows.

The eight new species formally described herein continue this process of the break up of this species complex.

All are reproductively, genetically and morphologically divergent from one another. All are clearly evolving as separate biological entities and therefore all warrant treatment as full species.

Due to confusion relating to type specimens and a ruling by the ICZN in 2020 (ICZN 2020), the description for the species complex immediately below is based on the nominate taxon, *E. chlorostigma* (Gray, 1831) as the standard form and not *E. indicus.*

The putative species, *E. chlorostigma* including the eight species formally named herein, do unless specified otherwise conform to the following unique diagnosis: Entirely dark tongue (blueish or dark purple), except for the rear which is purple or pink. Dorsum dark brownish-black, with small whitish-yellow spots, mostly smaller than an area covered by five scales; lack of blue pigmentation, even on the tail of juveniles; light, patternless throat; absence of a well-defined light, dark-bordered postocular/supratemporal stripe; snout flat dorsally, scales smooth or very slightly keeled, very low midbody scale counts usually within the range of 106-137.

All other species within the genus *Euprepiosaurus* Fitzinger, 1843 are separated from *E. chlorostigma* and the eight new species named above by having one or other of the four character states:

1/ Tongue dark violet, with light lines, or:

2/ Tongue dark bluish or greyish pigmented anteriorly, becoming distinctly lighter laterally and posteriorly, or:

3/ Light coloured tongue, with an ill-defined dark pigmentation in the anteriormost part, or:

4/ Entire tongue light, pinkish in colour.

Exceptional to this is the following two taxa.

E. tsukamotoi Kishida, 1929, which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and covered with evenly distributed yellow scales, (ii) yellow temporal stripe usually absent, (iii) low scale counts around the head (P: 31-40), tail base (Q: 54-74) and midbody (S: 101-126), and (iv) usually prominent dark pigmentation in the gular region (derived from Weijola *et al*. 2020).

E. bennetti (Weijola *et al*. 2020), which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and evenly speckled with yellow scales, sometimes arranged in small groups of yellow scales, (ii) venter cream coloured with pale grey crossbands, (iii) tail exceptionally long (F/SVL mean = 1.76, range = 1.60-1.89), high XY scale counts (148-160), (iv) a clear yellow temporal stripe present in about half of the studied specimens, and (v), in life, peach colouring on the throat (derived from Weijola *et al*. 2020).

For the record as a result of the ICZN ruling of 2020, *E. indicus* of the type form from the Mollucas, Indonesia is characterised by a tongue that is entirely pink.

E. dorisioi sp. nov. is readily separated from all other species within *Euprepiosaurus* by the following suite of characters: Those mentioned previously for the putative species, *E. chlorostigma* and: Dark black coloured neck and body with numerous scattered single yellow scales giving a speckled appearance on the dorsum and flanks. Exceptional to this are widely scattered clusters of 1-4 scales, either in circular arangement or similar (not as short bars). On the anterior tail the yellow spots coalesce to form numerous short yellow bars running cross ways of 2-4 scales in width. While juveniles have obvious banding on the tail, this is not the case in adults, with the entire length of the tail having a black and yellow speckled appearance.

The top of the head is brown, with orange-yellow spotting, the head becoming pink anteriorly from the nostrils to give a pink snout and labial region (upper and lower), extending back to roughly below the eye. Inner nostrils are pink. Tongue is pink with a line of blue on top, except the rear, which is all pink. Iris is bright orange.

Lower jaw is pink and the gular pouch is yellow, overlain with grey reticulations formed by joined single grey scales.

Behind the eye and anterior to the ear in the temporal region are scattered orange or yellow spots without any indication of any sort of a temporal streak, lines, broken lines, or similar.

Limbs densely spotted with yellow (single scales surrounded by black).

Photos of live adult *E. dorisioi sp. nov*. in life can be found online at:

https://www.alamy.com/stock-photo-mangrove-monitor-lizard-or-goanna-varanus-indicus-uepi-island-solomon-28841387.html

and

https://www.flickr.com/photos/waterdragon62/4233538386/in/photolist-2aDg2hb-7s6Zt9

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

The morphologically similar species *Oxysaurus spinulosus* (Mertens, 1941) is depicted in life in plate 96 of McCoy (2006).

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. dorisioi sp. nov.* is restricted to the New Georgia group of islands, including outliers.

Etymology: The new species is named in honour of Morrie Dorisio of Bulleen, Victoria, (more recently of Reservoir, Victoria), Australia in recognition of his many hours of logistical assistances helping Snakebusters: Australia's best reptile shows with wildlife conservation and education activities, as well as numerous scientific research projects, including publication of papers, monographs and books.

EUPREPIOSAURUS PAULWOOLFI SP. NOV.

LSIDurn:lsid:zoobank.org:act:C1D47722-84C6-4FFE-B16A-F1CDDB3EB823

Holotype: A preserved specimen at the Field Museum of Natural History, Chicago, Illinois, USA, specimen number FMNH 13805 collected from Ysabel Island (AKA Isabel Island), Solomon Islands. This facility allows access to its holdings.

Paratypes: Two preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R8614 and R9298 collected from Tunabuli Harbour, Ysabel Island, Solomon Islands. Latitude -8.383 S., Longitude 159.800 E.

Diagnosis: The following eight species, *Euprepiosaurus matteoae sp. nov.* from Santa Ana and San Cristobal (Solomon Islands), *E. elfakhariorum sp. nov.* from Malaita (Solomon Islands), *E. allengreeri sp. nov.* from Guadalcanal (Solomon Islands), *E. dorisioi sp. nov.* from the New Georgia group of islands (Solomon Islands), *E. paulwoolfi sp. nov.* from Santa Isabel (AKA Ysabel) (Solomon Islands), *E. sloppi* from Shortland Island (Solomon Islands), *E. powi sp. nov.* from Manus Island (Papua New Guinea) and *E. scottgranti sp. nov.* from Tanimbar Island (West Maluku Tenggara Regency, Maluku, Indonesia) have until now all been treated as populations of putative *E. indicus* (Daudin, 1802).

In his PhD Thesis in 1995, Robert George Sprackland headed his account of the putative taxon as “Mangrove Monitor, metaspecies”, knowing that several species-level taxa were within this group (Sprackland 1995). Similar views have been expressed by other authors since 1995 including most recently (Ziegler *et al.* 2007a, Weijola 2017).

Both before and since 1995, various species have been formally described. Prior to the publication of this paper 17 were recognized as being specifically distinct (excluding the descriptions of forms synonymised, which has been agreed by myself).

Species including *E. doreanus* (Meyer, 1874), *E. finschi* (Böhme, Horn and Ziegler, 1994), and *E. jobiensis* (Ahl, 1932), and associated species including *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. yuwonoi* (Harvey and Barker, 1998), *E. oxyi sp. nov.*, *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*, all of a divergent lineage and separated from the *E. indicus* group *sensu-stricto* by not having a mainly dark bluish-grey tongue and usually having blue colour on the posterior tail, are excluded from the diagnosis that follows.

The eight new species formally described herein continue this process of the break up of this species complex.

All are reproductively, genetically and morphologically divergent from one another. All are clearly evolving as separate biological entities and therefore all warrant treatment as full species.

Due to confusion relating to type specimens and a ruling by the ICZN in 2020 (ICZN 2020), the description for the species complex immediately below is based on the nominate taxon, *E. chlorostigma* (Gray, 1831) as the standard form and not *E. indicus.*

The putative species, *E. chlorostigma* including the eight species formally named herein, do unless specified otherwise conform to the following unique diagnosis: Entirely dark tongue (blueish or dark purple), except for the rear which is purple or pink. Dorsum dark brownish-black, with small whitish-yellow spots, mostly smaller than an area covered by five scales; lack of blue pigmentation, even on the tail of juveniles; light, patternless throat; absence of a well-defined light, dark-bordered postocular/supratemporal stripe; snout flat dorsally, scales smooth or very slightly keeled, very low midbody scale counts usually within the range of 106-137.

All other species within the genus *Euprepiosaurus* Fitzinger, 1843 are separated from *E. chlorostigma* and the eight new species named above by having one or other of the four character states:

1/ Tongue dark violet, with light lines, or:

2/ Tongue dark bluish or greyish pigmented anteriorly, becoming distinctly lighter laterally and posteriorly, or:

3/ Light coloured tongue, with an ill-defined dark pigmentation in the anteriormost part, or:

4/ Entire tongue light, pinkish in colour.

Exceptional to this is the following two taxa.

E. tsukamotoi Kishida, 1929, which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and covered with evenly distributed yellow scales, (ii) yellow temporal stripe usually absent, (iii) low scale counts around the head (P: 31-40), tail base (Q: 54-74) and midbody (S: 101-126), and (iv) usually prominent dark pigmentation in the gular region (derived from Weijola *et al.* 2020).

E. bennetti (Weijola *et al.* 2020), which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and evenly speckled with yellow scales, sometimes arranged in small groups of yellow scales, (ii) venter cream coloured with pale grey crossbands, (iii) tail exceptionally long (F/SVL mean = 1.76, range = 1.60-1.89), high XY scale counts (148-160), (iv) a clear yellow temporal stripe present in about half of the studied specimens, and (v), in life, peach colouring on the throat (derived from Weijola *et al.* 2020).

For the record as a result of the ICZN ruling of 2020, *E. indicus* of the type form from the Mollucas, Indonesia is characterised by a tongue that is entirely pink.

E. paulwoolfi sp. nov. is readily separated from all other species within *Euprepiosaurus* by the following suite of characters: Those mentioned previously for the putative species, *E. chlorostigma* and: Dark black coloured neck and body with numerous scattered single yellow scales giving a speckled appearance on the dorsum and flanks. Exceptional to this are widely scattered clusters of 1-4 scales, either in circular arangement or similar (not as short bars). On the anterior tail the yellow spots coalesce to form numerous short yellow bars running cross ways of 2-4 scales in width. While juveniles have obvious banding on the tail, this only remains the case for the posterior half of the tail in adults with banding being semi-distinct only.

The terminal part of the tail is mainly black, with a few yellow flecks.

The top of the head is blackish, with limited scattered indistinct tiny yellow spots.

The front of the head becomes a lighter faded brownish pink colour, becoming light greyish pink around the anterior lips to give a pinkish snout and anterior labial region (upper and lower), extending back to roughly below the eye. Inner nostrils are greyish pink. Tongue is pink with a line of blue on top (all blue at the tip), except the rear, which is all pink. Iris is dull brown orange.

Lower jaw is yellowish rather than pink, except the line of the lower labials and the gular pouch is yellow, overlain with grey ill-defined reticulations formed by joined single grey scales.

Behind the eye and anterior to the ear in the temporal region are scattered orange or yellow spots arranged in a more-or-less linear manner which give a pair of ill-defined lines containing a generally dark temporal line.

Upper surfaces of fore and hind limbs are densely spotted with yellow (single scales surrounded by black).

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

The morphologically similar species *Oxysaurus spinulosus* (Mertens, 1941) is depicted in life in plate 96 of McCoy (2006).

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. paulwoolfi sp. nov.* is known from the type locality, Ysabel Island in the Solomon Islands, but is believed to also be the taxon found on the islands extending in a linear manner to Bougainville, all of which were connected by land bridges in the most recent glacial minima.

Etymology: The new species *E. paulwoolfi sp. nov.* is named in honour of Paul Woolf of Walloon, west of Brisbane, Queensland, Australia, the foundation president of the Herpetological Society of Queensland Incorporated, Australia, in recognition of many decades of important contributions to herpetology in Australia.

EUPREPIOSAURUS SLOPPI SP. NOV.

LSIDurn:lsid:zoobank.org:act:6850CFF7-4D79-4A45-8BF6-44789616B7B9

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number: R121569 collected from Shortland Island, Western Province, Solomon Islands, Latitude -7.0452 S., Longitude 155.7372 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Museum of Natural History, London, UK, specimen number 84.3.24.77-78 collected at Shortland Island, Western Province, Solomon Islands, Latitude -7.0452 S., Longitude 155.7372 E.

Diagnosis: The following eight species, *Euprepiosaurus sloppi* from Shortland Island (Solomon Islands), *E. elfakhariorum sp. nov.* from Malaita (Solomon Islands), *E. allengreeri sp. nov.* from Guadalcanal (Solomon Islands), *E. dorisioi sp. nov.* from the New Georgia group of islands (Solomon Islands), *E. paulwoolfi sp. nov.* from Santa Isabel (AKA Ysabel) (Solomon Islands), *E. matteoae sp. nov.* from Santa Ana and San Cristobal (Solomon Islands), *E. powi sp. nov.* from Manus Island (Papua New Guinea) and *E. scottgranti sp. nov.* from Tanimbar Island (West Maluku Tenggara Regency, Maluku, Indonesia) have until now all been treated as populations of putative *E. indicus* (Daudin, 1802).

In his PhD Thesis in 1995, Robert George Sprackland headed his account of the putative taxon as "Mangrove Monitor, metaspecies", knowing that several species-level taxa were within this group (Sprackland 1995). Similar views have been expressed by other authors since 1995 including most recently (Ziegler *et al.* 2007a, Weijola 2017).

Both before and since 1995, various species have been formally described. Prior to the publication of this paper 17 were recognized as being specifically distinct (excluding the descriptions of forms synonymised, which has been agreed by myself).

Species including *E. doreanus* (Meyer, 1874), *E. finschi* (Böhme, Horn and Ziegler, 1994), and *E. jobiensis* (Ahl, 1932), and associated species including *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. yuwonoi* (Harvey and Barker, 1998), *E. oxyi sp. nov.*, *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*, all of a divergent lineage and separated from the *E. indicus* group *sensu-stricto* by not having a mainly dark bluish-grey tongue and usually having blue colour on the posterior tail, are excluded from the diagnosis that follows.

The eight new species formally described herein continue this process of the break up of this species complex.

All are reproductively, genetically and morphologically divergent from one another. All are clearly evolving as separate biological entities and therefore all warrant treatment as full species.

Due to confusion relating to type specimens and a ruling by the ICZN in 2020 (ICZN 2020), the description for the species complex immediately below is based on the nominate taxon, *E. chlorostigma* (Gray, 1831) as the standard form and not *E. indicus.*

The putative species, *E. chlorostigma* including the eight species formally named herein, do unless specified otherwise conform to the following unique diagnosis: Entirely dark tongue (blueish or dark purple), except for the rear which is purple or pink. Dorsum dark brownish-black, with small whitish-yellow spots, mostly smaller than an area covered by five scales; lack of blue pigmentation, even on the tail of juveniles; light, patternless throat; absence of a well-defined light, dark-bordered postocular/supratemporal stripe; snout flat dorsally, scales smooth or very slightly keeled, very low midbody scale counts usually within the range of 106-137.

All other species within the genus *Euprepiosaurus* Fitzinger, 1843 are separated from *E. chlorostigma* and the eight new species named above by having one or other of the four character states:

1/ Tongue dark violet, with light lines, or:

2/ Tongue dark bluish or greyish pigmented anteriorly, becoming distinctly lighter laterally and posteriorly, or:

3/ Light coloured tongue, with an ill-defined dark pigmentation in the anteriormost part, or:

4/ Entire tongue light, pinkish in colour.

Exceptional to this is the following two taxa.

E. tsukamotoi Kishida, 1929, which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and covered with evenly distributed yellow scales, (ii) yellow temporal stripe usually absent, (iii) low scale counts around the head (P: 31-40), tail base (Q: 54-74) and midbody (S: 101-126), and (iv) usually prominent dark pigmentation in the gular region (derived from Weijola *et al.* 2020).

E. bennetti (Weijola *et al.* 2020), which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and evenly speckled with yellow scales, sometimes arranged in small groups of yellow scales, (ii) venter cream coloured with pale grey crossbands, (iii) tail exceptionally long (F/SVL mean = 1.76, range = 1.60-1.89), high XY scale counts (148-160), (iv) a clear yellow temporal stripe present in about half of the studied specimens, and (v), in life, peach colouring on the throat (derived from Weijola *et al.* 2020).

For the record as a result of the ICZN ruling of 2020, *E. indicus* of the type form from the Mollucas, Indonesia is characterised by a tongue that is entirely pink.

E. sloppi sp. nov. is readily separated from all other species within *Euprepiosaurus* by the following suite of characters: Those mentioned previously for the putative species, *E. chlorostigma* and: Dark black coloured neck and body with numerous scattered single yellow scales giving a speckled appearance on the dorsum and flanks. Exceptional to this are widely scattered clusters of 1-4 scales, either in circular arangement or similar (not as short bars). On the anterior tail the yellow spots coalesce to form numerous short yellow bars running cross ways of 2-4 scales in width. While juveniles have obvious banding on the tail, the banding is less obvious in adults, but still clearly visible on the posterior half of the tail.

The top of the head is brownish-black, with very sparse and indistinct orange-brown spots. The dorsum of the head becomes yellowish-pink anteriorly from the nostrils to give a pink snout and labial region (upper and lower), extending back to roughly below the eye. Inner nostrils are yellowish-pink. Tongue is pink with a line of blue on top, except the rear, which is all pink. Iris is dull reddish brown.

Lower jaw is yellow and the gular pouch is also yellow, overlain with dull grey reticulations formed by joined single grey scales. The rear lower labials are heavily peppered brown, separating this taxon from others in the Solomons.

Behind the eye and anterior to the ear in the temporal region are scattered orange or yellow spots which combined show a broken outline of two lines, creating a semblance of a temporal streak as the intervening area is black.

Upper surfaces of the fore-limbs are densely spotted with yellow (single scales surrounded by black) and spotted with white on the hind-limbs, versus yellow on surfaces of fore and hind limbs in both *E. dorisioi sp. nov.* from New Georgia and *E. paulwoolfi sp. nov.* from Isabel Island.

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

The morphologically similar species *Oxysaurus spinulosus* (Mertens, 1941) is depicted in life in plate 96 of McCoy (2006).

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. sloppi sp. nov.* is as far as is known restricted to Shortland Island, Solomon Islands.

Etymology: Slop (AKA Slopp) was the name of the author's Great Dane dog (aged 8 in 2020) that protected this author's scientific research facility from thieves for 8 years. It is appropriate that a species (formally described above) is formally named in his honour.

EUPREPIOSAURUS POWI SP. NOV.

LSIDurn:lsid:zoobank.org:act:19002E65-59C7-4002-B78E-D8F968E54136

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number: R.129067 collected from Los Negros Island, Admiralty Islands, Manus District, Papua New Guinea, Latitude -2.016 S., Longitude 147.416 E.

This government-owned facility allows access to its holdings.

Diagnosis: The following eight species, *Euprepiosaurus sloppi* from Shortland Island (Solomon Islands), *E. elfakhariorum sp. nov.* from Malaita (Solomon Islands), *E. allengreeri sp. nov.* from Guadalcanal (Solomon Islands), *E. dorisioi sp. nov.* from the New Georgia group of islands (Solomon Islands), *E. paulwoolfi sp. nov.* from Santa Isabel (AKA Ysabel) (Solomon Islands), *E. matteoae sp. nov.* from Santa Ana and San Cristobal (Solomon Islands), *E. powi sp. nov.* from Manus Island (Papua New Guinea) and *E. scottgranti sp. nov.* from Tanimbar Island (West Maluku Tenggara Regency, Maluku, Indonesia) have until now all been treated as populations of putative *E. indicus* (Daudin, 1802).

In his PhD Thesis in 1995, Robert George Sprackland headed his account of the putative taxon as "Mangrove Monitor, metaspecies", knowing that several species-level taxa were within this group (Sprackland 1995). Similar views have been expressed by other authors since 1995 including most recently (Ziegler *et al.* 2007a, Weijola 2017).
Both before and since 1995, various species have been formally described. Prior to the publication of this paper 17 were recognized as being specifically distinct (excluding the descriptions of forms synonymised, which has been agreed by myself).

Species including *E. doreanus* (Meyer, 1874), *E. finschi* (Böhme, Horn and Ziegler, 1994), and *E. jobiensis* (Ahl, 1932), and associated species including *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. yuwonoi* (Harvey and Barker, 1998), *E. oxyi sp. nov.*, *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*, all of a divergent lineage and separated from the *E. indicus* group *sensu-stricto* by not having a mainly dark bluish-grey tongue and usually having blue colour on the posterior tail, are excluded from the diagnosis that follows.

The eight new species formally described herein continue this process of the break up of this species complex.

All are reproductively, genetically and morphologically divergent from one another. All are clearly evolving as separate biological entities and therefore all warrant treatment as full species.

Due to confusion relating to type specimens and a ruling by the ICZN in 2020 (ICZN 2020), the description for the species complex immediately below is based on the nominate taxon, *E. chlorostigma* (Gray, 1831) as the standard form and not *E. indicus.*

The putative species, *E. chlorostigma* including the eight species formally named herein, do unless specified otherwise conform to the following unique diagnosis: Entirely dark tongue (blueish or dark purple), except for the rear which is purple or pink. Dorsum dark brownish-black, with small whitish-yellow spots, mostly smaller than an area covered by five scales; lack of blue pigmentation, even on the tail of juveniles; light, patternless throat; absence of a well-defined light, dark-bordered postocular/supratemporal stripe; snout flat dorsally, scales smooth or very slightly keeled, very low midbody scale counts usually within the range of 106-137.

All other species within the genus *Euprepiosaurus* Fitzinger, 1843 are separated from *E. chlorostigma* and the eight new species named above by having one or other of the four character states:

1/ Tongue dark violet, with light lines, or:

2/ Tongue dark bluish or greyish pigmented anteriorly, becoming distinctly lighter laterally and posteriorly, or:

3/ Light coloured tongue, with an ill-defined dark pigmentation in the anteriormost part, or:

4/ Entire tongue light, pinkish in colour.

Exceptional to this is the following two taxa.

E. tsukamotoi Kishida, 1929, which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and covered with evenly distributed yellow scales, (ii) yellow temporal stripe usually absent, (iii) low scale counts around the head (P: 31-40), tail base (Q: 54-74) and midbody (S: 101-126), and (iv) usually prominent dark pigmentation in the gular region (derived from Weijola *et al.* 2020).

E. bennetti (Weijola *et al.* 2020), which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and evenly speckled with yellow scales, sometimes arranged in small groups of yellow scales, (ii) venter cream coloured with pale grey crossbands, (iii) tail exceptionally long (F/SVL mean = 1.76, range = 1.60-1.89), high XY scale counts (148-160), (iv) a clear yellow temporal stripe present in about half of the studied specimens, and (v), in life, peach colouring on the throat (derived from Weijola *et al.* 2020).

For the record as a result of the ICZN ruling of 2020, *E. indicus* of the type form from the Mollucas, Indonesia is characterised by a tongue that is entirely pink.

E. powi sp. nov. is readily separated from all other species within *Euprepiosaurus* by the following suite of characters: Those mentioned previously for the putative species, *E. chlorostigma* and: Similar in most respects to *E. douarrha* (Lesson, 1830) in that the top of the head, including tip of snout and body are jet black, both being heavily speckled with yellow, the spots not neccessarily coinciding with individual scales. The spots on the head and neck are tiny, circular, discrete and well spaced, but at the rear of the neck and the dorsum of the body they significantly enlarge and become more densely spaced giving the lizard's body a strongly yellowish appearance (faded slightly in very old specimens, to become more a light grey colour). Upper labials are black. Lower labials, chin and throat are generally dark, greyish-black, with yellow peppering, the dark giving way to yellow past the gular pouch and beyond to the venter, which is mainly yellow.

E. powi sp. nov. is separated from *C. douarrha* by the presence of pronounced light temporal streaks, bordered above and below by black lines which are absent in *C. douarrha* and is further separated from *C. douarrha* by the fact that *C. douarrha* has, running across the body a well-defined series of obvious yellow occeli with black centres, forming a series of about 8-10 bands running across the body.

Iris is dark. Upper surfaces of limbs are peppered with large and small yellow spots of uneven size. Inner nostril is yellow.

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

The morphologically similar species *Oxysaurus spinulosus* (Mertens, 1941) is depicted in life in plate 96 of McCoy (2006).

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. powi sp. nov.* is as far as is known restricted to Manus Island and ouliers in the Admiralty Islands, Manus District, Papua New Guinea.

Etymology: In 2001 the Australian government set up a notorious concentration camp on Los Negros Island in Manus Province, Papua New Guinea for prisoners of war (POW's) and refugees.

At this concentration camp facility prisoners of war and refugees were subjected to harassment, bashings, rapes and killings (Hill 2016).

The new species name "*powi*" is not intended to honour the reckless illegal action of the Australian government towards prisoners of war and refugees, including pain, suffering and deaths, but rather to draw attention to it so that similar mistakes are not made in the future and so that there is a historical record of these events, noting the propensity for the Australian government to seek to rewrite history to over-write atrocities it commits.

The spelling "powi" is deliberate and should not be amended to "poworum" which would normally be taken as the correct spelling, as more than one person is being remembered.

EUPREPIOSAURUS SCOTTGRANTI SP. NOV.

LSIDurn:lsid:zoobank.org:act:95D13230-3195-48EF-A0D6-3DE635CBB295

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number: R112255 collected from Tanimbar, Indonesia. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number: R109969 collected from Tanimbar, Indonesia.

Diagnosis: The following eight species, *Euprepiosaurus sloppi* from Shortland Island (Solomon Islands), *E. elfakhariorum sp. nov.* from Malaita (Solomon Islands), *E. allengreeri sp. nov.* from

Guadalcanal (Solomon Islands), *E. dorisioi sp. nov.* from the New Georgia group of islands (Solomon Islands), *E. paulwoolfi sp. nov.* from Santa Isabel (AKA Ysabel) (Solomon Islands), *E. matteoae sp. nov.* from Santa Ana and San Cristobal (Solomon Islands), *E. powi sp. nov.* from Manus Island (Papua New Guinea) and *E. scottgranti sp. nov.* from Tanimbar Island (West Maluku Tenggara Regency, Maluku, Indonesia) have until now all been treated as populations of putative *E. indicus* (Daudin, 1802).

In his PhD Thesis in 1995, Robert George Sprackland headed his account of the putative taxon as "Mangrove Monitor, metaspecies", knowing that several species-level taxa were within this group (Sprackland 1995). Similar views have been expressed by other authors since 1995 including most recently (Ziegler *et al.* 2007a, Weijola 2017).
Both before and since 1995, various species have been formally described. Prior to the publication of this paper 17 were recognized as being specifically distinct (excluding the descriptions of forms synonymised, which has been agreed by myself).

Species including *E. doreanus* (Meyer, 1874), *E. finschi* (Böhme, Horn and Ziegler, 1994), and *E. jobiensis* (Ahl, 1932), and associated species including *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. yuwonoi* (Harvey and Barker, 1998), *E. oxyi sp. nov.*, *E. adelynhoserae sp. nov.* and *E. jackyhoserae sp. nov.*, all of a divergent lineage and separated from the *E. indicus* group *sensu-stricto* by not having a mainly dark bluish-grey tongue and usually having blue colour on the posterior tail, are excluded from the diagnosis that follows.

The eight new species formally described herein continue this process of the break up of this species complex.

All are reproductively, genetically and morphologically divergent from one another. All are clearly evolving as separate biological entities and therefore all warrant treatment as full species.

Due to confusion relating to type specimens and a ruling by the ICZN in 2020 (ICZN 2020), the description for the species complex immediately below is based on the nominate taxon, *E. chlorostigma* (Gray, 1831) as the standard form and not *E. indicus.*

The putative species, *E. chlorostigma* including the eight species formally named herein, do unless specified otherwise conform to the following unique diagnosis: Entirely dark tongue (blueish or dark purple), except for the rear which is purple or pink. Dorsum dark brownish-black, with small whitish-yellow spots, mostly smaller than an area covered by five scales; lack of blue pigmentation, even on the tail of juveniles; light, patternless throat; absence of a well-defined light, dark-bordered postocular/supratemporal stripe; snout flat dorsally, scales smooth or very slightly keeled, very low midbody scale counts usually within the range of 106-137.

All other species within the genus *Euprepiosaurus* Fitzinger, 1843 are separated from *E. chlorostigma* and the eight new species named above by having one or other of the four character states:

1/ Tongue dark violet, with light lines, or:

2/ Tongue dark bluish or greyish pigmented anteriorly, becoming distinctly lighter laterally and posteriorly, or:

3/ Light coloured tongue, with an ill-defined dark pigmentation in the anteriormost part, or:

4/ Entire tongue light, pinkish in colour.

Exceptional to this is the following two taxa.

E. tsukamotoi Kishida, 1929, which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and covered with evenly distributed yellow scales, (ii) yellow temporal stripe usually absent, (iii) low scale counts around the head (P: 31-40), tail base (Q: 54-74) and midbody (S: 101-126), and (iv) usually prominent dark pigmentation in the gular region (derived from Weijola *et al.* 2020).

E. bennetti (Weijola *et al.* 2020), which also has a dark bluish-grey tongue, is separated from the preceding species by the following suite of characters: (i) dorsum black and evenly speckled with yellow scales, sometimes arranged in small groups of yellow scales, (ii) venter cream coloured with pale grey crossbands, (iii) tail exceptionally long (F/SVL mean = 1.76, range = 1.60-1.89), high XY scale counts (148-160), (iv) a clear yellow temporal stripe present in about half of the studied specimens, and (v), in life, peach colouring on the throat (derived from Weijola *et al.* 2020).

For the record as a result of the ICZN ruling of 2020, *E. indicus* of the type form from the Mollucas, Indonesia is characterised by a tongue that is entirely pink.

E. scottgranti sp. nov. is readily separated from all other species within *Euprepiosaurus* by the following suite of characters: Those mentioned previously for the putative species, *E. chlorostigma* and: Body dark, with light spots made of 2-6 scales in irregular pattern. Also on the body are 5-6 rows between neck and hind limbs, of spots that are larger and each forming a hexagonal shape running in a banded formation across the body with about ten such hexagons in each cross band running from either side of the flanks. A well defined, single light temporal streak is present, becoming irregular and often interrupted in larger specimens. The anterior half of the tail has irregular bands made of light spots forming oval clusters, most hollow in the center. These become prominent dark and light cross bands on the posterior half of the visible surfaces of the tail. Dorsum of head, including tip of snout is greyish with scattered light yellow flecks only. Inner ear black. Iris dark brownish red. Upper surfaces of limbs are greyish-black with numerous scattered white flecks or spots of various size and shape, not in any obvious pattern or configuration. Fingers and toes are heavily banded black and yellow. Gular region is whitish-yellow, generally unmarked or with limited peppering only.

The 17 Currently recognized species within *Euprepiosaurus* excluding those formally named within this paper are as follows: *E. bennetti* Weijola *et al.* (2020), *E. caerulivirens* (Philipp, Böhme and Ziegler, 1999), *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020), *E. doreanus* (Meyer, 1874), *E. douarrha* (Lesson, 1830), *E. finschi* (Böhme, Horn and Ziegler, 1994), *E. indicus* (Daudin, 1802) (type species) (*sensu* ICZN 2020), *E. jobiensis* (Ahl, 1932), *E. juxtindicus* (Böhme, Phillip, and Ziegler, 2002), *E. lirungensis* (Koch, Arida, Schmitz, Böhme and Ziegler, 2009), *E. melinus* (Böhme and Ziegler, 1997), *E. obor* (Weijola and Sweet, 2010), *E. rainerguentheri* (Ziegler, Böhme and Schmitz, 2007), *E. semotus* (Weijola, Donnellan and Lindqvist 2016), *E. tsukamotoi* (Kishida, 1929), *E. yuwonoi* (Harvey and Barker, 1998), *E. zugorum* (Böhme and Ziegler, 2005).

Photos of live specimens of all seventeen previously named species (prior to this paper) within the genus *Euprepiosaurus* (AKA the *E. indicus* Group) are in the literature, including as follows:

Weijola (2017) in Fig. 2, contains photos of living *Euprepiosaurus caerulivirens* (A), *E. indicus* (as *E. cerambonensis*) (B), *E. doreanus* (C), *E. douarrha* (D), *E. finschi* (E), *E. chlorostigma* (*sensu* ICZN 2020) (listed as *E. indicus*) (F), *E. jobiensis* (G), *E. juxtindicus* (H), *E. melinus* (I), *E. obor* (J), *E. rainerguentheri* (K), *E. semotus* (L), *E. yuwonoi* (M) (and *E. lenhoseri sp. nov.* (as *V. sp.*) from Misima (N)). Weijola (2020), contains photos of living *E. tsukamotoi* in Figs. 6 and 7 and *E. bennetti* in Figs 9-12. Hoser (1989) on page 117 has a photo of *E. chlorostigma* (Gray, 1831) (*sensu* ICZN 2020) from Australia, treated herein as two subspecies of the type form from Ambon (*sensu* ICZN 2020), namely *E. indicus wellsi* Hoser, 2013 and *E. indicus wellingtoni* Hoser, 2013.

E. lirungensis (Koch *et al.* 2009) is seen in life in (Koch *et al.* 2009), on page 33, Fig 4.

E. zugorum (Böhme and Ziegler, 2005) is depicted online at: https://www.reptilefact.com/zugs-monitor.html

All the preceding specimens in images are identified in the relevant publications as being of the genus "*Varanus*".

The morphologically similar species *Oxysaurus spinulosus* (Mertens, 1941) is depicted in life in plate 96 of McCoy (2006).

Species within the genus *Euprepiosaurus* Fitzinger, 1843 are readily separated from all other Varanids by the following suite of characters: At least the last two thirds of tail are strongly laterally compressed, not prehensile; mid-body scale count usually distinctly higher than 106; unilaterally built hemipenial and hemiclitorial paryphasma rows, which are also developed as weakly hardened ridges (the weakly hardened ridges separating *Euprepiosaurus* from *Shireenhosersaurea* Hoser, 2013).

Distribution: *E. scottgranti sp. nov.* are restricted to the Tanimbar Islands, West Maluku, Tenggara Regency, Maluku, Indonesia.

Etymology: The new species *E. scottgranti sp. nov.* is named in honour of Scott Grant, who as of 2020 was owner of the Whyalla Fauna Park in South Australia, in recognition of his services to wildlife conservation. His start in the wildlife "business" was somewhat choppy in that he sustained two near fatal bites from Inland Taipans *Parademansia microlepidotus* McCoy, 1879. This arose because he was improperly trained by a Victorian government-licensed trainer who in fact had no meaningful experience with snakes and should never have been licensed to train people in the first place.

Scott Grant's problems arose because he was let loose to catch and handle venomous snakes with so-called Killer Snake TONGS, of the sort aggressively used and marketed by the notorious Mark O'Shea in the UK, (see image at: http://www.markoshea.info/home.php of O'Shea with a set of TONGS ostensibly of "Mark searching for spitting cobras in KwaZulu Natal, S.Africa"), or alternatively, see image of O'Shea, Wolfgang Wüster and other members of the gang of thieves about to engage in a round of extreme animal abuse, armed to the teeth with numerous sets of TONGS at: https://www.markoshea.info/images/safricapix/geogap_teaml.jpg

These TONGS are barbaric devices, that when used on snakes, break bones and internal organs and as a result cause otherwise placid snakes to turn into crazy one-dimensional killing machines (Hoser, 2019b).

Fortunately for Scott Grant, he was retrained by the late Les Williams from Ballan, Victoria and Roy Pails, of Ballarat, Victoria, so now Scott Grant is able to handle venomous snakes without attacking them with TONGS and unecessarily inducing them to bite him.

By the way, the notorious Mark O'Shea rarely goes into the field to handle snakes venomous snakes and does not keep them either, but on the rare occasions he interacts with them, because he invariably uses TONGS, he regularly gets bitten and ends up in a hospital intensive care ward.

SHIREENHOSERSAUREA SHIREENHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:61D39781-0167-4357-9EED-F669CD60B5BB

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.129209 collected from Maprik, East Sepik District, Papua New Guinea, Latitude -3.650 S., Longitude 143.033 E. This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the Australian Museum in Sydney, New South Wales, Australia, specimen numbers R.124774 and R.124801 collected at Usino, Madang Province, Papua New Guinea, Latitude -5.5639 S., Longitude 145.3555 E.

Diagnosis: Until now *Shireenhosersaurea shireenhoserae sp. nov.* has been treated as a population of putative *S. prasinus* (Schlegel, 1839), which superficially at least, this species is most similar to.

S. shireenhoserae sp. nov. is separated from all other eleven species in *Shireenhosersaurea* Hoser, 2013 by the following suite of characters: Dorsal ground coloration of body brilliant to dark green, sometimes with V-shaped stripes over the dorsum being either absent or semi-distinct only at the anterior end; nuchals smooth or slightly keeled; ventral side yellow or greenish yellow; throat bright yellow and patternless; palms black or darker; 72-88 transverse rows of slightly keeled ventral scales. Separated from *S. prasinus*, *S. satis* and *S. clara* being the three species superficially most similar, by the following: Absence of a well defined temporal streak from eye to above ear; labials top and bottom are green, not yellow; iris is bright orange, versus yellow or light orange; top of head is without obvious black markings and generally dark green in colour, except nostrils (yellow) and tip of snout (light pinkish-grey), versus yellow in front of eyes in *S. prasinus*, *S. satis* and *S. clara.*

S. prasinus and *S. shireenhoserae sp. nov.* are both readily separated from both *S. satis sp. nov.* and *S. clara sp. nov.* by having black undersides of the feet (particularly the hind ones), versus grey or light in colour in *S. satis sp. nov.* and *S. clara sp. nov.*.

S. shireenhoserae sp. nov. is separated from all of *S. satis sp. nov.*, *S. clara sp. nov.* and *S. prasinus* by the absence of an obvious temporal streak running from the eye and above the ear.

S. prasinus is further separated from the other species by having a well defined pattern of distinct black V-shaped stripes on the dorsum of the neck extending down the body at least half way and usually all the way to the hind limbs (see for example the image published with the original description of that taxon) (or alternatively the cross bands are semi-distinct at the posterior end of the body).

The morphologically similar *S. telenesetes* (Sprackland, 1991) is separated from the preceding species by having a mottled venter, banded throat, pale palms and approximately 92 transverse rows of smooth ventral scales.

S. kordensis (Meyer, 1874) is separated from the preceding species by having an olive to bluish-green dorsum with dark ocelli or black reticulation and heavily keeled nuchal scales.

S. reisingeri (Eidenmüller and Wicker, 2005) is separated from the preceding species by having a yellow or greenish-yellow dorsum with transversal dark bands or a dark reticulation and a greenish-yellow throat.

All other species in the genus *Shireenhosersaurea* Hoser, 2013 are either melanistic and patternless or not melanistic, but with a dorsal ground coloration of black, combined with a distinct light pattern and therefore none can be confused with the preceding species.

A photo of *S. shireenhoserae sp. nov.* in life can be seen in O'Shea (1991).

The genus *Shireenhosersaurea gen. nov.* (now) consisting 12 recognized species are separated from all other living varanids by the following suite of characters: The tail is only moderately compressed or not at all; there is no obvious median double keel dorsally along the tail; the tail is round in section or somewhat dorso-ventrally compressed, at the most, very slightly laterally compressed in the last half; there is a median series of transversely enlarged supraocular scales. The genus *Shireenhosersaurea gen. nov.* is further separated from all other living varanids, including the so-called "*indicus* group" (Genus *Euprepiosaurus* Fitzinger, 1843), the group it is most closely related to, by the following suite of characters: a long tail being 1.75 times the snout-vent length, that is unique among the living varanids in being prehensile (and notably not seen in Genus *Euprepiosaurus* Fitzinger, 1843), and a mainly green or black colouration (the green being unique to this genus) and particular specializations of the foot to enable grasping on branches.

In common with *Euprepiosaurus*, *Shireenhosersaurea gen. nov.* species are characterized by having relatively long snouts, tails and legs.

The genus *Shireenhosersaurea* Hoser, 2013 consists the following 12 species: *Shireenhosersaurea prasinus* (Schlegel, 1839) (type species), *S. beccarii* (Doria, 1874), *S. boehmei* (Jacobs, 2003), *S. bogerti* (Mertens, 1950), *S. clara sp. nov.*, *S. keithhornei* (Wells and Wellington, 1985), *S. kordensis* (Meyer, 1874), *S. macraei* (Böhme and Jacobs, 2001), *S. reisingeri* (Eidenmüller and Wicker, 2005), *S. satis sp. nov.*, *S. shireenhoserae sp. nov.* and *S. telenesetes* (Sprackland, 1991).

Distribution: *S. shireenhoserae sp. nov.* is found in Northern New Guinea, in the general region bounded by Pulau Yapen Irian Jaya (West Papua) in the west, including the Mamberamo River system, along the north coast and nearby ranges, north of the highest parts of the central cordillera to the Huon Peninsula in Papua New Guinea.

Etymology: *S. shireenhoserae sp. nov.* is named in honour of my wife, Shireen Hoser, of Park Orchards, Melbourne, Victoria, Australia, formerly of Africa, in recognition of her services to herpetology and wildlife conservation over more than 20 years.

SHIREENHOSERSAUREA CLARA SP. NOV.

LSIDurn:lsid:zoobank.org:act:F0DB2587-AEE4-4ACA-B790-BDB468B8BD2B

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.9963 collected from Mt. Lamington, Northern District, Papua New Guinea, Latitude -8.933 S., Longitude 148.166 E. This government-owned facility allows access to its holdings.

Diagnosis: Until now *Shireenhosersaurea clara sp. nov.* has been treated as a population of putative *S. prasinus* (Schlegel, 1839), which superficially at least, this species is most similar to.

S. clara sp. nov. is separated from all other eleven species in *Shireenhosersaurea* Hoser, 2013 by the following suite of characters: Dorsal ground coloration of body green without a pattern of V-shaped stripes being semi-distinct or distinct; a dorsal pattern consisting of small indistinct irregular-shaped ocelli on the dorsum of the upper forebody, becoming indistinct at midbody; scattered dark markings forming a somewhat reticulated pattern under the otherwise yellowish chin and front of undersurface of the head, grading to become a pattern of heavy dark marbling on the neck and continuing in similar form as an indistinct pattern under the belly near the forelimbs, before grading to heavy peppering posteriorly; nuchals are smooth or only very slightly keeled; ventral surface is mainly yellowish or greenish; throat yellowish, palms black or very dark; 72-88 transverse rows of slightly keeled ventral scales.

The three species most similar to *S. clara sp. nov* are *S. prasinus*, *S. satis sp. nov.* and *S. shireenhoserae sp. nov.*. *S. clara sp. nov.* is separated from these three species by the following: A dorsal pattern consisting of small indistinct irregular-shaped ocelli on the dorsum of the upper forebody, becoming indistinct at midbody; scattered dark markings forming a somewhat reticulated pattern under the otherwise yellowish chin and front of undersurface of the head, grading to become a pattern of heavy dark marbling on the neck and continuing in similar form as an indistinct pattern under the belly near the forelimbs, before grading to heavy peppering posteriorly (versus an absence of this in the other three species). The base colouration of the ventral surface of the body is green. Front of dorsal surface of snout anterior to eyes is yellowish, which separates this species from *S. shireenhoserae sp. nov.* which has a generally green anterior snout.

The morphologically similar *S. satis sp. nov.* is separated from *S. clara sp. nov.* by the small indistinct irregular-shaped ocelli on the dorsum of the upper forebody extending the entire length of the body and an absence of the marbling on the underside of the throat, it being yellow and a green belly without dark peppering.

S. prasinus and *S. shireenhoserae sp. nov.* are readily separated from both *S. satis sp. nov.* and *S. clara sp. nov.* by having black undersides of the feet (particularly the hind ones), versus grey or light in colour in *S. satis sp. nov.* and *S. clara sp. nov.*.

S. shireenhoserae sp. nov. is separated from all of *S. satis sp. nov.*, *S. clara sp. nov.* and *S. prasinus* by the absence of an obvious temporal streak running from the eye and above the ear.

The morphologically similar *S. telenesetes* (Sprackland, 1991) is separated from the preceding species by having a mottled venter, banded throat, pale palms and approximately 92 transverse rows of smooth ventral scales.

S. kordensis (Meyer, 1874) is separated from the preceding species by having an olive to bluish-green dorsum with dark ocelli or black reticulation and heavily keeled nuchal scales.

S. reisingeri (Eidenmüller and Wicker, 2005) is separated from the preceding species by having a yellow or greenish-yellow dorsum with transversal dark bands or a dark reticulation and a greenish-yellow throat.

All other species in the genus *Shireenhosersaurea* Hoser, 2013 are either melanistic and patternless or not melanistic, but with a dorsal ground coloration of black, combined with a distinct light pattern and therefore none can be confused with the preceding species.

The genus *Shireenhosersaurea gen. nov.* consisting 12 species (recognized as of this paper) are separated from all other living varanids by the following suite of characters: The tail is only moderately compressed or not at all; there is no obvious median double keel dorsally along the tail; the tail is round in section or somewhat dorso-ventrally compressed, at the most, very slightly laterally compressed in the last half; there is a median series of transversely enlarged supraocular scales. The genus *Shireenhosersaurea gen. nov.* is further separated from all other living varanids, including the so-called "*indicus* group" (Genus *Euprepiosaurus* Fitzinger, 1843), the group it is most closely related to, by the following suite of characters: a long tail being 1.75 times the snout-vent length, that is unique among the living varanids in being prehensile (and notably not seen in Genus *Euprepiosaurus* Fitzinger, 1843), and a mainly green or black colouration (the green being unique to this genus) and particular specializations of the foot to enable grasping on branches.

In common with *Euprepiosaurus*, *Shireenhosersaurea gen. nov.* species are characterized by having relatively long snouts, tails and legs.

The genus *Shireenhosersaurea* Hoser, 2013 consists the following 12 species: *Shireenhosersaurea prasinus* (Schlegel, 1839) (type species), *S. beccarii* (Doria, 1874), *S. boehmei* (Jacobs, 2003), *S. bogerti* (Mertens, 1950), *S. clara sp. nov.*, *S. keithhornei* (Wells and Wellington, 1985), *S. kordensis* (Meyer, 1874), *S. macraei* (Böhme and Jacobs, 2001), *S. reisingeri* (Eidenmüller and Wicker, 2005), *S. satis sp. nov.*, *S. shireenhoserae sp. nov.* and *S. telenesetes* (Sprackland, 1991).

Distribution: *S. clara sp. nov.* is known only from the Popondetta / Mount Victory region in the Northern District of Papua New Guinea.

It may extend further east or west, north of the central cordillera, to Milne Bay in the east and the Huon Peninsula (Lae area) in the west.

Etymology: The new species name *S. clara sp. nov.* comes from the Latin word "clara", meaning bright, in reflection of the colour of the lizard.

SHIREENHOSERSAUREA SATIS SP. NOV.

LSIDurn:lsid:zoobank.org:act:B2397304-AA76-4068-BFFF-6927FE75A4A2

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.6495 collected from Fife Bay, Papua New Guinea, Latitude -10.600 S., Longitude 150.016 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.6741 collected from Fife Bay, Papua New Guinea, Latitude -10.600 S., Longitude 150.016 E.

Diagnosis: Until now *Shireenhosersaurea satis sp. nov.* has been treated as a population of putative *S. prasinus* (Schlegel, 1839), which superficially at least, this species is most similar to.

S. satis sp. nov. is separated from all other eleven species in *Shireenhosersaurea* Hoser, 2013 by the following suite of characters: Dorsal ground coloration of body is emerald green with a pattern of distinct black V-shaped stripes on the dorsum of the neck becoming obvious black-edged occeli from the region of the front legs, extending down the entire body to the base of the tail. Posteriorly nuchals are smooth or only very slightly keeled; ventral surface is green; throat yellow and patternless; undersides of all palms and feet are black; 72-88 transverse rows of slightly keeled ventral scales.

S. satis sp. nov. is readily separated from *S. prasinus* by having a green belly, versus yellow in *S. prasinus. S. prasinus* is further separated by having a well defined pattern of distinct black V-shaped stripes on the dorsum of the neck extending down the body at least half way, and usually all the way to the hind limbs (or alternatively semi-distinct at the posterior end of the body) (see for example the drawing that accompanied the original description of *S. prasinus* depicting a fully banded lizard).

S. satis sp. nov. and *S. clara sp. nov.* are readily separated from both of *S. prasinus* and *S. shireenhoserae sp. nov.* by having black undersides of palms and feet, versus grey or light in *S. prasinus* and *S. shireenhoserae sp. nov.*.

S. shireenhoserae sp. nov. is separated from all of *S. satis sp. nov.*, *S. clara sp. nov.* and *S. prasinus* by the absence of an obvious temporal streak running from the eye and above the ear.

The three species most similar to *S. clara sp. nov.* are *S. prasinus*, *S. satis sp. nov.* and *S. shireenhoserae sp. nov.*. *S. clara sp. nov.* is separated from these three species by the following: A dorsal pattern consisting of small indistinct irregular-shaped ocelli on the dorsum of the upper forebody, becoming indistinct at midbody; scattered dark markings forming a somewhat reticulated pattern under the otherwise yellowish chin and front of undersurface of the head, grading to become a pattern of heavy dark marbling on the neck and continuing in similar form as an indistinct pattern under the belly near the forelimbs, before grading to heavy peppering posteriorly (versus an absence of this in the other three species). The base colouration of the ventral surface of the body is green. Front of dorsal surface of snout anterior to eyes is yellowish, which separates this species from *S. shireenhoserae sp. nov.* which has a generally green anterior snout.

The morphologically similar *S. telenesetes* (Sprackland, 1991) is separated from the preceding species by having a mottled venter, banded throat, pale palms and approximately 92 transverse rows of smooth ventral scales.

S. kordensis (Meyer, 1874) is separated from the preceding species by having an olive to bluish-green dorsum with dark ocelli or black reticulation and heavily keeled nuchal scales.

S. reisingeri (Eidenmüller and Wicker, 2005) is separated from the preceding species by having a yellow or greenish-yellow dorsum with transversal dark bands or a dark reticulation and a greenish-yellow throat.

All other species in the genus *Shireenhosersaurea* Hoser, 2013 are either melanistic and patternless or not melanistic, but with a dorsal ground coloration of black, combined with a distinct light pattern and therefore none can be confused with the preceding species.

The genus *Shireenhosersaurea gen. nov.* consisting 12 species are separated from all other living varanids by the following suite of characters: The tail is only moderately compressed or not at all; there is no obvious median double keel dorsally along the tail; the tail is round in section or somewhat dorso-ventrally compressed, at the most, very slightly laterally compressed in the last half; there is a median series of transversely enlarged supraocular scales. The genus *Shireenhosersaurea gen. nov.* is further separated from all other living varanids, including the so-called "*indicus* group" (Genus *Euprepiosaurus* Fitzinger, 1843), the group it is most closely related to, by the following suite of characters: a long tail being 1.75 times the snout-vent length, that is unique among the living varanids in being prehensile (and notably not seen in Genus *Euprepiosaurus* Fitzinger, 1843), and a mainly green or black colouration (the green being unique to this genus) and particular specializations of the foot to enable grasping on branches.

In common with *Euprepiosaurus*, *Shireenhosersaurea gen. nov.* species are characterized by having relatively long snouts, tails and legs.

The genus *Shireenhosersaurea* Hoser, 2013 consists the following 12 species: *Shireenhosersaurea prasinus* (Schlegel, 1839) (type species), *S. beccarii* (Doria, 1874), *S. boehmei* (Jacobs, 2003), *S. bogerti* (Mertens, 1950), *S. clara sp. nov.*, *S. keithhornei* (Wells and Wellington, 1985), *S. kordensis* (Meyer, 1874), *S. macraei* (Böhme and Jacobs, 2001), *S. reisingeri* (Eidenmüller and Wicker, 2005), *S. satis sp. nov.*, *S. shireenhoserae sp. nov.* and *S. telenesetes* (Sprackland, 1991).

Distribution: *S. satis sp. nov.* is found in Papua New Guinea, extending from the Milne Bay region of south-east New Guinea to the east of the Trans-Fly region of New Guinea, generally south of the central cordillera. Specimens found west of this region (e.g. near Merauke) are morphologically similar and tentatively assigned to this species.

Etymology: The new species name *S. satis sp. nov.* comes from the Latin word "satis", meaning pretty, in reflection of the colour and form of the lizard.

REFERENCES CITED

Ahl, E. 1932. Eine neue Eidechse und zwei neue Frösche von der Insel Jobi. *Mitt. zool. Mus. Berlin* 17:892-899.

Akeret, B. 2014. Geschichtliches zur Haltung von Waranen in Deutschland und der Schweiz. *Terraria-Elaphe* 2014(6):14-21.

Allison, A. 1996. Zoogeography of amphibians and reptiles of New Guinea and the Pacific region. pp. 407-436. in: Keast, A and Miller, S. E. (eds.), *The origin and evolution of Pacific island biotas, New Guinea to eastern Polynesia: patterns and processes.* SBP Academic Publishing, Amsterdam, The Netherlands.

Allison, A. 2007a. Introduction to the fauna of Papua. pp. 479-494. in Marshall, J. M. and Beehler, B. M. (eds.), *The Ecology of Papua part one.* Periplus, Hong Kong.

Allison, A. 2007b. Herpetofauna of Papua. pp. 564-616. in Marshall, J. M. and Beehler, B. M. (eds.), *The Ecology of Papua part one.* Periplus, Hong Kong.

Allison, A. and Leisz, S. 2009. Analysis of the impacts of climate change on the herpetofauna of the Papuan region (New Guinea to the Solomon Islands):16 pp.

Amer, S. A. M. and Kumazawa,Y. 2008. Timing of a mtDNA gene rearrangement and intercontinental dispersal of varanid lizards. *Genes Genet. Syst.* 83:275-280.

Ast, J. C. 2001. Mitochondrial DNA Evidence and Evolution in Varanoidea (Squamata). *Cladistics* 17(3):211-226 [Erratum in 18(1):125.].

Ávalos, J. de and Martínez Carrión, P. 1997. Warane. *Reptilia* (Münster) 2(5):16-21.

Barts, M., Tillack, F. and Werning, F. 2006. Zum 65. Geburtstag von Dr. sc. Rainer Günther, Kustos der herpetologischen Abteilung des Zoologischen Museums Berlin, mit Anmerkungen zur Geschichte der Abteilung. *Sauria* 28(4):45-46.

Ávalos, J. de and Martínez Carrión, P. 1997. *Warane.* Reptilia (Münster) 2(5):16-21.

Bayless, M. and Dwyer, Q. 1997. Notes on the peach-throated monitor. *Reptile and Amphibian Magazine* (May):26-30.

Bennett, D. 1995. *A Little Book of Monitor Lizards*. Viperpress, Aberdeen, Scotland, UK:207 pp.

Bennett, D. 1998. *Monitor Lizards. Natural History, Biology and*

Husbandry. Edition Chimaira:352 pp.

Bennett, D. 2015. International Trade in the Blue Tree Monitor *Varanus macraei. Biawak* 9(2):50.

Bennett, D. 2017. Comment (Case 3676): On the proposed conservation of *Tupinambus indicus* Daudin, 1802 by replacement of the neotype. *Bulletin of Zoological Nomenclature* 73(2-4):116-118.

Bleeker, P. 1856. Reis Minahassa 1:278

Böhme, W. 1991a. The identity of *Varanus gouldii* (Gray, 1838), and the nomenclature of the *V. gouldii* species complex. *Mertensiella* Bonn 2:38-41.

Böhme, W. 1991b. New findings on the hemipenial morphology of monitor lizards and their systematic implications. *Mertensiella* Bonn 2:42-49.

Böhme, W. 2003. Checklist of the living monitor lizards of the world (family Varanidae). *Zoologische Verhandelingen* 341:6-43.

Böhme, W. 2014. Herpetology in Bonn. *Mertensiella* 21. vi+256 pp.

Böhme, W. and Jacobs, H. J. 2001. *Varanus macraei sp. n.*, eine neue Waranart der *V. prasinus*-Gruppe aus West Irian, Indonesien. *Herpetofauna* (Münster) 23(133):5-10.

Böhme, W. and Koch, A. 2010. On the type selection and re-typification of two monitor lizard taxa (Squamata: Varanidae): *Monitor bivittatus celebensis* Schlegel, 1844 and *Monitor kordensis* Meyer, 1874; with some comments and corrections on other name-bearing type specimens. *Zootaxa* (PRINO) (online) 2440:60-68.

Bo¨hme, W. and Ziegler, T. 1997. *Varanus melinus sp. n.*, ein neuer Waran aus der *V. indicus*-gruppe von den Molukken, Indonesien. *Herpetofauna* (Münster)19:26-34.

Böhme, W. and Ziegler, T. 2005. A new monitor lizard from Halmahera, Moluccas, Indonesia (Reptilia: Squamata: Varanidae). *Salamandra* 41:51-59.

Böhme, W. and Ziegler, T. 2007. Notes on the Distribution, Diet, Hemipenis Morphology and Systematics of *Varanus spinulosus* Mertens, 1941. *Mertensiella* 16:100-108.

Böhme, W., Horn, H. and Ziegler, T. 1994. On the taxonomy of the Pacific monitor lizards (*Varanus indicus* complex): Resurrection of *Varanus doreanus* (A.B. MEYER, 1874) and description of a new subspecies. *Salamandra* 30(2):119-142.

Böhme, W., Philipp, K. and Ziegler, T. 2002. Another new member of the *Varanus* (*Euprepiosaurus*) *indicus* group (Sauria: Varanidae): an undescribed species from Rennell Island, Solomon Islands. *Salamandra* 38(1):15-26.

Böhme, W., Koch, A. and Ziegler, T. 2016. Comment on the proposed conservation of *Tupinambus indicus* Daudin, 1832 (currently *Varanus indicus*: Reptilia, Squamata) by replacement of the neotype (Case 3676; see BZN 72: 134-140). *Bulletin of Zoological Nomenclature* 73(1).

Böhme, W., Jacobs, H. J., Koppetsch, T. and Schmitz, A. 2019. The Kei Islands Monitor Lizard (Squamata: Varanidae: *Varanus*: *Euprepiosaurus*) as a Distinct Morphological, Taxonomic, and Conservation Unit. *Russian Journal of Herpetology* 26(5):272-280.

Bosch, H. 1996. Schwarze Smaragdwarane: *Varanus beccarii* im Löbbecke Museum und Aquazoo Düsseldorf. *TI Magazin* (131):64-65.

Boulenger, G. A. 1885. *Catalogue of lizards in the British Museum. vol. 2.* Trustees of the British Museum, London, UK:492 pp.

Boulenger, G. A. 1886. On the reptiles and batrachians of the Solomon Islands. *Trans. Zool. Soc. London* 12:35-62.

Boulenger, G. A. 1895. On a collection of reptiles and batrachians from Ferguson Island, D'Entrecasteaux group British New Guinea. *Ann. Mag. Nat. Hist.* (6)16:28-32.

Brandenburg, T. 1983. Monitors in the Indo-Australian archipelago. PhD thesis, Leiden University:123 pp.

Brongersma, L. D. 1948. Lizards from the island of Morotai (Moluccas). *Proc. Koninkl. Ned. Akad. Wet.* Series C. 51:486-495.

Brown, D. 2014. *A guide to … Australian Lizards in captivity*. Reptile Publications, Tweed Heads, NSW, Australia:947 pp.

Brygoo, E. 1987. Les types de Varanides (Reptiles, Sauriens) du Museum national. Catalogue critique. *Bulletin du Museum d'Histoire Naturelle*, Paris, (4)9, section A: 21-38.

Bucklitsch, Y., Böhme, W. and Koch, A. 2016. Scale Morphology and Micro-Structure of Monitor Lizards (Squamata: Varanidae: *Varanus spp.*) and their Allies: Implications for Systematics, Ecology, and Conservation. *Zootaxa* (PRINO) (online) 4153(1):1-192.

Buden, D. W. 2015a. Reptiles of Lukunor Atoll, Mortlock Islands, Chuuk State, Federated States of Micronesia. *Pacific Science* 69(1):117-124.

Buden, D. W. 2015b. Reptiles of Uman District Islands (Southeastern Chuuk Lagoon and Kuop Atoll), Federated States of Micronesia. *Pacific Science* 69(2):271-279.

Buden, D. W. and Taboroši, D. 2016. *Reptiles of the Federated States of Micronesia*. Island Research and Education Initiative:311 pp.

Canto, R. del 2013. Field Observations on *Varanus macraei. Biawak* 7(1):18.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh Edition). CSIRO Publishing, Collingwood, Victoria, Australia:1033 pp.

Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia* (*1*) *Amphibia and Reptilia*, Australian Government Publishing Service, Canberra, ACT, Australia:319 pp.

Cooper, T., Liew, A., Andrle, G., Cafritz, E., Dallas, H., Niesen, T., Slater, E., Stockert, J., Vold, T., Young, M. and Mendelson, J. 2019. Latency in Problem Solving as Evidence for Learning in Varanid and Helodermatid Lizards, with Comments on Foraging Techniques. *Copeia* 107(1):78-84.

Cota, M. 2008. *Varanus indicus* and its presence on the Mariana Islands: natural geographic distribution vs. introduction. *Biawak* 2(1):18-27.

Court of Appeal Victoria. 2014. *Hoser v Department of Sustainability and Environment* [2014] VSCA 206 (5 September 2014).

Czechura, G. V. 1980. The Emerald Monitor *Varanus prasinus* (Schlegel): an addition to the Australian mainland herpetofauna. *Memoirs of the Queensland Museum* 20:103-109.

Daudin, F. M. 1802. *Histoire naturelle, geìneìrale et particulieìre des Reptiles*. Vol. 3. Dufart, Paris, France:455 pp.

Davis, A. C. 2014. Successful Repair of an Emerald Tree Monitor (*Varanus prasinus* Schlegel, 1839) Egg at Bristol Zoo Gardens. *Biawak* 8(1):39.

Dawson, J. E. 2018. Successful Hatching of a Patched *Varanus beccarii* (Doria, 1874) Egg at the Saint Louis Zoo?. *Biawak* 12(2):91-96.

De Lisle, H. F. 1996. *Natural History of Monitor Lizards*. Krieger, Malabar, Florida, USA.

De Lisle, H. F. 2009. Catalog of the Genus *Varanus* (Reptilia: Squamata: Varanidae) with new designations of a neotype and a lectotype. *ZooNova* 1:8-32.

Dedlmar, A. 2007. Haltung, Pflege und Nachzucht von *Varanus macraei. Reptilia* (Münster) 12(63):39-41.

Dedlmar, A. 2007. Keeping and breeding the Blue Tree Monitor *Varanus macraei. Reptilia* (UK) (50):25-27.

Dedlmar, A. 2008. Eine kleine Sensation. *Reptilia* (Münster) 13(69):8.

De Rooij, N. 1915. *The Reptiles of the Indo-Australian Archipelago*. Xiv+384 pp., E.J. Brill, Leiden.

De Vis, C. W. 1887. On new or rare vertebrates from the Herbert River, North Queensland. *Proc. Linn. Soc. N. S. W.* (2)1(IV):1129-1137.

Doria, G. 1875. Enumerazione dei rettili raccolti dal Dott. O. Beccari in Amboina alle Isole Aru ed alle Isole Kei durante gli anni 1872-73. *Ann. Mus. Civ. Stor. Nat. Genova* 6:325-357 [1874].

Dryden, G. L. 1965. The food and feeding habits of *Varanus indicus* on Guam. *Micronesica* 2(1):73-76.

Dubois, A. 2014. Email to Raymond Hoser, 14 May.

Dubois, A., Bauer, A. M., Ceriaco, L. M. P., Dusoulier, F., Fretey, T., Lobl, I., Lorvelec, O., Ohler, A., Stopiglia, R. and Aescht, E. 2019. The Linz Zoocode project: a set of new proposals regarding the terminology, the Principles and Rules of zoological nomenclature. First report of activities (2014-2019). *Bionomina* (online), 17:1-111.

Duméril, A. M. C. and Bibron, G. 1836. *Erpetologie Générale ou Histoire Naturelle Complete des Reptiles.* Vol. 3. Libr. Encyclopédique Roret, Paris:528 pp.

Earley, R. L., Attum, O. and Eason, P. 2002. Varanid combat: perspectives from game theory. *Amphibia-Reptilia* 23(4):469-485.

Eidenmüller, B. 2007a. Kleinwarane im Terrarium. *Reptilia* (Münster) 12(63):16-23.

Eidenmüller, B. 2007b. Small monitors in the terrarium. *Reptilia* (UK) (50):12-19.

Eidenmüller, B. and Philippen, H. -D. 2007. *Terralog Vol. 6: Varanoid Lizards of the World.* Edition Chimaira, Frankfurt, Germany:148 pp.

Eidenmüller, B. and Wicker, R. 1992. *Varanus* (*Odatria*) *prasinus beccarii* (Doria, 1874), Pflege und Zucht. *Salamandra* 28(3-4):171-178.

Eidenmüller, B. and Wicker, R. 2005. Eine weitere neue Waranart aus dem *Varanus prasinus*-Komplex von der Insel Misol, Indonesien. *Sauria* 27(1):3-8.

Eidenmüller, B., Koch, A., Köhler, J. and Wicker, R. 2017. New findings on the relationships among New Guinea tree monitor lizards of the *Varanus prasinus* (Schlegel, 1839) complex (Squamata: Sauria: Varanidae). *Herpetozoa* 30(1/2):9-20.

Eipper, S. 2013. Post on Facebook 16 December 2013.

Ellis, R. J. 2018. An annotated type catalogue of varanid lizards (Reptilia: Squamata: Varanidae) in the collection of the Western Australian Museum. *Records of the Western Australian Museum* 33:187-194,

Emerson, B. C. 2008. Speciation on islands: what are we learning? *Biological Journal of the Linnean Society* 95:47-52.

Fitch, A. J., Goodman, A. E. and Donnellan, S. C. 2006. A molecular phylogeny of the Australian monitor lizards (Squamata: Varanidae), inferred from mitochondrial DNA sequences. *Australian Journal of Zoology* 54:253–269.

Frýdlová, P. and Frynta, D. 2010. A test of Rensch's rule in varanid lizards. *Biological Journal of the Linnean Society* 100:293-306.

Frýdlová, P., Velenský, P., Šimková, O., Cikánová, V., Hnízdo, J., Rehák, I. and Frynta, D. 2011. Is body shape of mangrove-dwelling monitor lizards (*Varanus indicus*; Varanidae) sexually dimorphic? *Amphibia-Reptilia* 32(1):27-37.

Frýdlová, P., Hnizdo, J., Velensky, P., Simkova, O., Cikanova, V., Chylikova, L. and Frynta, D. 2013. Easy life of males? Indirect evidence that growth is easier than egg production in mangrove-dwelling monitor lizards (*Varanus indicus*). *Acta Herpetologica* 8(2):105-113.

Good, D. A., Bauer, A. M. and Günther, R. 1993. An Annotated Type Catalogue of the Anguimorph Lizards (Squamata: Anguidae, Helodermatidae, Varanidae, Xenosauridae) in the Zoological Museum, Berlin. *Mitt. Zool. Mus. Berl.* 69(1):45-56.

Grabbe, J. 2014. Erster Nachweis von Parthenogenese bei *Varanus rainerguentheri*, einem Pazifikwaran aus der *indicus*-Gruppe. *Terraria-Elaphe* 2014(6):38-42.

Grabbe, J. and Koch, A. 2014. First and Repeated Cases of Parthenogenesis in the Varanid Subgenus *Euprepiosaurus* (*Varanus indicus* Species Group) and the First Successful Breeding of *V. rainerguentheri* in Captivity. *Biawak* 8(2):79.

Goodman, R. 2019. Snake snatcher cops hefty fine for taking python. *Age*, 21 March 2019, posted online at: https://www.theage.com.au/national/victoria/snake-snatcher-cops-hefty-fine-for-taking-the-python-20190321-p51696.html

Gray, J. E. 1831. A synopsis of species of the class Reptilia. In Griffith, E. *The animal kingdom arranged in conformity with its organization* vol. 9:110 pp. Whittaker, Treacher and Co. London.

Gregorovicova, M., Zahradnicek, O., Tucker, A. F., Velensky, P. and Horacek, I. 2012. Embryonic development of the monitor lizard, *Varanus indicus. Amphibia-Reptilia* 33(3-4):451-468.

Günther, A. 1879. Notice of a collection of reptiles from islands of Torres Straits. *Ann. Mag. nat. Hist.* (5)3:84-87.

Hagen, I. J., Donnellan, S. C. and Bull, M. 2012. Phylogeography of the prehensile-tailed skink *Corucia zebrata* on the Solomon Archipelago. *Ecology and Evol.* 2(6):1220-1234.

Hartdegen, R. W., Chiszar, D. and Murphy, J. B. 1999. Observations on the feeding behavior of captive black tree monitors, *Varanus beccari. Amphibia-Reptilia* 20(3):330-332.

Harvey, M. B. and Barker, D. G. 1998. A new species of blue tailed monitor lizard (genus *Varanus*) from Halmahera Island, Indonesia. *Herpetologica* 54:34-44.

Hediger, H. 1934. Beitrag zur Herpetologie und Zoogeographie Neu-Britanniens und einiger umliegender Gebiete. *Zool. Jahrb.* (Syst.) 65:441-582.

Hill, B. 2016. Two men jailed for murdering asylum seeker Reza Barati in Manus Island. *Australian Broadcasting Corporation* (*ABC*) *News*, 19 April, posted online at: https://www.abc.net.au/radio-australia/programs/pacificbeat/two-men-jailed-for-murdering-asylum-seeker-reza/7339362?nw=0

Hobbs, K. 2010. Truckie jailed for having sex with 14 year old girl. *Geelong Advertiser*, 7 August, posted online at: http://www.geelongadvertiser.com.au/article/2010/08/07/198431_news.html

Holmes, R. B., Murray, A. M., Attia, Y. S., Simons, E. L. and Chatrath, P. 2010. Oldest known *Varanus* (Squamata: Varanidae) from the upper Eocene and lower Oligocene of Egypt: Support for an African origin of the genus. *Palaeontology* 53(5):1099-1110.

Hörenberg, T. and Koch, A. 2013. Die Zwergwarane der Untergattung *Odatria* Gray, 1838. *Draco* 13(53):6-19.

Horn, H. G. 1977. Notizen zur Systematik, Fundortangaben und Haltung von *Varanus* (*Varanus*) *karlschmidti. Salamandra* 13(2):78-88.

Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Sydney, NSW, Australia:238 pp.

Hoser, R. T. 1991. *Endangered Animals of Australia.* Pierson and Co., Mosman, NSW, 240 pp.

Hoser, R. T. 1993. *Smuggled: The Underground Trade in Australia's Wildlife.* Apollo Publishing, Moss Vale, NSW. 160 pp.

Hoser, R. T. 1995. Release into hell. *Monitor:Journal of the Victorian Herpetological Society Incorporated* 7(2):77-88.

Hoser, R. T. 1996. *Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia.* Kotabi Publishing, Doncaster, Victoria, 3108, Australia:280 pp.

Hoser, R. T. 1998a. Death Adders (Genus *Acanthophis*): An overview, including descriptions of five new species and one subspecies. *Monitor: Journal of the Victorian Herpetological Society Incorporated* 9(2):20-41.

Hoser, R. T. 1998b. Comments on the proposed conservation of the specific name of *Varanus teriae* Sprackland, 1991 (Reptilia, Squamata) (Case 3043; see BZN 54: 100-103, 250-251; 55: 37-

39). *Bulletin of Zoological Nomenclature* 55(2):113-114.

Hoser, R. T. 2000a. A New Species of Snake (Serpentes: Elapidae) from Irian Jaya. *Litteratura Serpentium* 20(6):178-186.

Hoser, R. T. 2000b. A Revision of the Australasian pythons. *Ophidia Review* 1:7-27.

Hoser, R. T. 2007. Wells and Wellington - It's time to bury the hatchet. *Calodema* Supplementary Paper 1:1-9.

Hoser, R. T. 2009a. Creationism and contrived science: A review of recent python systematics papers and the resolution of issues of taxonomy and nomenclature. *Australasian Journal of Herpetology* 2:1-34. (3 February).

Hoser, R. T. 2009b. Pain makes venomous snakes bite humans. *Australasian Journal of Herpetology* 5 (9 Feb 2009):1-21.

Hoser, R. T. 2012a. Exposing a fraud! *Afronaja* Wallach, Wüster and Broadley 2009, is a junior synonym of *Spracklandus* Hoser 2009! *Australasian Journal of Herpetology* 9 (3 April 2012):1-64.

Hoser, R. T. 2012b. Robust taxonomy and nomenclature based on good science escapes harsh fact-based criticism, but remains unable to escape an attack of lies and deception. *Australasian Journal of Herpetology* 14:37-64.

Hoser, R. T. 2013a. Tidying up the taxonomy of the extant Booidea, including the erection and naming of two new families, the description of *Acrantophis sloppi sp. nov.*, a new species of Ground Boa from Madagascar and *Candoia aspera iansimpsoni subsp. nov.*, a new subspecies of Boa from Papua New Guinea. *Australasian Journal of Herpetology* 16:3-8.

Hoser, R. T. 2013b. The science of herpetology is built on evidence, ethics, quality publications and strict compliance with the rules of nomenclature. *Australasian Journal of Herpetology* 18:2-79.

Hoser, R. T. 2013c. Monitor Lizards reclassified with some common sense (Squamata: Sauria: Varanidae). *Australasian Journal of Herpetology* (21):41-58.

Hoser, R. T. 2014. A long overdue taxonomic rearrangement of the New Guinea Crowned Snakes, currently referred to the genus *Aspidomorphus* Fitzinger, 1843 (Serpentes:Elapidae). *Australasian Journal of Herpetology* 23:3-9.

Hoser, R. T. 2015a. Dealing with the "truth haters" ... a summary! Introduction to Issues 25 and 26 of *Australasian Journal of Herpetology*. Including "A timeline of relevant key publishing and other events relevant to Wolfgang Wüster and his gang of thieves." and a "Synonyms list". *Australasian Journal of Herpetology* 25:3-13.

Hoser, R. T. 2015b. The Wüster gang and their proposed "Taxon Filter": How they are knowingly publishing false information, recklessly engaging in taxonomic vandalism and directly attacking the rules and stability of zoological nomenclature. *Australasian Journal of Herpetology* 25:14-38.

Hoser, R. T. 2015c. Best Practices in herpetology: Hinrich Kaiser's claims are unsubstantiated. *Australasian Journal of Herpetology* 25:39-52.

Hoser, R. T. 2015d. PRINO (Peer reviewed in name only) journals: When quality control in scientific publication fails. *Australasian Journal of Herpetology* 26:3-64.

Hoser, R. T. 2015e. Rhodin *et al*. 2015, Yet more lies, misrepresentations and falsehoods by a band of thieves intent on stealing credit for the scientific works of others. *Australasian Journal of Herpetology* 27:3-36.

Hoser, R. T, 2015f. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see *BZN* 70: 234-237; comments *BZN* 71:30-38, 133-135). (unedited version) *Australasian Journal of Herpetology* 27:37-42.

Hoser, R. T. 2015g. Two hitherto overlooked subspecies of Papuan Python *Liasis* (*Apodora*) *papuana* Peters and Doria, 1878 from New Guinea. *Australasian J. of Herp.* 30:18-20.

Hoser, R. T. 2016a. A division of the elapid genus *Salomonelaps* McDowell, 1970 from the Solomon Islands, including the resurrection of two species and formal description of four other forms (Serpentes: Elapidae: Micropechiini: Loveridgelapina). *Australasian Journal of Herpetology* 31:12-21.

Hoser, R. T. 2016b. A division of the genus elapid genus *Loveridegelaps* McDowell, 1970 from the Solomon Islands, including formal description of four new species (Serpentes: Elapidae: Micropechiini: Loveridgelapina). *Australasian Journal of Herpetology* 31:22-28.

Hoser, R. T. 2016c. A review of the *Candoia bibroni* species complex (Squamata: Serpentes: Candoiidae: *Candoia*). *Australasian Journal of Herpetology* 31:39-61.

Hoser, R. T. 2016d. Carphodactylidae reviewed: Four new genera, four new subgenera, nine new species and four new subspecies within the Australian gecko family (Squamata: Sauria). *Australasian Journal of Herpetology* 32:3-25.

Hoser, R. T. 2016e. A division of the genus *Corucia* Gray, 1855, the Giant Skink, from the Solomon Islands, into five geographically separated species. *Australasian Journal of Herpetology* 32:26-32.

Hoser, R. T. 2016f. A re-evaluation of the Crocodile Skinks, genus *Tribolonotus* Duméril and Bibron, 1839 *sensu lato* including the division of the genus into three, description of three new species, a new subspecies and the placement of all within a new tribe. *Australasian Journal of Herpetology* 32:33-39.

Hoser, R. T. 2016g. *Boiga irregularis* (Bechstein, 1802): An invasive species complex busted! (Serpentes: Colubridae). *Australasian Journal of Herpetology* 33:3-11.

Hoser, R. T. 2018. A revised taxonomy of the gecko genera *Lepidodactylus* Fitzinger, 1843, *Luperosaurus* Gray, 1845 and *Pseudogekko* Taylor, 1922 including the formal erection of new genera and subgenera to accommodate the most divergent taxa and description of 26 new species. *Australasian Journal of Herpetology* 38:32-64.

Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian Jour. of Herpetology* 39:23-52.

Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian Jour. of Herp.* 39:53-63.

Hoser, R. T. 2019c. A new species of Tree Kangaroo, Genus *Dendrolagus* Müller, 1840 from Tembagapura, Mimika, Irian Jaya, Indonesia. *Australasian Journal of Herpetology* 40:50-55.

Hoser, R. T. 2019d. Eight new skink genera and 45 newly named species associated with *Emoia* Gray, 1845 *sensu lato* that reflects ancient divergence and recent speciation within the assemblage (Reptilia: Squamata). *Australasian Journal of Herpetology* 40:3-49.

Hoser, R. T. 2019e. Further dismemberment of the pan-continental Lizard genus *Scincella* Mittleman, 1950 with the creation of four new genera to accommodate divergent species and the formal descriptions of six new species. *Australasian Journal of Herpetology* 41:18-28.

Hoser, R. T. 2019f. Six new genera of skinks associated with *Lipinia* Gray, 1845 based on morphological and evolutionary divergence as well as twenty seven previously undiagnosed species within the same assemblage. *Australasian Journal of Herpetology* 41:29-61.

Hoser, R. T. 2020a. Small and overlooked … six new species of Pygmy Possum, Genus *Cercartetus* Gloger, 1841 *sensu lato* from the Australasian bioregion. *Australasian Journal of Herpetology* 42:11-22.

Hoser, R. T. 2020b. For the first time ever! An overdue review and reclassification of Australasian Tree Frogs (Amphibia: Anura: Pelodryadidae), including formal descriptions of 12 tribes, 11 subtribes, 34 genera, 26 subgenera, 62 species and 12 subspecies new to science. *Australasian Journal of Herpetology* 44-46:1-192.

How, R. A. and Kitchener, D. J. 1997. Biogeography of Indonesian snakes. *Journal of Biogeography* 24:725-735.

Iannucci, A., Altmanová, M., Ciofi, C., Ferguson-Smith, M., Milan, M., Pereira, J. C., Pether, J., Rehák, I., Rovatsos, M., Stanyon, R., Velenský, P., Ráb, P., Kratochvíl, L. and Pokorná, M. J. 2019. Conserved sex chromosomes and karyotype evolution in monitor lizards (Varanidae). *Heredity* 123:215-227.

ICZN 2001. Opinion 1970: *Odatria keithhornei* Wells and Wellington, 1985 (Reptilia, Sauria): specific name placed on Official List. *Bulletin of Zoological Nomenclature* 58(1):74.

ICZN 2020. Opinion 2451: *Tupinambis indicus* Daudin, 1802 (currently *Varanus indicus*; Reptilia, Squamata): specific name conserved ICZN, *Bulletin of Zoological Nomenclature* 77.

Iskandar, D. T. and Mumpuni 2002. The herpetological type specimens in the Museum Zoologicum Bogoriense Collection. *Hamadryad* 27(1):123-135.

Jacobs, H. J. 2002. Zur morphologischen Variabilität der nominellen Smaragdwaran-Taxa *Varanus prasinus* (H. Schlegel, 1939) und *V. kordensis* (A. B. Meyer, 1874), mit Bemerkungen zur Erstzucht des letzteren. *Herpetofauna* (Münster) 24(137):21-34.

Jacobs, H. J. 2003. A further new emerald tree monitor lizard of the *Varanus prasinus* species group from Waigeo, West Irian (Squamata: Sauria: Varanidae). *Salamandra* 39(2):65-74.

Jacobs, H. J. 2008. Zucht von *Varanus reisingeri* EIDENMÜLLER UND WICKER, 2005 mit Vergleich der jugendkleider der *V. prasinus*-Gruppe und Bemerkungen zu deren Taxonomie. *Sauria* 30(1):5-12.

Kaiser, H. 2012a. SPAM email sent out to numerous recipients on 5 June 2012.

Kaiser, H. 2012b. Point of view. Hate article sent as attachment with SPAM email sent out on 5 June 2012.

Kaiser, H. 2013. The Taxon Filter, a novel mechanism designed to facilitate the relationship between taxonomy and nomenclature, vis-à-vis the utility of the Code’s Article 81 (the Commission’s plenary power). *Bulletin of Zoological Nomenclature* 70(4) December 2013:293-302.

Kaiser, H. 2014a. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published. *Bulletin of Zoological Nomenclature*, 71(1):30-35.

Kaiser H. 2014b. Best Practices in Herpetological Taxonomy: Errata and Addenda. *Herpetological Review*, 45(2):257-268.

Kaiser, H., Crother, B. L., Kelly, C. M. R., Luiselli, L., O’Shea, M., Ota, H., Passos, P., Schleip, W. D. and Wüster, W. 2013. Best practices: In the 21st Century, Taxonomic Decisions in Herpetology are Acceptable Only When supported by a body of Evidence and Published via Peer-Review. *Herpetological Review* 44(1):8-23.

Kirschner, A. and Koschorke, H. 1998. Das Portrait: *Varanus yuwonoi. Sauria* 20(4):1-2.

Kishida, K. 1929. A new Monitor from the island of Saipan, South Sea Islands. *Lansania.* 1(1):13-16.

Koch, A. 2012. *Discovery, Diversity, and Distribution of the Amphibians and Reptiles of Sulawesi and its offshore islands.* Edition Chimaira:374 pp.

Koch, A. 2016. Der Blaue Baumwaran (*Varanus macraei*) von Batanta:?wunderschön und stark bedroht. *Reptilia* (Münster) 21(122):38-41.

Koch, A. 2018. 15 Jahre Forschung an indo-australischen Waranen. *Terraria-Elaphe* 2018(5):54-57.

Koch, A. and Böhme, W. 2005. Die Herpetofauna Sulawesis unter besonderer Berücksichtigung der Gattung *Varanus*: phylogeographische Beziehungen zu angrenzenden Gebieten - das Projekt stellt sich vor. *Elaphe* 13(4):43-46.

Koch, A. and Eidenmüller, B. 2019. Is the New Guinea Emerald Tree Monitor Lizard (*Varanus prasinus*) Native to Mainland Australia? *Biawak* 13(1):32-42.

Koch, A., Arida, E. A. and Böhme, W. 2007. Zwischenbericht über die Herpetofauna Sulawesis unter besonderer Berücksichtigung der Gattung *Varanus*: phylogeographische Beziehungen zu angrenzenden Gebieten. *Elaphe* 15(3):42-52.

Koch, A., Arida, E., Schmitz, A., Böhme, W. and Ziegler, T. 2009. Refining the polytypic species concept of mangrove monitors (Squamata: *Varanus indicus* group): a new cryptic species from the Talaud Islands, Indonesia, reveals the underestimated diversity of Indo-Australian monitor lizards. *Australian Journal of Zoology* 57(1):29-40.

Koch, A., Philipp, K. and Ziegler, T. 2010a. The Monitor Man: A Story of Stunning Discoveries and Charismatic Creatures. *Biawak* 4(4):132-152.

Koch, A., Auliya, M. and Ziegler, T. 2010b. Updated checklist of the living monitor lizards of the world (Squamata: Varanidae). *Bonn Zool. Bull.* 57(2):127-136.

Koch, A., Ziegler, T., Böhme, W., Arida, E. and Auliya, M. 2013. Pressing Problems: Distribution, Threats, and Conservation Status of the Monitor Lizards (Varanidae: *Varanus spp.*) of Southeast Asia and the Indo-Australian Archipelago. *Herp. Cons. Biol.* 8 (Monograph 3):1-62.

Koch, A., Ernst, N., Eidenmuller, B. and Kraus, F. 2014. New data on the rare *Varanus bogerti* Mertens, 1950 and *V. telenesetes* Sprackland, 1991 (Squamata: Varanidae), two endemic monitor lizard taxa from island groups off southeastern New Guinea. *The Herpetological Journal* 24(2):111-122.

Kok, R. 1995. Zur Haltung und Nachzucht des Pazifikwarans (*Varanus indicus*). *Salamandra* 31(3): 129-136.

Kraus, F. 2013. Further range extensions for reptiles and amphibians from Papua New Guinea. *Herpetological Review* 44(2):277-280.

Lesson, R. P. 1830. *Monitor douarrha* In: Duperrey, L.I. Voyage autour du monde, exeìcuteì par ordre du Roi, sur la corvette de Sa Majesteì, La Coquille, pendant les anneìes 1822, 1823, 1824 et 1825. *Zoologie* 2(1):53-54.

LiVigni, F. (ed.) 2013. *A Life for Reptiles and Amphibians, Volume 1.* Chimaira, Frankfurt:495 pp.

Mann, H. J. 1976. Zur Behandlung eines Smaragdwarans, *Varanus prasinus. Salamandra* 12(4):206-207.

McCoid, M. J., Hensley, R. A. and Witteman, G. J. 1994. Factors in the decline of *Varanus indicus* on Guam, Mariana Islands. *Herpetological Review* 25(2):60-61.

McCoy, F. 1879. Small-scaled Brown Snake. *Prodromus Zoology Victoria* 3:12-13.

McCreless, E. E., Huff, D. D., Croll, D. A., Tershy, B. R., Spatz, D. N., Holmes, N. D., Butchart, S. H. M. and Wilcox, C. 2015. Past and estimated future impact of invasive alien mammals on insular threatened vertebrate populations. *Nature Communications* 10.103.

McCoy, M. 1980. *Reptiles of the Solomon Islands.* Wau Ecology Institute Handbook 7. Wau Ecology Institute, Wau, Papua New Guinea.

McCoy, M. 2015. *A Field Guide to the Reptiles of the Solomon Islands.* Michael McCoy, Kuranda:147 pp.

McCurry, M. R., Mahony, M., Clausen, P. D., Quayle, M. R., Walmsley, C. W., Jessop, T. S., Wroe, S., Richards, H. and McHenry, C. R. 2015. The Relationship between Cranial Structure, Biomechanical Performance and Ecological Diversity in Varanoid Lizards. *PLoS One* 10 (6): e0130625.

Mendyk, R. W. 2007. Dizygotic twinning in the Blue tree Monitor, *Varanus macraei. Biawak* 1(1):26-28.

Mendyk, R. W. 2011. Forelimb-assisted Extractive Foraging Sheds New Light on the Behavioural Complexity of Arboreal Varanid Lizards. *Biawak* 5(3):51-52.

Mendyk, R. W. 2015. An Annotated Bibliography of the Captive Husbandry, Breeding, Behavior, Veterinary Management and Trade of Tree Monitor Lizards (*Varanus prasinus* Complex). *Biawak* 9(2):58.

Mendyk, R. W. and Horn, H. -G. 2011. Skilled forelimb movements and extractive foraging in the arboreal monitor lizard *Varanus beccarii* (Doria, 1874). *Herp. Review* 42(3):343-349.

Merrem, B. 1820. *Versuch eines Systems der Amphibien I (Tentamen Systematis Amphibiorum).* J. C. Krieger, Marburg:191 pp.

Mertens, R. 1926. Uber die Rassen einiger indo – australischer Reptilien. *Senckenbergiana Biologica* 8:272-279.

Mertens, R. 1941. Zwei neue Warane des australischen Fauenengebietes. *Senckenbergiana Biologica* 23:266-272.

Mertens, R. 1942. Die familie der Warane (Varanidae) 3. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft* 466:235-391.

Mertens, R. 1950. Notes on some Indo-Australian monitors (Sauria, Varanidae). *American Museum Novitates* 1456:1-7.

Mertens, R. 1951. A new lizard of the genus *Varanus* from New Guinea. *Fieldiana Zoology* 31:467-471.

Mertens, R. 1959. Liste der Warane Asiens und der indo-australischen Inselwelt mit systematischen Bemerkungen. *Senckenbergiana Biologica* 40:221-240.

Mertens, R. 1963. Liste der rezenten Amphibien und Reptilien; Helodermatidae, Varanidae, Lanthanotidae. *Das Tierreich* 79:i-x+1-26.

Meyer, A. B. 1874. Übersicht über die von mir auf Neu-Guinea und den Inseln Jobi, Mysore und Mafoor im Jahre 1873 gesammelten Amphibien. *Monatsber. K. Preuss. Akad. Wiss. Berlin* 1874:128-140.

Milenkaya, O. and Lindley McKay, J. 2016. Observation in the Wild of the Poorly-known *Varanus yuwonoi. Biawak* 10(1):13.

Moldovan, D. 2009. Haltung und Zucht von *Varanus* (*Euprepiosaurus*) *macraei* Böhme und Jacobs, 2002. *Sauria* 30(4):5-10 [2008].

Mundhenk, K. 2008. Two Observations of Captured Green Tree Monitors (*Varanus prasinus*) in the Western Province of Papua New Guinea. *Biawak* 2(3):119-120.

Mutton, N. 2014a. Private email (via Facebook) to Raymond Hoser. 6.31 AM, 30 May.

Mutton, N. 2014b. Two emails to Raymond Hoser, 9 June.

Natusch, D. J. D. and Lyons, J. A. 2017. Notes on the Natural History of Blue-tailed Monitors (*Varanus doreanus*) in Australia. *Biawak* 11(1):8-14.

Oliver, P. M., Clegg, J. R., Fisher, R. N., Richards, S. J., Taylor, P. N. and Jocque, M. M. T. 2016. A new biogeographically disjunct giant gecko (Gehyra: Gekkonidae: Reptilia) from the East Melanesian Islands. *Zootaxa* (PRINO) (online) 4208 1: 61-76.

Oliver, P. M., Travers, S. L., Richmond, J. Q., Pikacha, P. and Fisher, R. N. 2017. At the end of the line: independent overwater colonizations of the Solomon Islands by a hyperdiverse trans-Wallacean lizard lineage (*Cyrtodactylus*: Gekkota: Squamata). *Zoological Journal of the Linnean Society* (XX):1-14.

Oransky, I. 2020. Major indexing service sounds alarm on self-citations by nearly 50 journals. Media release at: https://retractionwatch.com/2020/06/29/major-indexing-service-sounds-alarm-on-self-citations-by-nearly-50-journals/

O'Shea, M. 1991. The reptiles of Papua New Guinea. *The British Herpetological Society Bulletin* 37:15-32 (and cover).

Peters, W. C. H. and Doria, G. 1878. Catalogo dei retilli e dei batraci raccolti da O. Beccari, L. M. D'Alberts e A. A. Bruijn. nella sotto-regione Austro-Malese. *Annali del Museo Civico de Storia Naturale di Genova*. 1(13):323-450.

Philipp, K. M. 1999. Niche partitioning of *Varanus doreanus*, *V. indicus* and *V. jobiensis* in Irian Jaya: preliminary results. Pp. 307-316 in Horn, H. G. and Bo¨hme, W. (eds.): *Advances in monitor research II. Mertensiella* 11.

Philipp, K. M., Böhme, W. and Ziegler, T. 1999. The identity of *Varanus indicus*: Redefinition and description of a sibling species coexisting at the type locality (Sauria: Varanidae: *Varanus indicus* group). *Spixiana* 22(3):273-287.

Philipp, K. M., Ziegler, T. and Böhme, W. 2007. Preliminary Investigations of the Natural Diet of Six Monitor Lizard Species of the *Varanus* (*Euprepiosaurus*) *indicus* Group. *Mertensiella* 16:336-345.

Pianka, E. R. 2012. Can humans share spaceship earth? *Amphibian and Reptile Conservation* 6(1):1-24.

Pianka, E. R. and King, D. R. (eds.) 2004. *Varanoid Lizards of the World*. Indiana University Press, USA:599 pp.

Pianka, E. R. and Sweet, S. S. 2016. Field observations by two American Varanophiles, 64 pp. in Cota, M. (ed.), *Proceedings of the fourth multidisciplinary world conference on monitor lizards.*

Pianka, E. R. and Vitt, L. J. 2003. *Lizards: Windows to the Evolution of Diversity*. Univ. of Calif. Press, USA:347 pp.

Pimm, S., Raven, P., Peterson, A., Cagan, H., Sekercioglu and Ehrlich, P. R. 2006. Human impacts on the rates of recent, present, and future bird extinctions. *PNAS* 103(29):10941-10946.

Polleck, R. 2004. Haltung und Nachzucht von *Varanus prasinus prasinus* (Schlegel, 1839). *Sauria*, Berlin 26(2):43-45.

Rauhaus, A., Gutjahr, L., Oberreuter, J. and Ziegler, T. 2014. 7 Jahre Haltung und Nachzucht des Blaugefleckten Baumwarans (*Varanus macraei*) im Kölner Zoo: Ein Rück- und Ausblick. *Terraria-Elaphe* 2014(6):32-37.

Reisinger, M. 2014. Der blaue Waran. Die unglaubliche Entdeckungsgeschichte von *Varanus macraei. Terraria-Elaphe* 2014(6):22-31.

Reisinger, M. and Reisinger-Raweyai, D. 2007a. *Varanus boehmei* - Haltung und erstmalige Nachzucht im Terrarium. *Reptilia* (Münster) 12(63):34-38.

Reisinger, M. and Reisinger-Raweyai, D. 2007b. *Varanus boehmei* - Keeping and first breeding in the terrarium. *Reptilia* (UK) (50):20-24.

Rese, R. 1988. Beitrag zur Lebenserwartung von Grosswaranen in Gefangenschaft. *Sauria* 10(1):25-26.

Ride, W. D. L. (*ed.*) *et al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature* (Fourth edition). The Natural History Museum - Cromwell Road, London SW7 5BD, UK.

Rowe, K. C., Aplin, K. P., Baverstock, P. R. and Moritz, C. 2011. Recent and rapid speciation with limited morphological disparity in the genus *Rattus. Systematic Biology* 60(2):188-203.

Schlegel, H. 1839. *Abbildungen neuer oder unvollständig bekannter Amphibien, nach der Natur oder dem Leben entworfen und mit einem erläuternden Texte begleitet.* Arne and Co., Düsseldorf, xiv+141 pp.

Schmidt, K. P. 1932. Reptiles and Amphibians from the Solomon Islands. *Field Mus. Nat. Hist. Zool.* 18(9):175-190.

Schneider, A. 2016a. Der Blaue Baumwaran, *Varanus macraei* - ein prächtiger Botschafter der indopazifischen Inselwelt. *Reptilia* (Münster) 21(122):16-20.

Schneider, A. 2016b. Der Blaue Baumwaran im Terrarium. *Reptilia* (Münster) 21(122):22-33.

Schneider, A. 2016c. Die Nachzucht des Blauen Baumwarans, *Varanus* (*Hapturosaurus*) (sic) *macraei. Reptilia* (Münster) 21(122):34-37.

Setiadi, M. I. and Hamidy, A. 2006. Jenis-Jenis Herpetofauna di

Pulau Halmahera. *Kerjasama antara Pusat Studi Biodiversitas dan Konservasi Universitas Indonesia dan Museum Zoologicum Bogoriense, Puslit Biologi Lembaga Ilmu Pengetahuan Indonesia*.

Shea, G. 2013a. Email to Raymond Hoser dated Fri, 8 Mar 2013 04:29:39 +0000.

Shea, G. 2013b. Post on facebook on 8 March at 7.51 AM at: http://www.facebook.com/glenn.shea.73?ref=ts&fref=ts

Shea, G. 2013c. Post on facebook on 20 March at:

http://www.facebook.com/glenn.shea.73?ref=ts&fref=ts#!/bryangrieg.fry?fref=ts

Shea, G. 2013d. Second post on facebook on 20 March at:

http://www.facebook.com/glenn.shea.73?ref=ts&fref=ts#!/bryangrieg.fry?fref=ts

Shuter, A. 2014. A Novel Underwater Foraging Behavior Observed in *Varanus prasinus* at the wildlife Conservation Society's Bronx Zoo. *Biawak* 8(2):61.

Smith, C. E. and Filiardi, C. E. 2007. Patterns of molecular and morphological variation in some Solomon island land birds. *The Auk* 124(2):479-493.

Soler, J. 2013. Feral Monitor Lizards (*Varanus spp.*) in Catalonia, Spain: an increasing Phenomenon. *Biawak* 7(1):21.

Somma, M. and Koch, A. 2012. New morphological and distributional data on *Varanus rainerguentheri* (Squamata: Varanidae), an endemic and little-known monitor lizard species of the Moluccas, Indonesia. *Salamandra* 48(4):207-212.

Sprackland, R. G. 1991. Taxonomic review of the *Varanus prasinus* group with descriptions of two new species. *Memoirs of the Queensland Museum* 30(3):561-576.

Sprackland, R. G. 1993. Rediscovery of Solomon Islands monitor lizard (*Varanus indicus spinulosus*) Mertens, 1941. *Vivarium* 4(5):25-27.

Sprackland, R. G. 1994. Rediscovery and taxonomic review of *Varanus indicus spinulosus* Mertens, 1941. *Herpetofauna* (Sydney, Australia) 24(2):33-38.

Sprackland, R. G. 1995. The Emerald monitor. *Reptilian* 4(1):43-46.

Sprackland, R. G. 1995. *Evolution, Systematics, and Variation of Pacific Mangrove Monitors.* PhD thesis, University College London:249 pp. Online at: https://discovery.ucl.ac.uk/id/eprint/10101518/

Sprackland, R. G. 2004. Evolution, systematics and variation of Pacific mangrove monitor lizards. *Lizard Biology* 2(1):Art. 1.

Sprackland, R. G. 2007. Peach-throat monitors. *Reptiles Magazine* 2007:40-47.

Sprackland, R. G. 2010. True blue: Care for the rare and challenging blue-spotted monitor. *Reptiles Mag.* 18(7):32-41.

Spranger, T. M. 2012. Haltung und Handel „exotischer" Tiere als Gegenstand des Polizei- und Ordnungsrechts. *Draco* 13(51):44-53.

Steadman, D. W. 1995. Prehistoric extinctions of Pacific island birds: biodiversity meets zooarchaeology. *Science* 267(5201):1123-1131.

Steadman, D. W., White, J. P. and Allen, J. 1999. Prehistoric birds from New Ireland, Papua New Guinea: Extinctions on a large Melanesian island. *Proceedings of the National Academy of Sciences USA* 96:2563-2568.

Stefani, M. 2008. Husbandry and Reproduction of the Peach-throated Monitor *Varanus jobiensis* in Captivity. *Biawak* 2(3):124-130.

Strickland, J. L., Carter, S., Kraus, F. and Parkinson, C. L. 2016. Snake evolution in Melanesia: origin of the Hydrophiinae (Serpentes, Elapidae), and the evolutionary history of the enigmatic New Guinea elapid *Toxicocalamus. Zoological Journal of the Linnean Society* 178(3):663-678.

Supreme Court of Western Australia 2009. Thomas V Mallard [2009] WASC 95.

Sweet, S. S. and Pianka, E. R. 2003. The lizard kings. *Natural History* 112(9):40-45.

Sweet, S. S. and Pianka, E. R. 2007. Monitors, Mammals and Wallace's Line. pp. 79-99 in Horn, H. –G., Böhme, W. and Krebs, U. (eds.), *Advances in monitor research III*, DGHT, Rheinbach.

Switak, K. H. 2006. Adventures in Green Python Country. *Natur und Tier Verlag* (Münster):364 pp.

Thorpe, S. 2013. Post to the Taxacom listserver, 21 May 2014.

Thorpe, S. 2014a. Post on Taxacom forum dated 13 April.

Thorpe, S. 2014b. Email to ICZN. 29 April.

Toussaint, E. F. A., Moriniere, J., Lam, A., Turlin, B. and Balke, M. 2016. Bayesian Poisson tree processes and multispecies coalescent models shed new light on the diversification of Nawab butterflies in the Solomon Islands (Nymphalidaem Charaxinae, *Polyura*). *Zoological Journal of the Linnean Society* 178(2):241-256.

Victorian Civil and Administrative Tribunal (VCAT). 2015. *Hoser v Department of Environment Land Water and Planning* (Review and Regulation) [2015] VCAT 1147 (30 July 2015, judgment and transcript).

Vidal, N., Marin, J., Sassi, J., Battistuzzi, F. U., Donnellan, S. C., Fitch, A. J., Fry, B. G., Vonk, F. J., Rodriguez de la Vega, R. C., Couloux, A. and Hedges, S. B. 2012. Molecular evidence for an Asian origin of monitor lizards followed by Tertiary dispersals to Africa and Australasia. *Biology Letters* 8:853-855.

Voris, H. K. 2000. Maps of Pleistocene sea levels in Southeast Asia: shorelines, river systems and time durations. *Journal of Biogeography* 27(5):1153-1167.

Wallace, A. R. 1858. On the tendency of species to form varieties; and on the perpetuation of varieties and species by natural means of selection. *Journal of the proceedings of the Linnean Society of London. Zoology* 3(9):45-62.

Wallace, A. R. 1876. *The geographical distribution of animals: with a study of the relations of living and extinct faunas as elucidating the past changes of the earth's surface* (in two volumes). Cambridge University Press, New York (2011 reprint).

Wallace, A. R. 1881. *Island Life: Or, the phenomena and causes of insular faunas and floras, including a revision and attempted solution of the problem of geological climates*. Cosimo, New York (2007 reprint).

Wellington, C. R. 2013. Post on Facebook 26 December 2013.

Wellington, C. R. 2014a. Post on Facebook wall of Scott Eipper 6 April.

Wellington, C. R. 2014b. Email to ICZN List and others on 9 July 2014.

Wells, R. W. 2013. Post on Facebook dated 18 December.

Wells, R. W. 2014a. Post on Facebook wall of Scott Eipper 6 April.

Wells, R. W. and Wellington, C. R. 1984. A synopsis of the class Reptilia in Australia. *Australian Journal of Herpetology* 1(3-4):73-129.

Wells, R. W. and Wellington, C. R. 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology Supplementary Series* 1:1-61.

Weijola, V. 2010. Geographical distribution and habitat use of monitor lizards of the north Moluccas. *Biawak* 4:7-23.

Weijola, V. 2015. *Tupinambis indicus* Daudin, 1802 (currently *Varanus indicus*: Reptilia, Squamata): proposed conservation of usage of the specific name by replacement of the neotype. *Bulletin of Zoological Nomenclature* 72:134-141.

Weijola, V. 2017. Phylogeny and taxonomy of the Pacific Monitor Lizards (Squamata: *Varanus*: *Euprepiosaurus*). *Annales Universitatis Turkuensis* 334:36 pp.

Weijola, V. and Sweet, S. S. 2010. A new melanistic species of monitor lizard (Reptilia: Squamata: Varanidae) from Sanana

Island, Indonesia. *Zootaxa* (PRINO) (online):2434:17-32.

Weijola, V. and Sweet, S. S. 2015. A single species of mangrove monitor (*Varanus*) occupies Ambon, Seram, Buru and Saparua, Moluccas, Indonesia. *Amphibian and Reptile Cons.* 9:14-23.

Weijola, V., Donnellan, S. C. and Lindqvist, C. 2016. A new blue-tailed monitor lizard (Reptilia, Squamata, *Varanus*) of the *Varanus indicus* group from Mussau island, Papua New Guinea. *Zookeys* 568:129-154.

Weijola, V., Vahtera, V., Lindqvist, C. and Kraus, F. 2019. A molecular phylogeny for the Pacific monitor lizards (*Varanus* subgenus *Euprepiosaurus*) reveals a recent and rapid radiation with high levels of cryptic diversity. *Zoological Journal of the Linnean Society* 186(4):1053-1066.

Weijola, V., Vahtera, V., Koch, A., Schmitz, A. and Kraus, F. 2020. Taxonomy of Micronesian monitors (Reptilia: Squamata: *Varanus*): endemic status of new species argues for caution in pursuing eradication plans. *R. Soc. Open Sci.* 7:1-28.

Welton, L. J., Travers, S. L., Siler, C. D. and Brown, R. M. 2014. Integrative taxonomy and phylogeny-based species delimitation of Philippine water monitor lizards (*Varanus salvator* Complex) with descriptions of two new cryptic species. *Zootaxa* (PRINO) (online) 3881(3):201-227.

Werning, H. 2010. 100 Jahre Aquarium im Zoo Leipzig. *Reptilia* (Münster) 15(84):72-76.

Werning, H. and Lutzmann, N. 2014. Illegalen Wildtierhandel kann man nicht mehr verbieten. *Reptilia* (Münster) 19(106):14-22.

Wesiak, K. 2009. Terrarienhaltung und Erstnachzucht des Pazifikwarans *Varanus* (*Euprepiosaurus*) *indicus* (DAUDIN, 1802), mit einigen Bemerkungen zur Entwicklung der Jungtiere. *Elaphe* 17(1):44-55.

Wesiak, K. and Koch, A. 2009. Successful Husbandry and First Breeding of *Varanus juxtindicus* Böhme *et al.*, 2002, with Remarks on the Development of Juveniles of this “Rarely-Kept” Endemic Solomon Monitor Species. *Biawak* 3(4):106-121.

Whittier, J. M. and Moeller, D. R. 1993. *Varanus prasinus* (the Emerald Goanna) on Moa Island, Torres Strait, Australia. *Memoirs of the Queensland Museum* 34:130.

Wilson, S. 2015. *A field guide to the reptiles of Queensland*. Reed / New Holland, Chatswood, NSW, Australia:304 pp.

Wilson, S. and Swan, G. 2017. *A complete guide to Reptiles of Australia.* Reed / New Holland, Sydney, Australia:647 pp.

Woods, I. G. 2007. *Varanus indicus* (Mangrove Monitor) Liapari Island. *Biawak* 1(2):90.

Zaczek, Z. 2019. Former PM Kevin Rudd says Australia should drastically increase its population to 50 MILLION to make sure nation can defend itself in the face of threats from China. *Daily Mail* (Australia) (27 November), published online at: https://www.dailymail.co.uk/news/article-7729689/Kevin-Rudd-says-Australia-increase-population-50-MILLION-defend-China.html

Ziegler, T. 2012. Erforschung und Erhalt der Artenvielfalt: Neue Wege des Kölner Zoos in Südostasien. *Zeitschrift des Kölner Zoos* 55(3):111-130.

Ziegler, T. and Böhme, W. 1996. Zur Hemiclitoris der squamaten Reptilien: Auswirkungen auf einige Methoden der Geschlechtsunterscheidung. *Herpetofauna* (Münster) 18(101):11-19.

Ziegler, T. and Böhme, W. 1998. Comments on the proposed conservation of the specific name *Varanus teriae* Sprackland, 1991 (Reptilia, Squamata) (Case 3043; see *BZN* 54: 100-103, 250-251; 55: 37-39). *Bulletin of Zoological Nomenclature* 55(2):111-113.

Ziegler, T. and Minh, D. Le 2018. New Records of the Blue-tailed Monitor, *Varanus doreanus* (Meyer, 1874), including a Maximum Size Record, *Biawak* 12(1):48-53.

Ziegler, T., Philipp, K. M. and Böhme, W. 1999. Zum artstatus und zur genitalmorphologie von *Varanus finschi* Böhme, Horn et Ziegler, 1994, mit neuen verbreitungsangaben für *V. finschi* und *V. doreanus* (Meyer, 1874) (Reptilia: Sauria: Varanidae). *Zoologische Abhan-dlungen* 17:267-279.

Ziegler, T., Böhme, W., Eidenmüller, B. and Philipp, K. M. 2001. A note on the coexistence of three species of Pacific monitor lizards in Australia (Sauria, Varanidae, *Varanus indicus* group). *Bonner Zoologische Beiträge* 50(1-2):27-30.

Ziegler, T., Schmitz, A., Koch, A. and Böhme, W. 2007a. A review of the subgenus *Euprepiosaurus* of Varanus (Squamata: Varanidae): morphological and molecular phylogeny, distribution and zoogeography, with an identification key for the members of the *V. indicus* and the *V. prasinus* species groups. *Zootaxa* (PRINO) (online) 1472:1-28.

Ziegler, T., Böhme, W. and Schmitz, A. 2007b. A new species of the *Varanus indicus* group (Squamata, Varanidae) from Halmahera Island, Moluccas: morphological and molecular evidence. *Mitteilungen aus dem Museum für Naturkunde in Berlin* 83(S1):109-119.

Ziegler, T., Strauch, M., Pes, T., Konas, J., Jirasek, T., Rütz, N., Oberreuter, J. and Holst, S. 2009. First captive Breeding of the Blue Tree Monitor *Varanus macraei* Böhme and Jacobs, 2001 at the Plzen and Cologne Zoos. *Biawak* 3(4):122-133.

Ziegler, T., Rauhaus, A. and Gill, I. 2016. A Preliminary Review of Monitor Lizards in Zoological Gardens. *Biawak* 10(1):26.

CONFLICTS OF INTEREST

None.

Australasian Journal of Herpetology 47:32-38.
Published 9 July 2020.

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

Two new hitherto overlooked species of Dwarf Goanna, *Worrellisaurus* Wells and Wellington, 1984, subgenus *Parvavaranus* Hoser, 2013 from Australia.

TO BE ASSIGNED - LSID urn:lsid:zoobank.org:pub:88C0C262-ABA2-4878-80D9-F85838DB90DD

RAYMOND T. HOSER

LSIDURN:LSID:ZOOBANK.ORG:PUB:784CF879-1F94-4F82-B3AE-7414FF271077

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
Received 1 December 2020, Accepted 30 April 2020, Published 9 July 2020.

ABSTRACT

As part of a long-term taxonomic review of Australian varanid lizards by the author over a 40 year period, it has emerged that morphologically distinct and genetically divergent forms of two species of widely distributed Pygmy Monitors of the genus *Worrellisaurus* Wells and Wellington, 1984, subgenus *Parvavaranus* Hoser, 2013 remain unrecognized to science as of 2020.

The purpose of this paper is to identify and formally name these new species.

They can be readily identified and separated from the nominate form of each closely related species on the basis of morphology. Furthermore previously published studies involving the analysis of DNA has shown species-level divergences for the relevant putative taxa.

It is for this reason I have not hesitated to recognise each taxon as full species.

I have no doubt that a group of thieves known as the Wolfgang Wüster gang, will make a lot of “noise” following the publication of this paper and falsely accuse this author of “taxonomic vandalism”. Then a few years down the track, when the obvious can no longer be ignored, they will attempt to steal this work and illegally rename the very same species as done by Bucklitsch *et al.* (2016) at Wüster’s instigation, when they illegally renamed two varanid genera previously named by Hoser (2013).

The unlawfully coined name *Hapturosaurus* Bucklitsch, Böhme and Koch, 2016, published in (PRINO = peer reviewed in name only) online “journal” *Zootaxa* is a junior synonym of the correct legal name *Shireenhosersaurea* Hoser, 2013. *Solomonsaurus* Bucklitsch, Böhme and Koch, 2016 is a junior synonym of the correct legal name *Oxysaurus* Hoser, 2013.

The genus-level taxonomy used in this paper is that used in Hoser (2013) and not the illegally coined names of Wüster’s gang of thieves including Bucklitsch *et al.* (2016). I note that as of 2020 the ICZN names of Hoser are those that are being widely accepted by scientists as the most logical for the Australian varanids (see for example Cogger 2014 and Dubois *et al.* 2019, both of whom condemned the Wüster gang of thieves). The Hoser names are the ones that are fully compliant with the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999).

Keywords: Taxonomy; nomenclature; Goanna; Monitor lizard; Varanidae; *Varanus*; *Worrellisaurus*; *Parvavaranus*; South Australia; Northern Territory; Western Australia, Queensland, Australia; *Shireenhosersaurea*; *Hapturosaurus*; *Oxysaurus*; *Solomonsaurus*; *eremius*; *brevicauda*; *sparnus*; new species; *apicemalba*; *ignis*; new subspecies; *pyrhus.*

INTRODUCTION

As part of a long-term taxonomic review of Australian varanid lizards by the author over a 40 year period, the genus-level classification of the Varanidae globally was reviewed and revised by Hoser (2013).

This classification has been widely accepted in the five years since then, including by regular critics of my scientific works known as the Wüster gang of thieves, who have even sought to illegally rename genera first formally named in the Hoser (2013) paper in Bucklitsch *et al.* (2016) as detailed by Hoser (2017).

Therefore the genus-level classification of Hoser (2013) is used throughout this paper.

The nefarious and often illegal activities of the Wüster gang of thieves are detailed in Hoser (2015a-f) and sources cited therein.

Post year 2000 papers naming new taxa of Australian varanid include the following: Doughty *et al.* (2014), Hoser (2013, 2014, 2015g, 2018a, 2018b, 2018c, 2018d), Maryan *et al.* (2014).

The post year 2000 varanid taxa named in Australia by these authors (using the genus-level nomenclature of Hoser 2013) are the following 25 species and subspecies-level taxa as follows:

Worrellisaurus (*Arborhabitatiosaurus*) *bushi* (Aplin, Fitch and King, 2006);

Odatria (*Odatria*) *hoserae* Hoser, 2013;

Odatria (*Honlamus*) *honlami* Hoser, 2013;
Odatria (*Honlamus*) *mitchelli hawkeswoodi* Hoser, 2013;

Worrellisaurus (*Worrellisaurus*) *makhani* (Hoser, 2013), originally described by Hoser (2013) as a subspecies of *W. storri* (Mertens, 1966);

Odatria (*Odatria*) *tristis nini* Hoser, 2013;

Euprepiosaurus indicus wellsi Hoser, 2013;

Euprepiosaurus indicus wellingtoni Hoser, 2013;

Odatria (*Kimberleyvaranus*) *glebopalma funki* Hoser, 2014;

Odatria (*Kimberleyvaranus*) *glebopalma maderi* Hoser, 2014;

Odatria (*Pilbaravaranus*) *hamersleyensis* (Maryan, Oliver, Fitch and O'Connell, 2014);

Worrellisaurus (*Parvavaranus*) *sparnus* (Doughty, Keally, Fitch and Donnellan, 2014);

Pantherosaurus (*Aspetosaurus*) *maxhoseri* Hoser, 2015;

Worrellisaurus (*Worrellisaurus*) *primordius dalyi* Hoser, 2015;

Pantherosaurus (*Titanzius*) *giganteus queenslandensis* Hoser, 2015;
Pantherosaurus (*Titanzius*) *giganteus bulliardi* Hoser, 2015;

Worrellisaurus (*Worrellisaurus*) *kimaniadilbodeni* Hoser, 2018;

Worrellisaurus (*Worrellisaurus*) *microocellata* Hoser, 2018;
Worrellisaurus (*Worrellisaurus*) *tyeseeipperae* Hoser, 2018;
Worrellisaurus (*Worrellisaurus*) *scotteipperi* Hoser, 2018;

Worrellisaurus (*Worrellisaurus*) *dannybrowni* Hoser, 2018;

Worrellisaurus (*Arborhabitatiosaurus*) *jenandersonae* Hoser, 2018;

Worrellisaurus (*Worrellisaurus*) *bigmoreum* Hoser, 2018;

Odatria (*Odatria*) *davidhancocki* Hoser, 2018;

Odatria (*Kimberleyvaranus*) *glebopalma jimgreenwoodi* Hoser, 2018.

Non-Australian varanid taxa have also been formally described and named by Hoser (2013) and other authors in the same post 2000 period.

In spite of this effort, it has also emerged that two more morphologically distinct and genetically divergent forms of two species of widely distributed Pygmy Monitors of the genus *Worrellisaurus* Wells and Wellington, 1984, subgenus subgenus *Paravaranus* Hoser, 2013 remain unrecognized to science.

As it happens, these would have been named many years ago were it not for a series of extremely damaging interruptions to our research effort, by money grabbing thieves, whose agenda is more along the lines of destruction for profit, rather than public benefit or science.

These illegal armed raids and other attacks are detailed by Court of Appeal, Victoria (2014), Victorian Civil and Administrative Tribunal (VCAT) (2015), Hoser (1993, 1995, 1996, 1999a and 1999b).

Events detailed by Court of Appeal, Victoria (2014), Victorian Civil and Administrative Tribunal (VCAT) (2015), Hoser (1989, 1991, 1993, 1995, 1996, 1999a and 1999b, 2000a, 2000b) included illegal armed raids and unlawful thefts of research files, which caused irreparable harm to numerous research projects by the theft of records, photos and data that took many decades of hard work to accumulate.

While it would be preferable to either retrieve the stolen material or to replicate earlier research and accumulation of data, neither are likely to happen in my lifetime.

In terms of the former, corrupt wildlife officers and police who illegally took materials have refused to return them in spite of numerous court orders to do so.

Evidence given by the offenders in court was that the relevant materials have been destroyed.

In terms of the latter, I am now aged 57 years of age, and am not likely to live another 40 years in good health to be able to go around the same parts of northern Australia collecting and recording species, as done in the previous 40 years.

As it is critically important that unnamed species be formally identified and named as the vital first step in their long-term conservation, I have absolutely no hesitation in describing the new to science forms herein, even though my available material and data is nowhere near as extensive as I would like it to be.

As stated in the abstract, the purpose of this paper is to identify and formally name these two forms from Australia.

The newly named species can be readily identified and separated from the nominate form of each closely related species on the basis of morphology. Furthermore previously published studies involving the analysis of DNA within the last decade by other authors, including as cited in Hoser (2013), including Fitch *et al.* (2006), has shown species-level divergences for the relevant forms.

In terms of the divergence by way of DNA, earlier studies including Fitch *et al.* (2006) have shown divergences for each of the two newly named forms being on par with other well-known and widely accepted taxa, such as *Worrellisaurus bushi* (Aplin, Fitch and King, 2006) versus *W. gilleni* (Lucas and Frost, 1895) (its nearest relative) or *Pantherosaurus flavirufus* (Mertens, 1958) versus *P. gouldi* (Gray, 1838) (its nearest relative).

It is for this reason I have not hesitated to recognise each taxon as full species, rather than to take the conservative position of giving them taxonomic recognition at the subspecies level.

I have no doubt that a group of thieves known as the Wolfgang Wüster gang, will make a lot of "noise" following the publication of this paper and falsely accuse myself of "taxonomic vandalism".

Then a few years down the track, when the obvious can no longer be ignored, they will attempt to steal this work and illegally rename the very same species.

The same gang of thieves will allege I have no experience at all with the said taxa and that all my evidence is either "non-existent", "fabricated" or "stolen", (see for example Kaiser (2012a, 2012b, 2013, 2014a, 2014b) and Kaiser *et al.* (2013), the latter "paper" perhaps should be better known as "Wüster and others he can "add" to his authors list".

Bucklitsch *et al.* (2016) are a case in point in that as part of the Wüster gang of thieves, they engaged in taxonomic vandalism by coining names for varanid genera previously named by Hoser (2013).

Their objective junior synonyms should not be used as they are illegal under the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Hapturosaurus Bucklitsch, Böhme and Koch, 2016 is a junior synonym of the correct legal name *Shireenhosersaurea* Hoser, 2013 and *Solomonsaurus* Bucklitsch, Böhme and Koch, 2016 is a junior synonym of the correct legal name *Oxysaurus* Hoser, 2013.

As stated already, the genus-level taxonomy used in this paper is that used in Hoser (2013), which as of 2018 was widely accepted by scientists as the most logical for the Australian varanids, remains the case in 2020 and is also fully compliant with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

MATERIALS AND METHODS

The basis of this long-term study has been the inspection of numerous specimens, live, in jars in museums and via photos with accurate locality data, as well as a perusal of the limited published literature on putative species within the genus *Worrellisaurus* Wells and Wellington, 1984.

Obviously I should note that morphological divergence on its own is not regarded by myself as sufficient grounds to assign a new species.

However there are other important grounds. All populations of "candidate species" are separated by zones of clearly unsuitable habitat, meaning zero collection of specimens from those places and are therefore reproductively isolated.

Having said that, for one of these newly named species, geographic species boundaries between the relevant species has not yet been fully established.

As mentioned already, both newly named species are from the genus *Worrellisaurus* Wells and Wellington, 1984, subgenus *Parvavaranus* Hoser, 2013.

All the relevant comments of Hoser (2013) and Hoser (2018a-d) apply herein.

Relevant literature applicable to the taxonomy of Australian monitor species, including the species formally in named this paper was listed in Hoser (2013) and Hoser (2018a-d) and are not necessarily cited again here, although the ones that are most relevant are below.

RESULTS

The two newly identified species are wholly new to science in that until now, no other herpetologist has suspected their existence, or published anything to suggest they exist.

Both species were identified simply by way of audit of wide-ranging generally well-known taxa through inspection of hundreds of specimens of the relevant and similar species across their known areas of distribution.

They have also been confirmed and corroborated by way of publicly available and published gene sequences, including those of Fitch *et al* (2006).

W. eremius (Lucas and Frost, 1895) as defined and diagnosed in Cogger (2014), with a type locality of Idracowra, Northern Territory was inspected across the known range for the putative species. Specimens from the Shark Bay area of Western Australia were significantly divergent and are herein identified and named as a new species. Those from the Pilbara to the north are also identified and named herein as a new subspecies of *W. eremius* due to their morphological divergence.

The differential level of classification is due to the fact that the Shark Bay population is well and truly separated from all others and therefore wholly allopatric and this fits within the definition of species by any reasonable classification.

The Pilbara population, while also significantly divergent to the type form and based on the phylogeny of Fitch *et al.* (2006) at the species level, may have gene flow with that population and is therefore conservatively named herein as a subspecies.

The species *W. brevicauda* (Boulenger, 1898), was split by Doughty, Keally, Fitch and Donnellan, (2014), with a population from the Dampier Peninsula in Western Australia formally named *W. sparnus* (Doughty, Keally, Fitch and Donnellan, 2014). They placed both their newly identified species and *W. brevicauda* in the genus *Varanus* Merrem, 1820. See Hoser (2013) for a full discussion of the genus level placements of varanid species, including that used in this paper.

However in terms of the remaining population of the putative species, *W. brevicauda* Doughty, Keally, Fitch and Donnellan (2014) left it all as a single species.

Their molecular data did however indicate a genus-level divergence between eastern and western specimens.

Inspection of specimens from across the known range also shows consistent morphological divergence and so the unnamed eastern population is formally named as a new species in this paper. The type locality for *W. brevicauda* for the holotype is Sherlock River, Nickol Bay, Pilbara region, Western Australia (Boulenger 1898; Cogger *et al.* 1983; Wells and Wellington 1985).

Notwithstanding what has been written above, references relevant to the putative species subject of this paper and the taxonomic conclusions herein include Aplin *et al.* (2006), Bennett (1998), Boulenger (1885, 1898), Brown (2012, 2014), Cogger (2014), Cogger *et al.* (1983), Doughty *et al.* (2014), Dubois *et al.* (2019), Fitch *et al.* (2016), Gray (1838, 1845), Hoser (2007, 2013, 2014, 2015a-g, 2017, 2018a-d), Lucas and Frost (1895), Maryan *et al.* (2014), Mertens (1958, 1966), Ride *et al.* (1999), Sternfeld (1919, Storr (1980), Storr *et al.* (1983), Wells and Wellington (1984, 1985), Wilson and Knowles (1988), Wilson and Swan (2017) and sources cited therein.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

There is no conflict of interest in terms of this paper or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked as a relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal descriptions, spellings should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature including within the *International Code of Zoological Nomenclature* (Fourth edition) (Ride *et al.* 1999) as amended online since.

Any material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 20 April 2020, unless otherwise stated and were accurate in terms of the context cited herein as of that date.

Unless otherwise stated explicitly, colour descriptions apply to living adult specimens of generally good health and not under any form of stress by means such as excessive cool, heat, dehydration or abnormal skin reaction to chemical or other input.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant species has already been spelt out and/or is done so within each formal description and does not rely on material within publications not explicitly cited herein.

In terms of the long term conservation and survival of these newly named species, delays in recognition of these unique species as unique species (or subspecies) could jeopardise the long-term survival of these taxa as outlined by Hoser (2019a, 2019b and 2020) and sources cited therein.

Therefore attempts by taxonomic vandals like the Wolfgang Wüster gang via Kaiser (2012a, 2012b, 2013, 2014a, 2014b) and Kaiser *et al.* (2013) (as frequently amended) to unlawfully suppress the recognition of these taxa on the basis they have a personal dislike for the person who formally named it should be resisted (Cogger 2014, Dubois *et al.* 2019).

Claims by the Wüster gang against this paper and the descriptions herein will no doubt be no different to those the gang have made previously, all of which were discredited long ago as outlined by Cogger (2014), Dubois *et al.* (2019), Hoser, (2007, 2009, 2012a, 2012b, 2013a, 2015a-f, 2019a, 2019b) and sources cited therein.

WORRELLISAURUS* (*PARVAVARANUS*) *APICEMALBA SP. NOV.

LSIDurn:lsid:zoobank.org:act:448ED65C-846C-438E-8A27-9667DB275826

Holotype: A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number R121347 collected from 38 km south, south east of Canarvon, Western Australia, Australia, Latitude -25.1314 S., Longitude 113.7681 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number R125771 collected from Woodleigh Station, Western Australia, Australia, Latitude -26.2169 S., Longitude 114.5992 E.

Diagnosis: Until now, *Worrellisaurus apicemalba sp. nov.* from the Shark Bay area of Western Australia, has been treated as a western population of *W. eremius* Lucas and Frost, 1895 (better known as “*Varanus eremius*”), with a type locality of Idracowra, Northern Territory, Australia.

Likewise for the Pilbara subspecies *W. eremius pryyhus subsp. nov.*.

All three are readily separated from one another on the basis of their colouration as described below.

The type form of *W. eremius* is accurately depicted in the original description of Lucas and Frost (1895), Houston (1978) on page 51 top and also on page 769 of Cogger (2014).

It is readily separated from the other two forms, *W. apicemalba sp. nov.* and *W. eremius pryyhus subsp. nov.* by having an orange-red coloured dorsum punctuated by numerous semi-distinct brownish-black spots. The tail has alternating longitudinal stripes of yellowish-cream and dark brown, with the striped being sometimes broken, or marked as irregular blotching. The tail is overwhelmingly yellowish in colour, especially at the anterior end.

There is a well-defined temporal streak running from snout, through the eye and to the back of the head.

The forelimbs are orange with blackish spots.

W. eremius pryyhus subsp. nov. from the Pilbara region of Western Australia is like *W. eremius* in that the dorsum is generally orange-red coloured. It is however different from *W. eremius* in having obvious white spots on the orange forelimbs (not seen in *W. eremius eremius*) and a general lack of blackish spots and flecks on the upper surfaces of the head (in contrast to *W. eremius eremius*). *W. eremius pryyhus subsp. nov.* also has a strongly reddish anterior tail region, versus obviously yellow in *W. eremius eremius*.

Although not quantified, it appears that both *W. eremius pryyhus subsp. nov.* and *W. apicemalba sp. nov.* have slightly more pronounced ridging on the foretail than seen in *W. eremius eremius.*

W. apicemalba sp. nov. are readily separated from both *W. eremius eremius* and *W. eremius pryyhus subsp. nov.* by being a generally yellow-grey colour instead of strongly reddish-orange. Some *W. apicemalba sp. nov.* may have a dark brownish tinge on the back, but never a whole body that is bright orange red as seen in the other two forms.

W. apicemalba sp. nov. has dark brown forelimbs with white spots or small ocelli scattered on them. The tail is a brownish grey colour along the entire length, occasionally with a slight reddish hue at the posterior end. Unlike both both *W. eremius eremius* and *W. eremius pryyhus subsp. nov.*, *W. apicemalba sp. nov.* has a significant amount of white markings on the dorsal surface of the head, versus none in the other two taxa. These markings are in the form of flecks, thin lines, peppering or spots. Both *W. eremius eremius* and *W. eremius pryyhus subsp. nov.* have either an unmarked upper surface of the head, or alternatively any markings are darker coloured flecks, spots or tiny stripes.

The dorsum of *W. apicemalba sp. nov.* is characterised by being brownish-grey with scattered white peppering or flecks on the upper surfaces. On the lower flanks, there is a defined zone of grey between the dark upper surface and light (whitish) venter, this grey zone forming a wideish line on the lower flanks. This is not the case in *W. eremius eremius* and *W. eremius pryyhus subsp. nov.* where the orange-red upper surface rapidly becomes whitish on the lower flanks, effectively forming a line between these zones, the line being merely the boundary from one to other.

All of *W. eremius eremius*, *W. eremius pryyhus subsp. nov.* and *W. apicemalba sp. nov.* are separated from the morphologically similar species in the subgenus *Paravaranus* Hoser, 2013, as defined by Hoser (2013) by having keeled head scales, dark streaks on the throat and long slender claws.

The type form of *W. eremius* in life is depicted on page 316 of Wilson and Knowles (1988) at page 316 (bottom right) and on page 769 of Cogger (2014) and online at:

https://www.flickr.com/photos/reptileshots/30064010117

and:

https://www.flickr.com/photos/154630905@N06/26631863159/

W. eremius pryyhus subsp. nov. is depicted in life in Wilson and Swan (2017) at page 463 middle right and online at:
https://www.flickr.com/photos/euprepiosaur/13556044454/

W. apicemalba sp. nov. in life is depicted online at:
https://www.flickr.com/photos/ben_parkhurst_photography/38773858160/

and

https://www.flickr.com/photos/136643623@N03/45772808232

Distribution: *W. apicemalba sp. nov.* is found only in the Shark Bay region of Western Australia, in a zone generally south of Minilya, being the northern limit of a well-defined sand and spinifex zone, south to Geraldton, extending about 200 km inland from these towns.

Etymology: *Apicemalba* is Latin for white dot, in reference to the white dots on the brown forelimbs of this taxon, which also separates it from the nominate type form of *W. eremius.*

WORRELLISAURUS* (*PARVAVARANUS*) *EREMIUS PYRRHUS SP. NOV.

LSIDurn:lsid:zoobank.org:act:E50BF2B9-ADE6-4DF0-AD41-0E276F73716F

Holotype: A preserved male specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number R110851 collected 36.8 km south, south-west of Pannawonica, Western Australia, Latitude -21.9413 S., Longitude 116.4538 E. This facility allows access to its holdings.

Paratype: A preserved male specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number R157578, collected from the Robe River, Western Australia, Australia, Latitude -21.7478 S., Longitude 116.0753 E.

Diagnosis: Until now, *Worrellisaurus apicemalba sp. nov.* as described above, from the Shark Bay area of Western Australia, had been treated as a western population of *W. eremius* Lucas and Frost, 1895 (better known as “*Varanus eremius*”), with a type locality of Idracowra, Northern Territory, Australia.

Likewise for the Pilbara subspecies *W. eremius pryyhus subsp. nov.* formally described herein.

All three are readily separated from one another on the basis of their colouration as described below.

The type form of *W. eremius* is accurately depicted in the original description of Lucas and Frost (1895), Houston (1978) on page 51 top and also on page 769 of Cogger (2014).

It is readily separated from the other two forms *W. apicemalba sp. nov.* and *W. eremius pryyhus subsp. nov.* by having an orange-red coloured dorsum punctuated by numerous semi-distinct brownish-black spots. The tail has alternating longitudinal stripes of yellowish-cream and dark brown, with the striped being sometimes broken, or marked as irregular blotching. The tail is overwhelmingly yellowish in colour.

There is a well-defined temporal streak running from snout, through the eye and to the back of the head.

The forelimbs are orange with blackish spots.

W. eremius pryyhus subsp. nov. from the Pilbara region of Western Australia is like *W. eremius* in that the dorsum is generally orange-red coloured. It is however different from *W. eremius* in having obvious white spots on the orange forelimbs (not seen in *W. eremius eremius*) and a general lack of blackish spots and flecks on the upper surfaces of the head (in contrast to *W. eremius eremius*). *W. eremius pryyhus subsp. nov.* also has a strongly reddish anterior tail region, versus obviously yellow in *W. eremius eremius*.

Although not quantified, it appears that *W. eremius pryyhus subsp. nov.* and *W. apicemalba sp. nov.* have slightly more pronounced ridging on foretail than seen in *W. eremius eremius.*

W. apicemalba sp. nov. are readily separated from both *W. eremius eremius* and *W. eremius pryyhus subsp. nov.* by being a generally yellow-grey colour instead of strongly reddish-orange. Some *W. apicemalba sp. nov.* may have a dark brownish tinge on the back, but never a whole body that is bright orange red as seen in the other two forms.

W. apicemalba sp. nov. has dark brown forelimbs with white spots or small ocelli scattered on them. The tail is a brownish grey colour along the entire length, occasionally with a slight reddish hue at the posterior end. Unlike both both *W. eremius eremius* and *W. eremius pryyhus subsp. nov.*, *W. apicemalba sp. nov.* has a significant amount of white markings on the dorsal surface of the head, versus none in the other two taxa. These markings are in the form of flecks, thin lines, peppering or spots. Both *W. eremius eremius* and *W. eremius pryyhus subsp. nov.* have either an unmarked upper surface of the head, or alternatively any markings are darker coloured flecks, spots or tiny stripes.

The dorsum of *W. apicemalba sp. nov.* is characterised by being brownish-grey with scattered white peppering or flecks on the upper surfaces. On the lower flanks, there is a defined zone of grey between the dark upper surface and light (whitish) venter, this grey zone forming a wideish line on the lower flanks. This is not the case in *W. eremius eremius* and *W. eremius pryyhus subsp. nov.* where the orange-red upper surface rapidly becomes whitish on the lower flanks, effectively forming a line between these zones, the line merely being the boundary from one to other.

All of *W. eremius eremius*, *W. eremius pryyhus subsp. nov.* and *W. apicemalba sp. nov.* are separated from the morphologically similar species in the subgenus *Paravaranus* Hoser, 2013, as defined by Hoser (2013) by having keeled head scales, dark streaks on the throat and long slender claws.

The type form of *W. eremius* in life is depicted on page 316 of Wilson and Knowles (1988) at page 316 (bottom right) and on page 769 of Cogger (2014) and online at:
https://www.flickr.com/photos/reptileshots/30064010117
and:
https://www.flickr.com/photos/154630905@N06/26631863159/

W. eremius pryyhus subsp. nov. is depicted in life in Wilson and Swan (2017) at page 463 middle right and online at:
https://www.flickr.com/photos/euprepiosaur/13556044454/

W. apicemalba sp. nov. in life is depicted online at:
https://www.flickr.com/photos/ben_parkhurst_photography/38773858160/
and
https://www.flickr.com/photos/136643623@N03/45772808232

Distribution: As far as is known, *W. eremius pryyhus subsp. nov.* appears to be confined to the Pilbara of Western Australia.

Etymology: "Pyrrhus" sometimes refers to fire in Latin and so the name reflects the fire colouration of the dorsum of adults.

WORRELLISAURUS (*PARVAVARANUS*) *IGNIS SP. NOV.*

LSIDurn:lsid:zoobank.org:act:6E0AE27B-7C70-4960-8451-E0848D87A5A4

Holotype: A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J45037, collected from 8km north of Mirrica Boren at Ethabuka Station, north-west of Bedourie, Queensland, Australia, Latitude -23.75 S., Longitude 138.5 E. This government-owned facility allows access to its holdings.

Paratpes: Two preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J73991 and J73992 collected at Naibar Station, Queensland, Australia, Latitude -23.6456 S., Longitude 138.4478 E, and a preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.110614 collected at 8km north of Mirrica Bore at Ethabuka Station, north-west of Bedourie, Queensland, Australia, Latitude -23.75 S., Longitude 138.5 E.

Diagnosis: Until now, *Worrellisaurus ignis sp. nov*. has been treated as the eastern population of *W. brevicauda* (Boulenger, 1898), type locality of Sherlock River, Nickol Bay, Pilbara region, Western Australia (Boulenger 1898; Cogger *et al.* 1983; Wells and Wellington 1985).

W. brevicauda is herein restricted to Western Australia, while *W. ignis sp. nov.* accounts for those specimens referred to *W. brevicauda* from Queensland, South Australia and the Northern Territory. The ranges of both species appear to be separated by a series of salt lakes running north-south near the Northern Territory / Western Australian border.

W. brevicauda is readily separated from *W. ignis sp. nov.* by having a reddish-brown dorsum and a dorsum which has numerous scattered white spots of size large enough to appear as distinctive small ocelli and a red iris. The white spots fade in aged specimens.
By contrast *W. ignis sp. nov.* has no such white spots or ocelli on the dorsum, has an orange dorsum, which is only broken by numerous indistinct and dull lighter and dull darker flecks, giving it a more uniform appearance, as well as having an orange iris.
In *W. brevicauda* the lower surface of the dark temporal streak is well defined by a whitish border, versus ill-defined in *W. ignis sp. nov.*.

The top of the head of *W. ignis sp. nov.* is heavily peppered with white, versus a brownish-red unicoloured upper surface of the head in *W. brevicauda.*
W. ignis sp. nov. and *W. brevicauda* are separated from all other species of living varanid by having a tail that is the same length as or shorter than the head as well as body and forearms with large scales encircled by granules.

The morphologically similar species *V. sparnus* (Doughty *et al.*, 2014) is separated from both *W. ignis sp. nov.* and *W. brevicauda* by having a plain reddish-brown dorsum with widely scattered small black spots; a more elongate body than *W. ignis sp. nov.* and *W. brevicauda*, shorter limbs, less robust head, body and tail, and importantly having the presence of enlarged squarish scales not encircled by granules on front of the arms.

W. sparnus in life is depicted in Wilson and Swan (2017) on page 473 at top right and Doughty *et al.* (2014) at page 134.

W. brevicauda in life is depicted in Wilson and Swan (2017) on page 461 at bottom.

W. ignis sp. nov. in life is depicted in Wilson (2014) on page 210 bottom right.

Distribution: *W. ignis sp. nov.* occurs in south-west Queensland, northern South Australia and the Northern Territory, Australia.

Etymology: "Ignis" in Latin means fire, and this is the colouration of the dorsal surface of adults and so is an appropriate species name.

ACKNOWLEDGEMENTS

Luke and Gina Faba, lawyers at Stenta Legal, 1 Queens Road, Melbourne, Victoria, Australia, successfully retrieved some, but not all, relevant data and hard drives illegally seized by Glenn Sharp and Emily Gibson, claiming to be acting on the orders of Ron Waters, head of wildlife law enforcement at the State Government wildlife department on 17 August 2011 during a unlawful violent armed raid on the author's facility.
The trio, and the dozens of others they employed in their so-called "Operation Bassett" (as detailed in Victorian Civil and Administrative Tribunal 2015) all worked for the Victorian Government Wildlife Department (at the time called "DSE").

Their destructive armed raid, in which they also illegally killed numerous live reptiles held by the author, was found to be illegal by several courts of law after the fact, including by the Victorian Court of Appeal in 2014 and Victorian Civil and Administrative Appeals Tribunal (VCAT) in 2015.

REFERENCES CITED

Aplin, K. P., Fitch, A. J. and King, D. J. 2006. A new species of *Varanus* Merrem (Squamata: Varanidae) from the Pilbara region of Western Australia, with observations on sexual dimorphism in closely related species. *Zootaxa* (online) 1313:1-38.

Bennett, D. 1998. *Monitor Lizards: Natural history, biology and husbandry*. Edition Chimaira: Germany:352 pp.

Boulenger, G. A. 1885. *Catalogue of the Lizards in the British Museum (Natural History) Volume II. Iguanidae, Xenosauridae, Zonuridae, Anguidae, Anniellidae, Helodermatidae, Varanidae, Xantusidae, Teiidae, Amphisbaenidae.* Taylor and Francis, UK.

Boulenger, G. A. 1898. Third report on additions to the collection of lizards in the British Museum. *Proceedings of the Zoological Society of London*, 1898:912-923.

Brown, D. 2012. *A guide to … Australian Monitors in Captivity.* Reptile Publications, Tweed Heads, NSW, Australia: 222 pp.

Brown, D. 2014. *A guide to … Australian Lizards in Captivity.* Reptile Publications, Tweed Heads, NSW, Australia:952 pp.

Bucklitsch, Y., Böhme, W. and Koch, A. 2016. Scale Morphology and Micro-Structure of Monitor Lizards (Squamata: Varanidae: *Varanus spp.*) and their Allies: Implications for Systematics, Ecology, and Conservation. *Zootaxa* (online) 4153(1):1-192.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh edition), CSIRO. Sydney, Australia:1064 pp.

Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia, Volume 1: Amphibia and Reptilia.* AGPS, Canberra, ACT:313 pp.

Court of Appeal Victoria. 2014. *Hoser v Department of Sustainability and Environment* [2014] VSCA 206 (5 Sept. 2014).

Doughty, P., Kealley, L., Fitch, A. and Donnellan, S. C. 2014. A new diminutive species of *Varanus* from the Dampier Peninsula, western Kimberley region, Western Australia. *Records of the Western Australian Museum* 29:128-140.

Dubois, A., Bauer, A. M., Ceriaco, L. M. P., Dusoulier, F., Fretey, T., Lobl, I., Lorvelec, O., Ohler, A., Stopiglia, R. and Aescht, E. 2019. The Linz Zoocode project: a set of new proposals regarding the terminology, the Principles and Rules of zoological nomenclature. First report of activities (2014-2019). *Bionomina* (online), 17:1-111.

Fitch, A. J., Goodman, A. E. and Donnellan, S. C. 2006. A molecular phylogeny of the Australian monitor lizards (Squamata: Varanidae) inferred from mitochondrial DNA sequences. *Australian Journal of Zoology* 54:253-269.

Gray, J. E. 1838. Catalogue of the slender-tongued saurians, with descriptions of many new genera and species. Part 3. *Ann. Mag. Nat. Hist.* (1)1:388-394.

Gray, J. E. 1845. *Catalogue of the Specimens of Lizards in the British Museum.* British Museum, London, UK.

Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, 2088, Australia:238 pp.

Hoser, R. T. 1991. *Endangered Animals of Australia.* Pierson Publishing, Mosman, NSW, 2088, Australia:240 pp.

Hoser, R. T. 1993. *Smuggled: The Underground Trade in Australia's Wildlife.* Apollo Publishing, NSW, Australia:160 pp.

Hoser, R. T. 1996. *Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia*. Kotabi Pub., Victoria, Australia:280 pp.

Hoser, R. T. 1999a. *Victoria Police Corruption: The book the Victoria Police don't want you to read!* Kotabi Publishing, Doncaster, Victoria, 3108, Australia:736 pp.

Hoser, R. T. 1999b. *Victoria Police Corruption-2:Including what the media didn't tell you!* Kotabi Pub., Victoria, Australia:736 pp.

Hoser, R. T. 2000a. *Taxi: Indecent Exposures.* Kotabi Publishing, Doncaster, Victoria, 3108, Australia:520 pp.

Hoser, R. T. 2000b. *Taxi-2: More Indecent Exposures.* Kotabi Publishing, Doncaster, Victoria, 3108, Australia:504 pp.

Hoser, R. T. 2007. Wells and Wellington - It's time to bury the hatchet. *Calodema* (Supplementary Paper) 1:1-9.

Hoser, R. T. 2013. Monitor Lizards reclassified with some common sense (Squamata: Sauria: Varanidae). *Australasian Journal of Herpetology* 21:41-58.

Hoser, R. T. 2014. The break up of *Odatria* (*Kimberleyvaranus*) *glebopalma* (Mitchell, 1955) into three obvious subspecies. *Australasian Journal of Herpetology* 24:16-19.

Hoser, R. T. 2015a. Dealing with the "truth haters" ... a summary! Introduction to Issues 25 and 26 of *Australasian Journal of Herpetology*. Including "A timeline of relevant key publishing and other events relevant to Wolfgang Wüster and his gang of thieves." and a "Synonyms list". *Australasian Journal of Herpetology* 25:3-13.

Hoser, R. T. 2015b. The Wüster gang and their proposed "Taxon Filter": How they are knowingly publishing false information, recklessly engaging in taxonomic vandalism and directly attacking the rules and stability of zoological nomenclature. *Australasian Journal of Herpetology* 25:14-38.

Hoser, R. T. 2015c. Best Practices in herpetology: Hinrich Kaiser's claims are unsubstantiated. *Australasian Journal of Herpetology* 25:39-52.

Hoser, R. T. 2015d. PRINO (Peer reviewed in name only) journals: When quality control in scientific publication fails. *Australasian Journal of Herpetology* 26:3-64.

Hoser, R. T. 2015e. Rhodin *et al.* 2015, Yet more lies, misrepresentations and falsehoods by a band of thieves intent on stealing credit for the scientific works of others. *Australasian Journal of Herpetology* 27:3-36.

Hoser, R. T, 2015f. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see *BZN* 70: 234-237; comments *BZN* 71:30-38, 133-135). (unedited version) *Australasian Journal of Herpetology* 27:37-42.

Hoser, R. T. 2015g. Hitherto overlooked species of reptile from Northern Australia: A result of science, taxonomy, molecular biology, systematics, history and forensic herpetology. *Australasian Journal of Herpetology* 30:21-27.

Hoser, R. T. 2017. Taxonomic vandalism by Wolfgang Wüster and his gang of thieves continues. New names unlawfully coined by the rule breakers for species and genera previously named according to the rules of the *International Code of Zoological Nomenclature. Australasian Journal of Herpetology* 35:57-63.

Hoser, R. T. 2018a. Six new species of Dwarf Goanna, *Worrellisaurus* Wells and Wellington, 1984 from Australia. *Australasian Journal of Herpetology* 37:24-37.

Hoser, R. T. 2018b. *Varanus kingorum* Storr, 1980, *Varanus minor* Weigel, 1985, a damaging case of taxonomic vandalism by John Weigel and *Worrellisaurus bigmoreum sp. nov.*, a new species of small monitor lizard, from the East Kimberley division of Western Australia. *Australasian J. of Herpetology* 37:38-43.

Hoser, R. T. 2018c. A new species within the *Odatria glauerti* (Squamata: Varanidae) species complex. *Australasian Journal of Herpetology* 37:44-45.

Hoser, R. T. 2018d. The description of a fourth subspecies of *Odatria* (*Kimberleyvaranus*) *glebopalma* (Mitchell, 1955) (Reptilia: Squamata: Varanidae). *Australasian Journal of Herpetology* 37:46-47.

Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian J. of Herpetology* 39:23-52.

Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian J. of Herp.* 39:53-63.

Hoser, R. T. 2020. From a putative new taxon to a mutt! Formal descriptions of three new genetically divergent Mountain Pygmy Possums from Victoria and New South Wales closely associated with *Burramys parvus* Broom, 1896. *Australasian Journal of Herpetology* 42:3-10.

Houston, T. F. 1978. *Dragon lizards and goannas of South Australia.* SA Museum, Adelaide, South Australia:84 pp.

Kaiser, H. 2012a. SPAM email sent out to numerous recipients on 5 June 2012.

Kaiser, H. 2012b. Point of view. Hate article sent as attachment with SPAM email sent out on 5 June 2012.

Kaiser, H. 2013. The Taxon Filter, a novel mechanism designed to facilitate the relationship between taxonomy and nomenclature, vis-à-vis the utility of the Code's Article 81 (the Commission's plenary power). *Bulletin of Zool. Nomenclature* 70(4) December 2013:293-302.

Kaiser, H. 2014a. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published. *Bulletin of Zoological Nomenclature*, 71(1):30-35.

Kaiser H. 2014b. Best Practices in Herpetological Taxonomy: Errata and Addenda. *Herpetological Review*, 45(2):257-268.

Kaiser, H., Crother, B. L., Kelly, C. M. R., Luiselli, L., O'Shea, M., Ota, H., Passos, P., Schleip, W. D. and Wüster, W. 2013. Best practices: In the 21st Century, Taxonomic Decisions in Herpetology are Acceptable Only When supported by a body of Evidence and Published via Peer-Review. *Herpetological Review* 44(1):8-23.

Lucas, A. H. S. and Frost, C. 1895. Preliminary notice of certain new species of lizards from central Australia. *Proceedings of the Royal Society of Victoria*, 7:264-269.

Maryan, B., Oliver, P. M., Fitch, A. J. and O'Connell, M. 2014. Molecular and morphological assessment of *Varanus pilbarensis* (Squamata: Varanidae), with a description of a new species from the southern Pilbara, Western Australia. *Zootaxa* (PRINO) online 3768(2):139-158.

Mertens, R. 1958. Bemerkungen über die Warane Australiens. *Senckenbergiana biologica* 39:229-264.

Mertens, R. 1966. Ein neuer Zwergwaran aus Australien. *Senckenbergiana biologica* 47:437-441.

Ride, W. D. L. (ed.) *et. al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature.* The Natural History Museum - Cromwell Road, London SW7 5BD, UK.

Sternfeld, R. 1919. Neue Schlangen und Echsen aus Zentralaustralien. *Senckenbergiana* 1:76-83.

Storr, G. M. 1980. The monitor lizards (genus *Varanus* Merrem, 1820) of Western Australia. *Rec. West. Aus. Mus.* 8(2):237-293.

Storr, G. M., Smith, L. A. and Johnstone, R. E. 1983. *Lizards of Western Australia 2: Dragons and Monitors.* Western Australian Museum, Perth, Western Australia, Australia:114 pp.

Victorian Civil and Administrative Tribunal (VCAT). 2015. *Hoser v Department of Environment Land Water and Planning* (Review and Regulation) [2015] VCAT 1147 (30 July 2015, judgment and transcript).

Wells, R. W. and Wellington, C. R. 1984. A synopsis of the class Reptilia in Australia. *Australian J. of Herpetology* 1(3-4):73-129.

Wells, R. W. and Wellington, C. R. 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology Supplementary Series* 1:1-61.

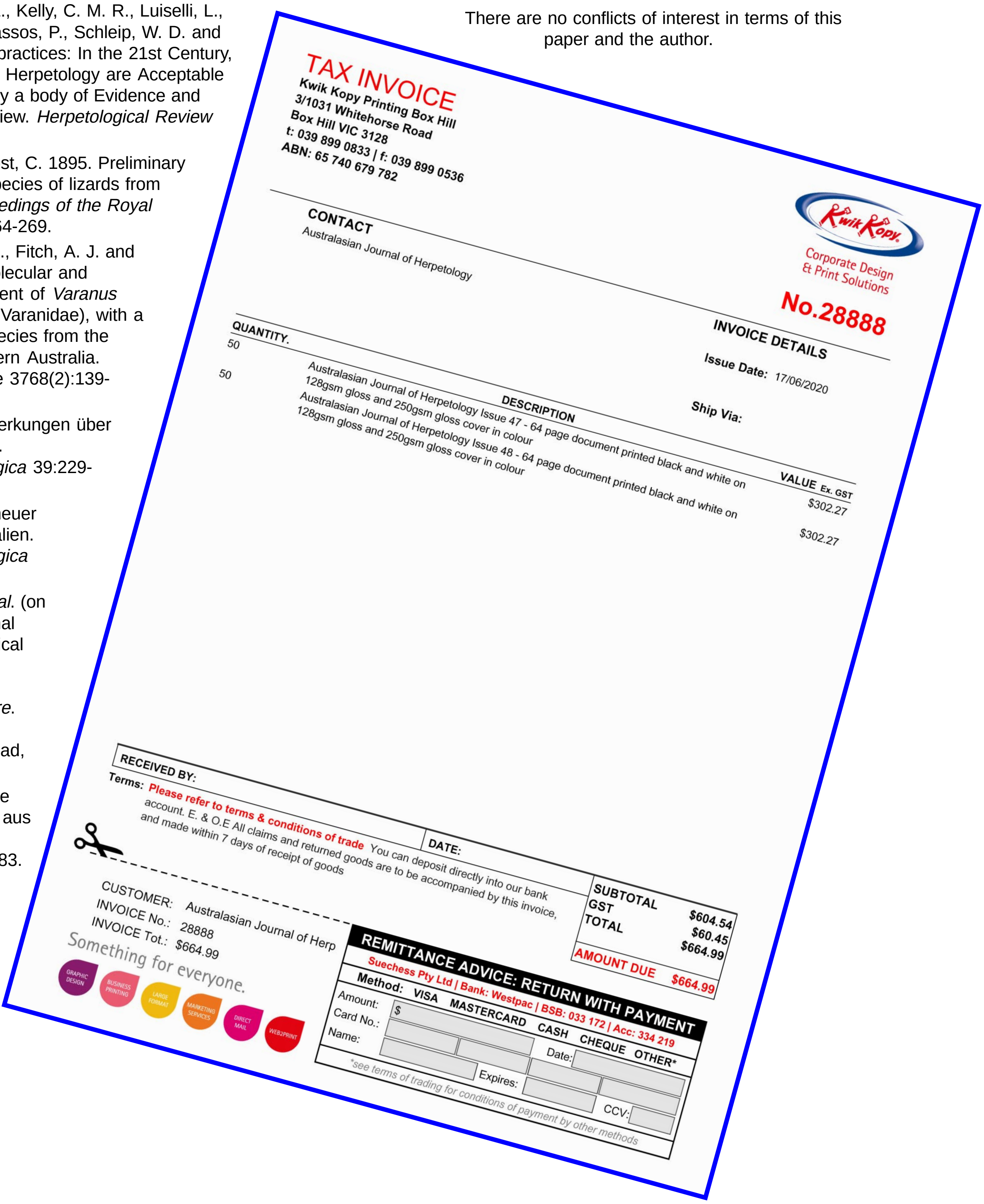
Wilson, S. K. 2014. *A field guide to reptiles of Queensland.* Reed / New Holland, Chatswood, NSW, Australia:304 pp.

Wilson, S. K. and Knowles, D. G. 1988. *Australia's Reptiles. A Photographic Reference to the Terrestrial Reptiles of Australia.* William Collins, Sydney, New South Wales, Australia:447 pp.

Wilson, S. and Swan, G. 2017. *A complete guide to reptiles of Australia.* New Holland, Australia:560 pp.

CONFLICT OF INTEREST

There are no conflicts of interest in terms of this paper and the author.



TAX INVOICE

Kwik Kopy Printing Box Hill
3/1031 Whitehorse Road
Box Hill VIC 3128
t: 039 899 0833 | f: 039 899 0536
ABN: 65 740 679 782

Kwik Kopy
Corporate Design & Print Solutions

No.28888

CONTACT
Australasian Journal of Herpetology

INVOICE DETAILS
Issue Date: 17/06/2020
Ship Via:

QUANTITY.	DESCRIPTION	VALUE Ex. GST
50	Australasian Journal of Herpetology Issue 47 - 64 page document printed black and white on 128gsm gloss and 250gsm gloss cover in colour	$302.27
50	Australasian Journal of Herpetology Issue 48 - 64 page document printed black and white on 128gsm gloss and 250gsm gloss cover in colour	$302.27

RECEIVED BY:

DATE:

Terms: **Please refer to terms & conditions of trade** You can deposit directly into our bank account. E. & O.E All claims and returned goods are to be accompanied by this invoice, and made within 7 days of receipt of goods

SUBTOTAL	**$604.54**
GST	**$60.45**
TOTAL	**$664.99**
AMOUNT DUE	**$664.99**

CUSTOMER: Australasian Journal of Herp
INVOICE No.: 28888
INVOICE Tot.: $664.99

Something for everyone.

GRAPHIC DESIGN
BUSINESS PRINTING
LARGE FORMAT
MARKETING SERVICES
DIRECT MAIL
WEB2PRINT

REMITTANCE ADVICE: RETURN WITH PAYMENT
Suechess Pty Ltd | Bank: Westpac | BSB: 033 172 | Acc: 334 219
Method: VISA MASTERCARD CASH CHEQUE OTHER*
Amount: $
Card No.:
Date:
Name:
Expires:
CCV:
*see terms of trading for conditions of payment by other methods

Australasian Journal of Herpetology 47:39-41.
Published 9 July 2020.

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

A new species of the Australian Bandy Bandy *Vermicella* Gray, 1841 (Serpentes: Elapidae) from north-west Australia.

LSIDURN:LSID:ZOOBANK.ORG:PUB:CBC854A2-50FE-4E74-AB62-7FF940C9C506

RAYMOND T. HOSER
LSID urn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.
Phone: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au

Received 3 April 2020, Accepted 14 April 2020, Published 9 July 2020.

ABSTRACT

Hoser in 2019 reviewed the wide-ranging Bandy Bandy group of snakes, *Vermicella* Gray, 1841, as defined by Cogger (2014).

After inspection of specimens from all parts of their range in continental Australia, a greater diversity than indicated by the then current taxonomy was found.

As a result of that paper, five species and three subspecies were formally recognized.

This paper formally names a sixth valid species for the genus.

Vermicella sloppi sp. nov. has until now been treated as a northern population of *V. snelli* Storr (1967) as defined by Storr in that paper.

However genetic divergence across the known biogeographical barrier of the Fortescue River Valley combined with the morphological divergence of the population, is a compelling argument for recognition of this population as a separate species.

The new species is formally named *Vermicella sloppi sp. nov.*in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999).

Keywords: Taxonomy; nomenclature; snakes; Elapidae; Australia; Western Australia; New *Vermicella*; *snelli*; new species; *sloppi.*

Hoser 2020 - Australasian Journal of Herpetology 47:39-41.

INTRODUCTION

As part of a wide-ranging audit of the Australian snake fauna, specimens of the iconic Bandy Bandy Snakes (Genus *Vermicella*, Gray, 1841) of all recognized species from across the range of each were inspected by myself with a view to ascertaining if there were any hitherto unnamed forms.

The results of that audit were published by Hoser (2019c).

Resolution of the identity of the northern population of *V. snelli* (Storr, 1967) was deferred pending a planned field trip to the region in 2018.

However as a result of unexpected legal proceedings against trademark infringing, animal abusing thieves, attacking the Snakebusters and Reptile Party businesses which dragged on for some years, such a field trip was put off until these finalised, which appeared to be in early 2020.

However a Coronavirus (Covid-19) outbreak in Australia, being part of a global pandemic that had started in China, led the State of Western Australia closing its borders in April 2020 for an indefinite period (Laschon and Trigger 2020).

Notwithstanding this effective indefinite shelving of the proposed field trip, the evidence available in support of recognizing the north western population of putative *V. snelli* as a separate species is compelling and doing so is the purpose of this paper, even with limited data available.

Delay in recognition of this form as a new species could also have negative conservation outcomes as outlined by Hoser (2019a, 2019b) and hence the decision to publish this paper.

MATERIALS, METHODS AND RESULTS

These are effectively the same as for Hoser (2019c).

Besides inspecting live specimens, museum specimens and quality photos with accurate location data, I also reviewed all relevant available literature. This included the following: Boulenger (1896), Cogger (2014), Cogger *et al.* (1983), Couper and Covacevich (1996), Covacevich (1971), De Vis (1905), Derez *et al*. (2018), Duméril *et al.* (1851), Gray (1841), Hoser (1989), Keogh and Smith (1996), Krefft (1869), Longman (1915, 1916), Simpson (1973), Storr (1967) and Wells and Wellington (1984, 1985) including sources cited therein.

Material relevant to this and related papers was stolen during an illegal armed raid by government wildlife officers on our research facility on 17 Aug 2011 and this was not returned in spite of orders by courts to do so (Court of Appeal Victoria 2014, Victorian Civil and Administrative Tribunal 2015).

The destructive illegal armed raid was initiated by false complaints made by associates of the Wüster gang (see Hoser 2015a-f for details).

The actions of the raid and the numerous bogus criminal charges arising from it, all of which were defended in court and won by myself (i.e. all claims by the wildlife department were found to be false) (Court of Appeal Victoria 2014, Victorian Civil and Administrative Tribunal 2015), delayed the publication of this paper and others in any form indefinitely.

It also gave the Wüster gang of thieves the opportunity to scoop me in terms of describing a species now known as *V. parscauda*

Derez *et al.* (2018), named with full knowledge I had intended doing so.

Before dealing with the description of the new West Australian species in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* (1999), I raise other relevant material below.

Storr (1967), highlighted differences within four populations of the subspecies he then identified as "*Vermicella annulata snelli subsp. nov*.". Keogh and Smith (1996) later formally named the two Northern Territory forms as new species, namely *V. intermedia* (from the top end of the Northern Territory) and *V. vermiformis* from central Australia.

Hoser (2019) relied on morphological evidence and the molecular evidence as published by Derez *et al.* (2018) to treat both *V. multifasciata* (Longman, 1915) and *V. intermedia* as conspecific, with the name *V. multifasciata* (Longman, 1915) having date priority in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Derez *et al*. (2018) also produced in their genus-wide phylogeny, results for six specimens of putative *V. snelli*, which in turn formed two clades of moderate divergence, but not sufficient to warrant taxonomic recognition.

However all specimens tested were of the population to the north of the Fortescue River and therefore of the same general group and population.

The nominate form of *V. snelli* is from south of this biogeographic barrier and as shown by Storr (1967) is radically different in form to this more northern population.

On this basis alone, a convincing case for taxonomic recognition at the species level is made.

This is further shown to be the case when one reconciles other dominantly saxacoline hill dwelling reptile forms also separated by the same biogeographical barrier of the Fortescue River and now recognized as northern and southern species based on morphological and genetic divergence.

Examples include *Worrellisaurus acanthurus* (Boulenger, 1885) north of the river and *W. dannybrowni* Hoser, 2018 south of the river, *Pilbaravaranus pilbarensis* (Storr, 1980) north of the river and *P. hamersleyensis* (Maryan *et al.* 2014) south of the river, or *Wellsopus elegans* (Kluge, 1974) to the south of the river and *W. robwatsoni* (Hoser, 2017) to the north.

In terms of the formal description below, the spelling of the new name should not be changed unless absolutely mandated by the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended, or superseding publication.

There is no conflict of interest in terms of this paper and assistances of many people including Museum curators and the like are acknowledged, as are the assistance's of peer reviewers in this and all other papers I have published of a taxonomic or nomenclatural nature.

VERMICELLA SLOPPI SP. NOV.

LSIDurn:lsid:zoobank.org:act:71EDA185-29F0-4FD2-8849-366A3C262DA2

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R 6745, collected from Tambrey, Western Australia, Australia, Latitude 21.6333 S., Longitude 117.6 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R 20238 collected from Mount Herbert, 40 miles (64 km) south of Roebourne, Western Australia, Australia, Latitude -21.3333 S., Longitude 117.2166 E.

Diagnosis: *Vermicella sloppi sp. nov.* has until now been treated as an aberrant population of V. snelli (Storr, 1967). It is readily separated from *V. snelli* by having 52 to 66 body bands, versus 33-41 for *V. snelli.*

The radically different number of bands is seen by comparison of photos of *Vermicella sloppi sp. nov.* in life as depicted in Cogger (2014) on page 939 at bottom and the holotype specimen of *V. snelli* downloaded from the internet at: http://museum.wa.gov.au/catalogues/sites/default/files/vermicella_snelli_dors_holotype_wamr19203.jpg

on 3 February 2020.

These images clearly show that the difference in number of body bands is wholly due to the greater width of the black bands on the body in the species *V. snelli*. In that species at the widest point, the black bands are more than three times wider than the adjacent white ones, whereas in *V. sloppi sp. nov.* this is never the case.

Both *V. sloppi sp. nov.* and *V. snelli* are separated from all other species of *Vermicella* Günther, 1858 by the presence of internasals and 285-320 ventrals.

Snakes in the genus *Vermicella* are readily separated from all other Australian elapid genera by having a body pattern consisting of distinctive black and white rings across the body, short tails with less than 35 divided subcaudals, smooth scales with 15 mid-body rows and no suboculars.

Distribution: *V. sloppi sp. nov.* is believed to be confined to the immediate region of the vicinity of the locations of the collection of the holotype and paratype, being north of the Fortescue River in the Pilbara Region of Western Australia and generally near to the coast, extending as far east as Bonney Downs Station, Western Australia.

The species *V. snelli* is found in all other hilly parts of the Pilbara region, not including where *V. sloppi sp. nov.* occurs.

Conservation status: No known threats exist at present, save for the fact that wildlife laws in Western Australia prevent private individuals from keeping, breeding, or studying this taxon, as noted in Hoser (1989, 1991, 1993, 1996, 2019a, 2019b),

The dysfunctional government-owned Zoo in Perth or any others in Australia, have zero interest in this species or its long-term survival and so there is no captive population to ensure against calamity in the wild.

If the Australian government persists with its "Big Australia Policy", (see for example Saunders 2019 or Zaczek 2019), that being a long-term aim to increase the human population in Australia to over 100 million people by year 2150 (from the present 25 million as of 2019), all sorts of unforseen threats to the survival of this species may emerge.

V. sloppi sp. nov. is a restricted range species as compared to many other Australian elapid species and due to this I recommend further research on the taxon and potential future conservation threats in line with the previous paragraph, including by direct human activities as well as potential threats caused by changed vegetation regimes, introduced pests and potential pathogens, including those introduced via the legal importation of foreign reptiles by government-owned zoos and associated entities.

Etymology: Named in honour of the author's pet Great Dane named Slopp, who in 2020 was nearly 8 years of age and in ailing health with Cardiomyopathy. With his life nearing an end, it is fitting he be honoured for his valuable work in protecting the wildlife conservation and research facility of this author and our team of dedicated co-workers.

REFERENCES CITED

Boulenger, G. A. 1885. *Catalogue of the lizards in the British Museum* (Natural History). Vol. 2, Second edition. London, xiii+497 pp.

Boulenger, G. A. 1896. *Catalogue of the snakes in the British Museum, Vol. 3.* London (Taylor and Francis), xiv+727 pp.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia*, 7th ed. CSIRO Publishing, xxx+1033 pp.

Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia, Volume 1: Amphibia and Reptilia.* Australian Government Publishing Service, Canberra, ACT:313 pp.

Court of Appeal Victoria. 2014. *Hoser v Department of*

Sustainability and Environment [2014] VSCA 206 (5 September 2014).

Couper, P. J. and Covacevich, J. A. 1996. A Bandy Bandy with a difference. *Memoirs of the Queensland Museum* 39(2):242.

Covacevich, J. 1971. Amphibian and reptile type specimens in the Queensland Museum. *Memoirs of the Queensland Museum* 16:49-68.

Derez, C. M., Arbuckle, K., Ruan, Z., Xie, B., Huang, Y., Dibben, L., Shi, Q., Vonk, F. J. and Fry, B. G. 2018. A new species of Bandy Bandy (*Vermicella*: Serpentes: Elapidae) from the Weipa Region, Cape York, Australia. *Zootaxa* (online): 4446(1):1-12, 16 July.

De Vis, C. W. 1905. *Rhynchelaps latizonatus n. s. Ann. Queensland Museum* (Brisbane) 6:48.

Duméril, A. M. C., Bibron, G. and Duméril, A. H. A., 1854. *Erpétologie générale ou histoire naturelle complète des reptiles. Tome septième. Deuxième partie, comprenant l'histoire des serpents venimeux.* Paris, Librairie Encyclopédique de Roret: i-xii + 781-1536.

Gray, J. E. 1841. A catalogue of the species of reptiles and Amphibia hitherto described as inhabiting Australia, with a description of some new species from Western Australia. Appendix E, pp. 422-449. In: G. Grey, Journals of Two Expeditions of Discovery in Northwest T. and W. Boone, London. Vol. 2: 422-449 + plates.

Günther, A. 1858. *Catalogue of colubrine snakes in the collection of the British Museum.* British Museum, London, UK xvi+281 pp.

Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, 2088, Australia:238 pp.

Hoser, R. T. 1991. *Endangered Animals of Australia*. Pierson Publishing, Mosman, NSW, 2088, Australia:240 pp.

Hoser, R. T. 1993. *Smuggled: The Underground Trade in Australia's Wildlife*. Apollo Publishing, Moss Vale, NSW, Australia:160 pp.

Hoser, R. T. 1996. *Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia*. Kotabi Publishing. Doncaster, Victoria, Australia:280 pp.

Hoser, R. T. 2017. The inevitable break-up of the Australian legless lizard genera *Delma* Gray, 1831 and *Aprasia* Gray, 1839, formal descriptions of 13 well-defined Pygopodid species, as well as a further improvement in Pygopodid taxonomy and nomenclature. *Australasian Journal of Herpetology* 35:3-32.

Hoser, R. T. 2018. Six new species of Dwarf Goanna, *Worrellisaurus* Wells and Wellington, 1984 from Australia. *Australasian Journal of Herpetology* 37:24-37.

Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard

in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian Journal of Herpetology* 39:23-52.

Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian Journal of Herpetology* 39:53-63.

Hoser, R. T. 2019c. New subspecies of the Australian Bandy Bandy *Vermicella* Gray, 1841 (Serpentes: Elapidae). *Australasian Journal of Herpetology* 40:56-58.

Keogh, J. S. and Smith, S. A. 1996. Taxonomy and natural history of the Australian bandy-bandy snakes (Elapidae: *Vermicella*) with a description of two new species. *Journal of Zoology* 240:677-701.

Kluge, A. G. 1974. A taxonomic revision of the lizard family Pygopodidae. *Miscellaneous Publications, Museum of Zoology*, University of Michigan, (147):1-221.

Krefft, G. 1869. *The Snakes of Australia; an Illustrated and Descriptive Catalogue of All the Known Species*. Sydney, Govt. Printer xxv+100 pp.

Laschon, E. and Trigger, R. 2020. Coronavirus sees WA close its borders from midnight on Sunday to stop COVID-19 spread from eastern states. ABC News online, report posted at: https://www.abc.net.au/news/2020-04-02/coronavirus-sees-wa-close-state-borders-from-midnight-sunday/12114648 last downloaded on 2 April 2020.

Longman, H. A. 1915. Reptiles from Queensland and the Northern Territory. *Memoirs of the Queensland Museum* 3: 30-34.

Longman, H. A. 1916. Snakes and lizards from Queensland and the Northern Territory. *Memoirs of the Queensland Museum* 5:46-51.

Maryan, B., Oliver, P. M., Fitch, A. J. and O'Connell, M. 2014. Molecular and morphological assessment of *Varanus pilbarensis* (Squamata: Varanidae), with a description of a new species from the southern Pilbara, Western Australia. *Zootaxa* (online) 3768(2):139-158.

Ride, W. D. L. (ed.) *et. al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature*. The Natural History Museum - Cromwell Road, London SW7 5BD, UK (also commonly cited as "ICZN 1999").

Saunders, S. 2019. Morrison and Shorten's Big Australia: The overpopulation problem. News article published 17 April 2019 and downloaded from

https://independentaustralia.net/politics/politics-display/morrison-and-shortens-big-australia-the-overpopulation-problem,12584

last downloaded on 3 February 2020.

Simpson, K. N. G. 1973. Amphibians, reptiles and mammals of the Murray River region between Mildura and Renmark, Australia. *Mem. Nat. Mus. Vict.* 34:275-279.

Storr, G. M. 1967. The genus *Vermicella* (Serpentes : Elapidae) in Western Australia and the Northern Territory. *J. Roy. Soc. West. Aust.* 50:80-92.

Storr, G. M. 1980. The monitor lizards (genus *Varanus* Merrem, 1820) of Western Australia. *Records of the Western Australian Museum* 8(2):237-293.

Victorian Civil and Administrative Tribunal (VCAT). 2015. *Hoser v Department of Environment Land Water and Planning* (Review and Regulation) [2015] VCAT 1147 (30 July 2015, judgment and transcript).

Wells, R. W. and Wellington, C. R. 1984. A synopsis of the class Reptilia in Australia. *Australian Journal of Herpetology* 1(3-4):73-129.

Wells, R. W. and Wellington, C. R. 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology Supplementary Series* 1:1-61.

Zaczek, Z. 2019. Former PM Kevin Rudd says Australia should drastically increase its population to 50 MILLION to make sure nation can defend itself in the face of threats from China. *Daily Mail* (Australia) (27 November), published online at: https://www.dailymail.co.uk/news/article-7729689/Kevin-Rudd-says-Australia-increase-population-50-MILLION-defend-China.html

CONFLICT OF INTEREST

There are no conflicts of interest in terms of this paper.

Australalasian Journal of Herpetology 47:42-56.
Published 9 July 2020.

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

Nine new species of *Katrinahoserserpenea* Hoser, 2012 from northern India, western China Vietnam, Burma, Thailand and Malaysia as well as a new genus of snake associated with *Xylophis* Beddome, 1878 from India (Serpentes: Pareidae).

LSIDURN:LSID:ZOOBANK.ORG:PUB:BC3585E7-CDA1-491B-A6EF-CFA1A651939E

RAYMOND T. HOSER
LSIDurn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.
Phone: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au

Received 22 June 2020, Accepted 1 July 2020, Published 5 July 2020.

ABSTRACT

Nine divergent species within the genus *Katrinahoserserpenea* Hoser, 2012 (Serpentes: Pareidae) from northern India, western China, Thailand, Vietnam and Burma are formally named and described for the first time. Two species were formerly treated as populations of *K*. (*Dannyleeus*) *monticola* (Cantor, 1839), five of *K. (Katrinahoserserpenea*) *macularius* (Theobold, 1868) and two of *K. (Katrinahoserserpenea*) *margaritophorus* (Jan, 1866).

This paper continues the recent naming of new species within the Pareidae, underscoring previously underestimated snake biodiversity in the south Asian region.

The genus *Xylophis* Beddome, 1878, (subfamiliy Xylophiinae Deepak *et al*. 2019) as currently recognized are endemic to the Western Ghats of peninsular India. Molecular studies (e.g. Deepak *et al.* 2020) and morphology indicate two divergent lineages of great antiquity. One of these is formally placed in a new genus *Zilonear gen. nov.*.

Keywords: Snakes; Serpentes; Pareidae; Asia; China; India; Thailand; Vietnam; Burma; *Katrinahoserserpenea*; *Pareas*; *Dannyleeus*; *macularius*; *monticola*; new genus; *Zilonear*; new species; *rayhammondi*; *danielmani*; *tongzhoujiae*; *mannixi*; *mcconnachiei*; *daranini*; *rodneykingi*; *bobbottomi*; *evanwhittoni*.

INTRODUCTION

Hoser (2012b) formally divided the genus *Pareas* Wagler, 1830, type species *Dipsas carinata* Reinhardt along obvious phylogenetic lines.

This meant that most species were transferred to the new genus *Katrinahoserserpenea* Hoser, 2012, with a type species of *Amblycephalus boulengeri* Angel, 1920.

The divergent taxon originally described as *Dipsas monticola* Cantor, 1839 was placed in the subgenus *Dannyleeus* Hoser, 2012, within *Katrinahoserserpenea.*

This logical arrangement was immediately condemned and lampooned by the Wolfgang Wüster gang of thieves, who via their war-cry blog known as Kaiser *et al.* (2013) told all other herpetologists not to use the new genus and subgenus name. To enforce this position, they reposted their blog and similar comments all over the internet many thousands of times, including on Search Engine Optimized (SEO) sites such as Wikipedia and Peter Uetz's "The Reptile Database".
On Uetz's site, at:
http://reptile-database.reptarium.cz/species?genus=Pareas&species=carinatus&search_param=%28%28search%3D%27Pareas%27%29%29
Wüster *et al.* had (as of 10 June 2020) written:

"Synonymy: Kaiser *et al.* 2013 rejected the (sub-) generic names *Dannyleeus* Hoser 2012, *Katrinahoserserpenea* Hoser 2012 invalid (sic) and rejected their use instead of *Pareas*."

More recently, Wüster *et al.* have taken it upon themselves to not bother attacking taxonomy in papers by Hoser, as they know them to be correct, but have instead decided to systematically rename the taxa previously named by Hoser, with a total number of illegally renamed taxa being nearly 100 as of June 2020 and including species and genera of Blind Snakes, Elapids, Agamids, Pythons, Crocodile, Geckos, Monitors, Skinks and Turtles.
These acts of taxonomic vandalism are in breach of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Through Kaiser *et al.* (2013) and other documents including, Kaiser (2012a, 2012b, 2013, 2014a, 2014b) and countless others by the same cohort, they have directed and harassed other herpetologists to not use names proposed by Hoser and to act in defiance of the *International Code of Zoological Nomenclature* and the edicts of the ICZN itself.

Their actions, arguments and lies have been thoroughly discredited by numerous authors including Cogger (2014), Dubois *et al.* (2019), Hoser, (2007, 2009, 2012a, 2012c, 2013a, 2015a-f, 2019a, 2019b) and sources cited therein.

Furthermore, scientific reality is hard to ignore and while placing all relevant species in a single genus *Pareas* (as opposed to splitting between that genus and *Katrinahoserserpenea*) Wang

Hoser 2020 - Australasian Journal of Herpetology 47:42-56.

et al. (2020) confronted scientific reality when they wrote:

"*Pareas* is not monophyletic, but contains two highly supported clades, consistent with scale characters (Guo *et al.* 2011)."

Hoser (2016) also re-confirmed the earlier findings.

Deepak *et al.* (2020) also made the same findings, but as their paper was published in the predatory PRINO (peer reviewed in name only) online "journal" called *Zootaxa* as was Guo *et al.* (2011), there is simply no evidence to suggest any peer review of their papers.

In other words, three separate peer reviewed papers and two without peer review have come to the same obvious conclusion and yet the wholly unscientific and non peer reviewed document known as Kaiser *et al.* (2013) steadfastly attempts to hide peer reviewed scientific reality and is as of 2020 still being falsely peddled as herpetological consensus by the noisy minority known as the Wolfgang Wüster gang of thieves.

In the absence of any scientific basis to reject use of *Katrinahoserserpenea* Hoser, 2012 or *Dannyleeus* Hoser, 2020, and that both names are fully compliant with the rules of the *International Code of Zoological Nomenclature* both are used as correct within this paper.

An audit of previously described forms within *Katrinahoserserpenea* yielded a number of potentially undescribed species and among these, those that are obviously and undeniably new species-level taxa are formally described within this paper.

MATERIALS AND METHODS

The audit of the genus *Katrinahoserserpenea*, followed an earlier one on the audit of *Pareas sensu* Hoser (2012b), which yielded new species as published by Hoser (2016).

Specimens of all known putative species and all relevant and available literature was audited against type material, published descriptions, redescriptions and the like to flag any potentially unnamed forms.

When molecular evidence had been published or was available, it was used to assist in determination if populations represented new species. In the absence of molecular data, biogeographical information was utilized in terms of determining likely barriers to gene flow between morphologically similar, but geographically disjunct populations in order to determine likely species-level divergence. This same information was used to estimate species boundaries in the absence of significant collection in this understudied region.

The genus *Xylophis* Beddome, 1878 from south-west India has also come under recent scrutiny at the species level (see for example Deepak *et al.* 2020). However in spite of at least two studies indicating deep divergence of the two main species groups, both are presently treated as being within a single genus.

This point of view was tested and the result is already outlined in the abstract.

Literature relevant to the audit of *Katrinahoserserpenea*, *Pareas* and taxonomic conclusions herein include: Anderson (1871), Angel (1920), Athreya (2006), Barbour (1912), Boulenger (1896, 1900a, 1900b, 1905, 1914), Bourret (1935a, 1935b, 1937, 1939), Cantor (1839), Chan-ard *et al.* (2015), Chew (2017), Das *et al.* (2009), Das (1996, 2012), Deepak *et al.* (2020), de Rooij (1917), Dunaev and Orlova (2003), Figueroa *et al.* (2016), Goris and Maeda (2004), Götz (2002), Grossmann and Tillack (2003), Günther (1864), Guo and Deng (2009), Guo and Zhang (2015), Guo *et al.* (2011), Hauser (2017), Hei (2008), Hoser (2012b, 2016), Hoso (2017), Hoso and Hori (2008), Hoso *et al.* (2010), Huang (2004), Jan (1866), Jiang (2004), Kelly *et al.* (2003), Kraus and Brown (1998), Lalbiakzuala and Lalremsanga (2019), Laltanpuia *et al.* (2008), Lawson *et al.* (2005), Lenz (2012), Loredo *et al.* (2013), Maki (1931, 1937), Malkmus *et al.* (2002), Nguyen *et al.* (2009), Ota *et al.* (2007), Pope (1928), Pyron *et al.* (2011), Rao and Yang (1992), Savage (2015), Schleich and Kästle (2002), Sharma (2004), Smith (1923, 1930, 1943), Stanley (2017), Stejneger (1910), Tan and Lim (2013), Taylor (1965), Theobald (1868), Van Denburgh (1909), Vidal *et al.* (2007), Vogel (2010, 2015), Wall (1908, 1909), Wallach *et al.* (2014), Wang *et al.* (2020), Yang *et al.* (2019), You *et al.* (2015), Zaher *et al.* (2019), Zhao (2006), Zhao and Adler (1993), Ziegler (2002) and sources cited therein.

References relevant to the potential division of *Xylophis* Beddome, 1878 and taxonomic conclusions herein include Beddome (1878), Bhupathy and Sathishkumar (2013), Boulenger (1890, 1893), Deepak *et al.* (2019, 2020), Duméril *et al.* (1854), Ganesh *et al.* (2012), Gower and Winkler (2007), Günther (1858, 1875), Inger *et al.* (1984), Jerdon (1865), Palot (2015), Ruane and Austin (2017), Santhoshkumar and Kannan (2017), Sharma (2004), Smith (1943), Wall (1919) and sources cited therein.

RESULTS

Nine hitherto unnamed species were identified.

With two exceptions, all were of taxa generally confined to hilly or higher altitude areas, separated by areas of lowland, being a common precursor to speciation in otherwise geographically proximate forms. This was particularly the case in terms of the relevant species, noting similar potentially excluding species occurred in intervening lowland areas. In this case the relevant species was *K. margaritophorus* (Jan, 1866) as defined by Hauser (2017), which is herein treated as a species complex.

K. margaritophorus (Jan, 1866) *sensu stricto* and the two newly named species until now treated as populations of this taxon appeared to exclude the other taxa where it/they occurred (sympatry only occurring where ranges abut). *K. margaritophorus sensu lato* was generally a lowland form/s as identified by data presented in Hauser (2017).

The putative species *K. tamdaoensis* (Bourret, 1935) from northern Vietnam and nearby southern China is herein treated as valid and is most like *K. macularius* Theobold, 1868 in terms of previously described forms (see elsewhere in this paper).

The putative species *K.* (*Dannyleeus*) *monticola* (Cantor, 1839), with a type locality of Naga Hills, Asám (=Assam), India, was found to comprise at least three morphologically distinctive species. Two are formally named herein for the first time.

K. rayhammondi sp. nov. is found on the southern edge of the Himalayas in northern India and *K. danielmani sp. nov.* is found in south-western China.

The three populations appear to be separated by major river valleys.

The putative species *K. macularius* Theobold, 1868 was found to comprise at least six regionally distinct species. The nominate form of *K. macularius* is from southern Burma and nearby western Thailand.

The newly described forms are *K. tongzhoujiae sp. nov.* from Hainan, China, *K. danielmannixi sp. nov.* from Yunnan, China, *K. rodneykingi sp. nov.* from Vietnam, *K. daranini sp. nov.* from Western and northern Myanmar and *K. mcconnachiei sp. nov.* from the Isthmus of Kra, in southern Thailand.

Specimens of putative *K. margaritophorus* (Jan, 1866) were inspected from all parts of the known range of the species.

Three distinctive forms were identified, all of which corresponded with well-known biogeographic barriers and gaps in collection records for museums. As a result, the specimens from Peninsula Malaysia and Hong Kong, were each formally named as new species.

These are *K. bobbottomi sp. nov.* from the Malay Peninsula and (presumably) nearby Sumatra and *K. evanwhittoni sp. nov.* from Hong Kong and adjacent parts of China.

The genus *Xylophis* Beddome, 1878, (subfamiliy Xylophiinae Deepak *et al.* 2020) as currently recognized are endemic to the Western Ghats of peninsular India. Molecular studies (e.g. Deepak *et al.* 2020) and morphology indicate two divergent lineages of great antiquity. One of these is formally placed in a new genus *Zilonear gen. nov.*.

In terms of the following formal descriptions, the following should be noted: Spelling of names is deliberate and should not be changed. Descriptions are of normal, healthy adult snakes unless otherwise stated. Material may be repeated in descriptions of taxa to ensure full compliance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Material cited in this paper as downloaded from the internet was last checked as being online and as cited as of 20 June 2020 unless otherwise stated.

KATRINAHOSERSERPENEA (*DANNYLEEUS*) *RAYHAMMONDI SP. NOV.*

LSIDurn:lsid:zoobank.org:act:BFACB7B4-4733-42E1-9294-1A5F4546537F

Holotype: A preserved male specimen at the Museum of Natural History, London, UK, specimen number 1880.11.10.147, collected at Darjeeling, India.

This facility allows access to its holdings.

Paratype: A preserved female specimen at the Museum of Natural History, London, UK, specimen number 1909.3.9.18-21, collected from near Darjeeling, India.

Diagnosis: In most respects *Katrinahoserserpenea* (*Dannyleeus*) *rayhammondi sp. nov.* and *K. danielmani sp. nov.* are similar to *K. monticola* (Cantor, 1839) and until now have been treated as the same taxon.

However both the new species are readily separated from *K. monticola* by their shorter body.

K. monticola is separated from the other two species by males having more than 193 ventrals and 84 subcaudals.

By contrast, male *K. rayhammondi sp. nov.* has 188 ventrals and 75 subcaudals.

K. danielmani sp. nov. is separated from both other species by males having 182-189 ventrals and 69-72 subcaudals.

K. rayhammondi sp. nov., *K. monticola* and *K. danielmani sp. nov.* are also separated by colouration. *K. rayhammondi sp. nov.* is yellowish brown (sometimes with reddish tinge as well as strong yellow tinge) and with indistinct or no obvious banding or markings on the posterior end of the body, versus orange in *K. monticola* with pattern extending the full length of the body and versus yellowish brown with pattern extending the full length of the body in *K. danielmani sp. nov.*.

An image of *K. monticola* in life can be found in Vogel (2015) in figure 5, from Mizoram, India, or online at:
https://www.flickr.com/photos/84335714@N07/15257990328/
or:
https://www.inaturalist.org/observations/1610555
or:
https://www.inaturalist.org/observations/18564088
or:
https://www.inaturalist.org/observations/18406607

Two images of *K. rayhammondi sp. nov.* in life can be found online at:
http://www.aoc.nrao.edu/~sbhatnag/Nature/warunachal/Images/Snakes/rma_pareasSp1.jpg
and:
http://www.aoc.nrao.edu/~sbhatnag/Nature/warunachal/Images/Snakes/rma_pareasSp2.jpg
with specimens from Eaglenest Wildlife Reserve, India.

The three species form the entirety of the subgenus *Dannyleeus* Hoser, 2012 and are separated from all other species within *Katrinahoserserpenea* Hoser, 2012 and *Pareas* Wagler, 1830 by the following suite of characters (amended slightly to form a new diagnosis as opposed to Hoser, 2012):

These snakes are of a dark or light-brown dorsal colour, many dorsal scales having small black dots forming a transverse line or reticulation, there is a pre-frontal that enters the eye, there's no preocular and the loreal enters the eye, smooth dorsal scales, vertebral enlarged, the fourth upper labial enters the eye, there are more than 182 ventrals, more than 69 subcaudals and a black "X"-shaped mark behind the parietals.

Snakes in the genus *Pareas* Wagler, 1830 differ from taxa in the genus *Katrinahoserserpenea* by cephalic scalation and distribution pattern.

Pareas species share three anterior temporals in contrast to the one or two (rarely three) anterior temporals in *Katrinahoserserpenea* species.

The frontal scale in *Pareas* is hexagonal with the lateral sides parallel to the body axis; this scale in *Katrinahoserserpenea* is almost diamond-shaped or shield-shaped with the lateral sides converging posteriorly. The two anterior chin shields are longer than broad in *Katrinahoserserpenea*, whereas in *Pareas* they are broader than long; this is a consistent way to separate the two genera.

Another consistent way to separate the genera is by the fact that in *Katrinahoserserpenea* species there is a pre-frontal that enters they eye, whereas in *Pareas* there is no prefrontal.

The snakes in the genus *Pareas* occur mainly throughout the Indochinese Peninsula and Sunda shelf Islands.

By contrast most species of *Katrinahoserserpenea* occur in southern China and the northern Indochinese Peninsula, extending south along the southern Indochinese Peninsula and west to north-east India.

Distribution: *K. rayhammondi sp. nov.* is known only from the type locality, but is presumed to also be found in immediately adjacent parts of Nepal, Bhutan and China.

Etymology: *K. rayhammondi sp. nov.* is named in honour of Ray Hammond of Hamilton in western Victoria, Australia, in recognition for his critically important and free of charge logistical services assisting various scientific projects by this author over many years.

KATRINAHOSERSERPENEA (*DANNYLEEUS*) *DANIELMANI SP. NOV.*

LSIDurn:lsid:zoobank.org:act:DB19D3CD-9B80-4083-8A7D-80C7CCD7AE60

Holotype: A preserved specimen at the Kuming Institute of Zoology at the Chinese Academy of Sciences, now at the Kuming Natural History Museum of Zoology at Kuming Institute of Zoology, China, specimen number KIZ047036 collected from Pingbian, Yunnan, China. This facility allows access to its holdings.

Paratype: A preserved specimen at the California Academy of Sciences, San Francisco, USA, specimen number CAS 224415 collected at Nagmung Township, Hkakabo Razi National Park, between Ngawar Village and Lon Nut Village, Myanmar, Latitude 27.4605 N., Longitude 97.4907 E.

Diagnosis: In most respects *Katrinahoserserpenea* (*Dannyleeus*) *danielmani sp. nov.* and *K. rayhammondi sp. nov.* are similar to *K. monticola* (Cantor, 1839) and until now have been treated as the same taxon.

However both the new species are readily separated from *K. monticola* by their shorter body.

K. monticola is separated from the other two species by males having more than 193 ventrals and 84 subcaudals.

By contrast, male *K. rayhammondi sp. nov.* has 188 ventrals and 75 subcaudals.

K. danielmani sp. nov. is separated from both other species by males having 182-189 ventrals and 69-72 subcaudals.

K. rayhammondi sp. nov., *K. monticola* and *K. danielmani sp. nov.* are also separated by colouration. *K. rayhammondi sp. nov.* is yellowish brown (sometimes with reddish tinge as well as strong yellow tinge) and with indistinct or no obvious banding or markings on the posterior end of the body, versus orange in *K. monticola* with pattern extending the full length of the body and versus yellowish brown with pattern extending the full length of the body in *K. danielmani sp. nov.*.

An image of *K. monticola* in life can be found in Vogel (2015) in figure 5, from Mizoram, India, or online at:
https://www.flickr.com/photos/84335714@N07/15257990328/
or:
https://www.inaturalist.org/observations/1610555

or:
https://www.inaturalist.org/observations/18564088
or:
https://www.inaturalist.org/observations/18406607

Two images of *K. rayhammondi sp. nov.* in life can be found online at:
http://www.aoc.nrao.edu/~sbhatnag/Nature/warunachal/Images/Snakes/rma_pareasSp1.jpg
and:
http://www.aoc.nrao.edu/~sbhatnag/Nature/warunachal/Images/Snakes/rma_pareasSp2.jpg
with specimens from Eaglenest Wildlife Reserve, India.

The three species form the entirety of the subgenus *Dannyleeus* Hoser, 2012 and are separated from all other species within *Katrinahoserserpenea* Hoser, 2012 and *Pareas* Wagler, 1830 by the following suite of characters (amended slightly to form a new diagnosis as opposed to Hoser, 2012):

These snakes are of a dark or light-brown dorsal colour, many dorsal scales having small black dots forming a transverse line or reticulation, there is a pre-frontal that enters the eye, there's no preocular and the loreal enters the eye, smooth dorsal scales, vertebral enlarged, the fourth upper labial enters the eye, there are more than 182 ventrals, more than 69 subcaudals and a black "X"-shaped mark behind the parietals.

Snakes in the genus *Pareas* Wagler, 1830 differ from taxa in the genus *Katrinahoserserpenea* by cephalic scalation and distribution pattern.

Pareas species share three anterior temporals in contrast to the one or two (rarely three) anterior temporals in *Katrinahoserserpenea* species.

The frontal scale in *Pareas* is hexagonal with the lateral sides parallel to the body axis; this scale in *Katrinahoserserpenea* is almost diamond-shaped or shield-shaped with the lateral sides converging posteriorly. The two anterior chin shields are longer than broad in *Katrinahoserserpenea*, whereas in *Pareas* they are broader than long; this is a consistent way to separate the two genera.

Another consistent way to separate the genera is by the fact that in *Katrinahoserserpenea* species there is a pre-frontal that enters they eye, whereas in *Pareas* there is no prefrontal.

The snakes in the genus *Pareas* occur mainly throughout the Indochinese Peninsula and Sunda shelf Islands.

By contrast most species of *Katrinahoserserpenea* occur in southern China and the northern Indochinese Peninsula, extending south along the southern Indochinese Peninsula and west to north-east India.

Distribution: *K. danielmani sp. nov.* is known from Yunnan, China and nearby parts of northern Myanmar.

Etymology: Named in honour of Daniel Man, an accountant of Mitcham, Victoria, Australia, in recognition of his services to Snakebusters, Australia's best reptiles shows and other wildlife conservation enterprises in Australia over a period of 30 years.

KATRINAHOSERSERPENEA (*KATRINAHOSERSERPENEA*) *TONGZHOUJIAE SP. NOV.*

LSIDURN:LSID:ZOOBANK.ORG:ACT:74AA0D00-80BE-47CA-876F-A539E78E0000

Holotype: A preserved specimen at Yinbin University, China, Cuiping District, Yibin, China, specimen number: YBU12016, collected from Hainan, China.
This facility allows access to its holdings.

Paratype: A preserved specimen at Yinbin University, China, Cuiping District, Yibin, China, specimen number: YBU17030, collected from Hainan, China.

Diagnosis: *Katrinahoserserpenea (Katrinahoserserpenea) macularius* (Theobold, 1868) has until now been treated as a wide-ranging species with a distribution encompassing potentially India (Darjeeling, Sikkim, West Bengal) (those records being doubted by Hauser 2017), Bangladesh, Myanmar (= Burma): Kachin, Mandalay, Mon, Shan, Tanintharyi, Yangon, Thailand (Chiang Mai), Laos (Xiangkhouang), Vietnam (Bac Kan, Cao Bang, Hai Duong, Hoa Binh, Lai Chau, Nghe An, Quang Binh, Vinh Phuc), Northern West Malaysia, South China (Yunnan, Guangxi, Guangdong, Guizhou).

However previous studies including the molecular evidence, of Wang *et al.* (2020) and Deepak *et al.* (2020), as well as the morphological evidence of Hauser (2017) have confirmed that a number of species have been lumped within this putative taxon.

Five relevant species are formally named in this paper.

The nominate form of *K. macularius* is from hilly parts of southern Myanmar and nearby western Thailand.

The newly described species are *K. tongzhoujiae sp. nov.* from Hainan, China, *K. danielmannixi sp. nov.* from Yunnan, China, *K. rodneykingi sp. nov.* from Vietnam south of the delta region of Hanoi and *K. daranini sp. nov.* from Western and northern Myanmar and *K. mcconnachiei sp. nov.* from the Isthmus of Kra, in southern Thailand.

All six preceding species are separated from the morphologically similar species *K. margaritophorus* (Jan, 1866) by the following suite of characters: Dorsal scales forming the median 7-13 rows are weakly keeled; nuchal region often with a butterfly or W-shaped collar with moderate or dense speckling; intensely black blotch (IBB) usually present on the seventh (and last) supralabial (rarely absent except in *K. danielmannixi sp. nov.*); ventral shields usually more than 148; belly speckling usually dense, often large blotches are present, but the prevalence of this last character is also somewhat species dependent (see below).

By contrast *K. margaritophorus* (*sensu lato*) is diagnosed and separated from the preceding species as follows: Dorsal scales are entirely smooth (no keels); nuchal region usually with pink, cream or yellow, entire or tripartite collar or spot without fine brown speckling; IBB usually absent on the seventh supralabial (very rarely present); ventral shields usually fewer than 158; belly speckling usually sparse, in particular anteriorly (adapted from Hauser 2017).

The type form of *K. macularius* is readily separated from *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: dorsum is mainly light brown with a very slight orange tinge; scattered dark brownish-black scales are arranged into indistinct cross bands or similar and with obvious white tips at the anterior end, therefore being only visible on the outward curved side of the snake, with the white being hidden under a scale on the inward curved side of the snake. Where bands form across the body, they are more-or-less continuous, with most scales in a given row being dark and few if any lighter gap scales are present. The top of the head is greyish brown and peppered all over. Labials have white on them near the lip and if the white is prominent it is always well barred with dark brown.

K. tongzhoujiae sp. nov. is readily separated from all of *K. macularius*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by having the following unique combination of characters: Dorsum is a dark olive brown and the dark blackish-brown scales scattered on the dorsum are clustered to form a distinctive series of spots all over the dorsal surface, as opposed to cross bands. The spots are irregularly spaced. The anterior upper surface of the head is uniformly grey.

K. danielmannixi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by being generally dark brown dorsally, with dark near black scales being generally arranged in cross-bands, but these are well spaced with more lighter coloured scales between the dark ones, making the banding indistinct on the fore-body, becoming absent on the posterior end of the body and tail. The side of the head and snout, anterior to the eye are dark grey, but the upper lip has a series of 3-5 small but well-defined white triangles, with base of each on the lip and point facing up. These small triangles do not go anywhere near reaching the eye. The upper surface of the head and snout are black, other than for some brown blotches on the upper surface, these having ill defined boundaries.

The IBB on the last supralabial is absent and this scale is merely strongly peppered with grey.

K. rodneykingi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following character suite: Similar to *K. macularius* as described above, but separated from it by having a dark iris, versus light orangeish to red in *K. macularius.* The upper lip is bounded by a distinctive thick white line (sometimes yellowish) and if barring is present it is usually incomplete and/or indistinct.

The dorsum is greyish with a slight orangeish tinge. Snout is yellowish with grey peppering.

The belly of *K. rodneykingi sp. nov.* is heavily speckled with peppering and also with dark blotches, versus not so in *K. macularius.*

K. daranini sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: The dorsal side, with rows of keeled scales, is nearly completely black and shows no cross-bands of bicolored spots as seen in the other five species. A speckled, W-shaped nuchal collar typical of the other five species cannot be distinguished. On the belly there are rows of squarish, black blotches. The seventh (last) supralabial does not show a distinct IBB, but is heavily mottled with black or alternatively is completely black.

K. mcconnachiei sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. daranini sp. nov.* by possessing a distinctive W-shaped collar with two distinctive ‘tails’ extending backwards. The W-shaped collar configuration is not seen in any of the other species. Otherwise *K. mcconnachiei sp. nov.* is similar in most other respects to *K. macularius.*

The putative species *K. tamdaoensis* (Bourret, 1935) from northern Vietnam and nearby southern China is herein treated as valid and is most like *K. rodneykingi sp. nov.* as described herein (separating it from the other species as well), but *K. tamdaoensis* is separated from that species by having reduced white on the upper lip (as compared to *K. rodneykingi sp. nov.*) and a very prominent IBB on the last supralabial.

All the preceding species and *K. margaritophorus* (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) are separated from all other species within *Katrinahoserserpenea* as defined by Hoser (2012b) by having a uniform brown, yellowish brown or blue gray above with a pattern including single dark (near black) scales forming cross-bands, broken cross bands or spotting, the single dark scales usually having a white tip at the anterior, which is exposed when the snake turns to face the surface outwards to stretch that surface. Venter brownish white, spotted or peppered with brown and sometimes with spots or squares. Rostral a little broader than deep; internasals about half the length of the prefrontals; latter entering the eye; frontal a little longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals; supraocular moderate, nearly half the width of the frontal; a small loreal; one preocular, one postocular and three or more suboculars, excluding the labials from the eye; temporals much elongate, 2+2; seven upper labials, seventh very large; three pairs of large chin-shields. 15 midbody rows, dorsals may be weakly keeled, anal entire.

A photo of the type form of *K. macularius* in life can be found in Hauser (2017) on page 31 at top or online at:
https://www.flickr.com/photos/herpguide/4094975909/
and:
https://www.flickr.com/photos/rushen/15360955943/
and:
https://www.flickr.com/photos/tontantravel/15765143819/

A photo of *K. tongzhoujiae sp. nov.* in life can be found in Hei (2008) in Fig. 16 (page 4 bottom).

A photo of *K. danielmannixi sp. nov.* in life can be found in black and white in Yang and Rao (2008).

A photo of *K. margaritophorus* (Jan, 1866) in life can be found in Hauser (2017) on page 30 at top.

K. margaritophorus (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) is formally split three ways in this paper.

The relevant species are *K. margaritophorus* (Jan, 1866) restricted to Thailand generally north of Phuket and Nakhon Si Thammarat (8 degrees north) as well as Laos, South Vietnam and south east Myanmar., *K. bobbottomi sp. nov.*, restricted to the Malay Peninsula south of about 8 degrees north and potentially nearby Sumatra, Indonesia and *K. evanwhittoni sp. nov.* from Hong Kong, nearby parts of China and adjacent parts of north Vietnam.

Distribution: *K. tongzhoujiae sp. nov.* from Hainan, China are known only from hilly parts of Hainan, China (mainly the southern parts of the island), where it is believed to be common and easily found. It is one of a number of endemic species from this area.

Etymology: Named in honour of Tongzhou Ji, (AKA Josie) originally from northern China, but now living in Sunbury, Victoria, Australia in recognition of her work in animal welfare, working with Snakebusters and the Victorian Dog Training Academy, doing Snake Avoidance training for dogs.

This training saves lives of both snakes and dogs and besides the animal welfare benefits, also has positive outcomes for wildlife conservation in that snakes do not get killed!.

KATRINAHOSERSERPENEA (*KATRINAHOSERSERPENEA*) *DANIELMANNIXI SP. NOV.*

LSIDurn:lsid:zoobank.org:act:CB0625EC-A1BF-4F88-AC81-A3DF1B70D7F7

Holotype: A preserved specimen at Yinbin University, China, Cuiping District, Yibin, China, specimen number: YBU17062, collected from Jingdong, Yunnan, China. This facility allows access to its holdings.

Paratype: A preserved specimen at Yinbin University, China, Cuiping District, Yibin, China, specimen number: YBU17078, collected from Jingdong, Yunnan, China.

Diagnosis: *Katrinahoserserpenea (Katrinahoserserpenea*) *macularius* (Theobold, 1868) has until now been treated as a wide-ranging species with a distribution encompassing potentially India (Darjeeling, Sikkim, West Bengal) (those records being doubted by Hauser 2017), Bangladesh, Myanmar (= Burma): Kachin, Mandalay, Mon, Shan, Tanintharyi, Yangon, Thailand (Chiang Mai), Laos (Xiangkhouang), Vietnam (Bac Kan, Cao Bang, Hai Duong, Hoa Binh, Lai Chau, Nghe An, Quang Binh, Vinh Phuc), Northern West Malaysia, South China (Yunnan, Guangxi, Guangdong, Guizhou).

However previous studies including the molecular evidence, of Wang *et al.* (2020) and Deepak *et al.* (2020), as well as the morphological evidence of Hauser (2017) have confirmed that a number of species have been lumped within this putative taxon.

Five relevant species are formally named in this paper.

The nominate form of *K. macularius* is from hilly parts of southern Myanmar and nearby western Thailand.

The newly described species are *K. tongzhoujiae sp. nov.* from Hainan, China, *K. danielmannixi sp. nov.* from Yunnan, China, *K. rodneykingi sp. nov.* from Vietnam south of the delta region of Hanoi and *K. daranini sp. nov.* from Western and northern Myanmar and *K. mcconnachiei sp. nov.* from the Isthmus of Kra, in southern Thailand.

All six preceding species are separated from the morphologically similar species *K. margaritophorus* (Jan, 1866) by the following suite of characters: Dorsal scales forming the median 7-13 rows are weakly keeled; nuchal region often with a butterfly or W-

Hoser 2020 - Australasian Journal of Herpetology 47:42-56.

shaped collar with moderate or dense speckling; intensely black blotch (IBB) usually present on the seventh (and last) supralabial (rarely absent except in *K. danielmannixi sp. nov.*); ventral shields usually more than 148; belly speckling usually dense, often large blotches are present, but the prevalence of this last character is also somewhat species dependent (see below).

By contrast *K. margaritophorus* (*sensu lato*) as defined by Hauser (2017) is diagnosed and separated from the preceding species as follows: Dorsal scales are entirely smooth (no keels); nuchal region usually with pink, cream or yellow, entire or tripartite collar or spot without fine brown speckling; IBB usually absent on the seventh supralabial (very rarely present); ventral shields usually fewer than 158; belly speckling usually sparse, in particular anteriorly (adapted from Hauser 2017).

The type form of *K. macularius* is readily separated from *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: dorsum is mainly light brown with a very slight orange tinge; scattered dark brownish-black scales are arranged into indistinct cross bands or similar and with obvious white tips at the anterior end, therefore being only visible on the outward curved side of the snake, with the white being hidden under a scale on the inward curved side of the snake. Where bands form across the body, they are more-or-less continuous, with most scales in a given row being dark and few if any lighter gap scales are present. The top of the head is greyish brown and peppered all over. Labials have white on them near the lip and if the white is prominent it is always well barred with dark brown.

K. tongzhoujiae sp. nov. is readily separated from all of *K. macularius*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by having the following unique combination of characters: Dorsum is a dark olive brown and the dark blackish-brown scales scattered on the dorsum are clustered to form a distinctive series of spots all over the dorsal surface, as opposed to cross bands. The spots are irregularly spaced. The anterior upper surface of the head is uniformly grey.

K. danielmannixi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by being generally dark brown dorsally, with dark near black scales being generally arranged in cross-bands, but these are well spaced with more lighter coloured scales between the dark ones, making the banding indistinct on the fore-body, becoming absent on the posterior end of the body and tail. The side of the head and snout, anterior to the eye are dark grey, but the upper lip has a series of 3-5 small but well-defined white triangles, with base of each on the lip and point facing up. These small triangles do not go anywhere near reaching the eye. The upper surface of the head and snout are black, other than for some brown blotches on the upper surface, these having ill defined boundaries.

The IBB on the last supralabial is absent and this scale is merely strongly peppered with grey.

K. rodneykingi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following character suite: Similar to *K. macularius* as described above, but separated from it by having a dark iris, versus light orangeish to red in *K. macularius.* The upper lip is bounded by a distinctive thick white line (sometimes yellowish) and if barring is present it is usually incomplete and/or indistinct.

The dorsum is greyish with a slight orangeish tinge. Snout is yellowish with grey peppering.

The belly of *K. rodneykingi sp. nov.* is heavily speckled with peppering and also with dark blotches, versus not so in *K. macularius.*

K. daranini sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: The dorsal side, with rows of keeled scales, is nearly completely black and shows no cross-bands of bicolored spots as seen in the other five species. A speckled, W-shaped nuchal collar typical of the other five species cannot be distinguished. On the belly there are rows of squarish, black blotches. The seventh (last) supralabial does not show a distinct IBB, but is heavily mottled with black or alternatively is completely black.

K. mcconnachiei sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. daranini sp. nov.* by possessing a distinctive W-shaped collar with two distinctive ‘tails’ extending backwards. The W-shaped collar configuration is not seen in any of the other species. Otherwise *K. mcconnachiei sp. nov.* is similar in most other respects to *K. macularius.*

The putative species *K. tamdaoensis* (Bourret, 1935) from northern Vietnam and nearby southern China is herein treated as valid and is most like *K. rodneykingi sp. nov.* as described herein (separating it from the other species as well), but *K. tamdaoensis* is separated from that species by having reduced white on the upper lip (as compared to *K. rodneykingi sp. nov.*) and a very prominent IBB on the last supralabial.

All the preceding species and *K. margaritophorus* (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) are separated from all other species within *Katrinahoserserpenea* as defined by Hoser (2012b) by having a uniform brown, yellowish brown or blue gray above with a pattern including single dark (near black) scales forming cross-bands, broken cross bands or spotting, the single dark scales usually having a white tip at the anterior, which is exposed when the snake turns to face the surface outwards to stretch that surface. Venter brownish white, spotted or peppered with brown and sometimes with spots or squares. Rostral a little broader than deep; internasals about half the length of the prefrontals; latter entering the eye; frontal a little longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals; supraocular moderate, nearly half the width of the frontal; a small loreal; one preocular, one postocular and three or more suboculars, excluding the labials from the eye; temporals much elongate, 2+2; seven upper labials, seventh very large; three pairs of large chin-shields. 15 midbody rows, dorsals may be weakly keeled, anal entire.

A photo of the type form of *K. macularius* in life can be found in Hauser (2017) on page 31 at top or online at: https://www.flickr.com/photos/herpguide/4094975909/
and:
https://www.flickr.com/photos/rushen/15360955943/
and:
https://www.flickr.com/photos/tontantravel/15765143819/

A photo of *K. tongzhoujiae sp. nov.* in life can be found in Hei (2008) in Fig. 16 (page 4 bottom).

A photo of *K. danielmannixi sp. nov.* in life can be found in black and white in Yang and Rao (2008).

A photo of *K. margaritophorus* (Jan, 1866) in life can be found in Hauser (2017) on page 30 at top.

K. margaritophorus (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) is formally split three ways in this paper.

The relevant species are *K. margaritophorus* (Jan, 1866) restricted to Thailand generally north of Phuket and Nakhon Si Thammarat (8 degrees north) as well as Laos, South Vietnam and south east Myanmar., *K. bobbottomi sp. nov.*, restricted to the Malay Peninsula south of about 8 degrees north and potentially nearby Sumatra, Indonesia and *K. evanwhittoni sp. nov.* from Hong Kong, nearby parts of China and adjacent parts of north Vietnam.

Distribution: *K. danielmannixi sp. nov.* from Hainan, China are known to occur in Yunnan, China.

Etymology: Named in honour of Daniel Mannix, of Sunbury, Victoria, Australia, formerly of Sunshine Victoria, owner of the Victorian Dog Training Academy (VDTA) in recognition of his work in animal welfare, working with Snakebusters and the Victorian Dog Training Academy, doing Snake Avoidance training for dogs. This training saves lives of both snakes and dogs and besides the animal welfare benefits, also has positive outcomes for wildlife conservation.

KATRINAHOSERSERPENEA (*KATRINAHOSERSERPENEA*) *RODNEYKINGI SP. NOV.*

LSIDurn:lsid:zoobank.org:act:B757D4F3-7D17-4965-AF1C-6F480517FD72

Holotype: A preserved specimen at the Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany, specimen number ZFMK 86446 collected from Quang Binh, Phong Nha Ke Bang National Park, Vietnam. This facility allows access to its holdings.

Paratype: A preserved specimen at the Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany, specimen number ZFMK 82925 collected from Nghe An, Vietnam.

Diagnosis: *Katrinahoserserpenea (Katrinahoserserpenea) macularius* (Theobold, 1868) has until now been treated as a wide-ranging species with a distribution encompassing potentially India (Darjeeling, Sikkim, West Bengal) (those records being doubted by Hauser 2017), Bangladesh, Myanmar (= Burma): Kachin, Mandalay, Mon, Shan, Tanintharyi, Yangon, Thailand (Chiang Mai), Laos (Xiangkhouang), Vietnam (Bac Kan, Cao Bang, Hai Duong, Hoa Binh, Lai Chau, Nghe An, Quang Binh, Vinh Phuc), Northern West Malaysia, South China (Yunnan, Guangxi, Guangdong, Guizhou).

However previous studies including the molecular evidence, of Wang *et al.* (2020) and Deepak *et al.* (2020), as well as the morphological evidence of Hauser (2017) have confirmed that a number of species have been lumped within this putative taxon.

Five relevant species are formally named in this paper.

The nominate form of *K. macularius* is from hilly parts of southern Myanmar and nearby western Thailand.

The newly described species are *K. tongzhoujiae sp. nov.* from Hainan, China, *K. danielmannixi sp. nov.* from Yunnan, China, *K. rodneykingi sp. nov.* from Vietnam south of the delta region of Hanoi and *K. daranini sp. nov.* from Western and northern Myanmar and *K. mcconnachiei sp. nov.* from the Isthmus of Kra, in southern Thailand.

All six preceding species are separated from the morphologically similar species *K. margaritophorus* (Jan, 1866) by the following suite of characters: Dorsal scales forming the median 7-13 rows are weakly keeled; nuchal region often with a butterfly or W-shaped collar with moderate or dense speckling; intensely black blotch (IBB) usually present on the seventh (and last) supralabial (rarely absent except in *K. danielmannixi sp. nov.*); ventral shields usually more than 148; belly speckling usually dense, often large blotches are present, but the prevalence of this last character is also somewhat species dependent (see below).

By contrast *K. margaritophorus* (*sensu lato*) as defined by Hauser (2017) is diagnosed and separated from the preceding species as follows: Dorsal scales are entirely smooth (no keels); nuchal region usually with pink, cream or yellow, entire or tripartite collar or spot without fine brown speckling; IBB usually absent on the seventh supralabial (very rarely present); ventral shields usually fewer than 158; belly speckling usually sparse, in particular anteriorly (adapted from Hauser 2017).

The type form of *K. macularius* is readily separated from *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: dorsum is mainly light brown with a very slight orange tinge; scattered dark brownish-black scales are arranged into indistinct cross bands or similar and with obvious white tips at the anterior end, therefore being only visible on the outward curved side of the snake, with the white being hidden under a scale on the inward curved side of the snake. Where bands form across the body, they are more-or-less continuous, with most scales in a given row being dark and few if any lighter gap scales are present. The top of the head is greyish brown and peppered all over. Labials have white on them near the lip and if the white is prominent it is always well barred with dark brown.

K. tongzhoujiae sp. nov. is readily separated from all of *K. macularius*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by having the following unique combination of characters: Dorsum is a dark olive brown and the dark blackish-brown scales scattered on the dorsum are clustered to form a distinctive series of spots all over the dorsal surface, as opposed to cross bands. The spots are irregularly spaced. The anterior upper surface of the head is uniformly grey.

K. danielmannixi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by being generally dark brown dorsally, with dark near black scales being generally arranged in cross-bands, but these are well spaced with more lighter coloured scales between the dark ones, making the banding indistinct on the fore-body, becoming absent on the posterior end of the body and tail. The side of the head and snout, anterior to the eye are dark grey, but the upper lip has a series of 3-5 small but well-defined white triangles, with base of each on the lip and point facing up. These small triangles do not go anywhere near reaching the eye. The upper surface of the head and snout are black, other than for some brown blotches on the upper surface, these having ill defined boundaries.

The IBB on the last supralabial is absent and this scale is merely strongly peppered with grey.

K. rodneykingi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following character suite: Similar to *K. macularius* as described above, but separated from it by having a dark iris, versus light orangeish to red in *K. macularius.* The upper lip is bounded by a distinctive thick white line (sometimes yellowish) and if barring is present it is usually incomplete and/or indistinct.

The dorsum is greyish with a slight orangeish tinge. Snout is yellowish with grey peppering.

The belly of *K. rodneykingi sp. nov.* is heavily speckled with peppering and also with dark blotches, versus not so in *K. macularius.*

K. daranini sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: The dorsal side, with rows of keeled scales, is nearly completely black and shows no cross-bands of bicolored spots as seen in the other five species. A speckled, W-shaped nuchal collar typical of the other five species cannot be distinguished. On the belly there are rows of squarish, black blotches. The seventh (last) supralabial does not show a distinct IBB, but is heavily mottled with black or alternatively is completely black.

K. mcconnachiei sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. daranini sp. nov.* by possessing a distinctive W-shaped collar with two distinctive ‘tails’ extending backwards. The W-shaped collar configuration is not seen in any of the other species. Otherwise *K. mcconnachiei sp. nov.* is similar in most other respects to *K. macularius.*

The putative species *K. tamdaoensis* (Bourret, 1935) from northern Vietnam and nearby southern China is herein treated as valid and is most like *K. rodneykingi sp. nov.* as described herein (separating it from the other species as well), but *K. tamdaoensis* is separated from that species by having reduced white on the upper lip (as compared to *K. rodneykingi sp. nov.*) and a very prominent IBB on the last supralabial.

All the preceding species and *K. margaritophorus* (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) are separated from all

Hoser 2020 - Australasian Journal of Herpetology 47:42-56.

other species within *Katrinahoserserpenea* as defined by Hoser (2012b) by having a uniform brown, yellowish brown or blue gray above with a pattern including single dark (near black) scales forming cross-bands, broken cross bands or spotting, the single dark scales usually having a white tip at the anterior, which is exposed when the snake turns to face the surface outwards to stretch that surface. Venter brownish white, spotted or peppered with brown and sometimes with spots or squares. Rostral a little broader than deep; internasals about half the length of the prefrontals; latter entering the eye; frontal a little longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals; supraocular moderate, nearly half the width of the frontal; a small loreal; one preocular, one postocular and three or more suboculars, excluding the labials from the eye; temporals much elongate, 2+2; seven upper labials, seventh very large; three pairs of large chin-shields. 15 midbody rows, dorsals may be weakly keeled, anal entire.

A photo of the type form of *K. macularius* in life can be found in Hauser (2017) on page 31 at top or online at:
https://www.flickr.com/photos/herpguide/4094975909/

and:
https://www.flickr.com/photos/rushen/15360955943/

and:
https://www.flickr.com/photos/tontantravel/15765143819/

A photo of *K. tongzhoujiae sp. nov.* in life can be found in Hei (2008) in Fig. 16 (page 4 bottom).

A photo of *K. danielmannixi sp. nov.* in life can be found in black and white in Yang and Rao (2008).

A photo of *K. margaritophorus* (Jan, 1866) in life can be found in Hauser (2017) on page 30 at top.

K. margaritophorus (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) is formally split three ways in this paper.

The relevant species are *K. margaritophorus* (Jan, 1866) restricted to Thailand generally north of Phuket and Nakhon Si Thammarat (8 degrees north) as well as Laos, South Vietnam and south east Myanmar., *K. bobbottomi sp. nov.*, restricted to the Malay Peninsula south of about 8 degrees north and potentially nearby Sumatra, Indonesia and *K. evanwhittoni sp. nov.* from Hong Kong, nearby parts of China and adjacent parts of north Vietnam.

Distribution: *K. rodneykingi sp. nov.* occurs in hilly parts of Vietnam south of the delta region of Hanoi.

Etymology: Named in recognition of Rodney Glen King. He was born on 2 April, 1965 at Sacramento, California, USA and died on 17 June, 2012 (aged 47) at Rialto, California, USA allegedly from drowning. His name is synonymous with unlawful acts of police violence, brutality and corruption and the public exposure of it.

On 3 March 1991, King, at the time a construction worker was beaten by Los Angeles Police Department (LAPD) officers after a high-speed chase during his arrest for allegedly drunk driving on I-210. An unconnected civilian, George Holliday, filmed the incident from his nearby balcony and sent the footage to local news station KTLA.

The footage showed an unarmed King on the ground being brutally bashed by the police officers. The incident was covered by news media around the world and caused a massive outrage among others who had been similarly bashed by police behind closed doors.

At a press conference, announcing the fourteen officers involved would be disciplined, and three would face criminal charges, Los Angeles police chief Daryl Gates said:

“We believe the officers used excessive force taking him into custody. In our review, we find that officers struck him with batons between fifty-three and fifty-six times.”

No charges were filed against the then 25-year-old King. On his release, he spoke to reporters from his wheelchair, with his injuries evident: a broken right leg in a cast, his face badly cut and swollen, bruises on his body, and a burn area to his chest where he had been jolted with a 50,000-volt stun gun. He described how he had knelt, spread his hands out, and slowly tried to move so as not to make any ‘stupid move,’ being hit across the face by a billy club and shocked.

King said he was scared for his life as the police drew down on him.

Dallas chief of police William Rathburn ordered that all police watch the video as an instructional tape on how not to behave.

Four officers were eventually tried on charges of use of excessive force. Of these, three were acquitted, and the jury failed to reach a verdict on one charge for the fourth.

Within hours of the acquittals, the 1992 Los Angeles demonstrations started.

These were sparked by outrage among racial minorities over the trial’s verdict and related, longstanding issues of endemic police corruption.

Aggressive police attacks on the peaceful protesters led to riots and the rioting ultimately lasted six days.

The end result was 63 people dead and another 2,383 injured. The demonstrations and riots ended only after the California Army National Guard, the United States Army and the United States Marine Corps provided heavily armed reinforcements to re-establish control.

As a result of the protests, the USA Federal government prosecuted a separate civil rights case, obtaining grand jury indictments of the four officers for violations of King’s civil rights. Their trial in a Federal district court ended on April 16, 1993, with two of the officers being found guilty and sentenced to serve prison terms. The other two were acquitted of the charges. In a separate civil lawsuit in 1994, the city of Los Angeles reluctantly awarded King $3.8 million in damages.

In 2012, King was found dead in his swimming pool, just two months after publishing his memoirs. Officially at least, there was no foul play involving his untimely death.

KATRINAHOSERSERPENEA (*KATRINAHOSERSERPENEA*) *DARANINI SP. NOV.*

LSIDURN:LSID:ZOOBANK.ORG:ACT:ABBF4766-7B29-4474-9405-4A107153DD7A

Holotype: A preserved specimen in the California Academy of Sciences, San Francisco, California, 94118, USA, specimen number CAS 235218, collected at an elevation of 4296 ft from Ke Har stream, Kanpetlet town, Mindat District, Chin State, Western Myanmar. Latitude 21.1220 N,, Longitude 94.0301 E. This facility allows access to its holdings.

Paratypes: Three preserved specimens in the California Academy of Sciences, San Francisco, California, 94118, USA, specimen numbers CAS 245296, 245377, 255359, collected from the same part of Western Myanmar as the holotype.

Diagnosis: *Katrinahoserserpenea* (*Katrinahoserserpenea*) *macularius* (Theobold, 1868) has until now been treated as a wide-ranging species with a distribution encompassing potentially India (Darjeeling, Sikkim, West Bengal) (those records being doubted by Hauser 2017), Bangladesh, Myanmar (= Burma): Kachin, Mandalay, Mon, Shan, Tanintharyi, Yangon, Thailand (Chiang Mai), Laos (Xiangkhouang), Vietnam (Bac Kan, Cao Bang, Hai Duong, Hoa Binh, Lai Chau, Nghe An, Quang Binh, Vinh Phuc), Northern West Malaysia, South China (Yunnan, Guangxi, Guangdong, Guizhou).

However previous studies including the molecular evidence, of Wang *et al*. (2020) and Deepak *et al*. (2020), as well as the morphological evidence of Hauser (2017) have confirmed that a number of species have been lumped within this putative taxon.

Five relevant species are formally named in this paper.

The nominate form of *K. macularius* is from hilly parts of southern Myanmar and nearby western Thailand.

The newly described species are *K. tongzhoujiae sp. nov.* from Hainan, China, *K. danielmannixi sp. nov.* from Yunnan, China, *K. rodneykingi sp. nov.* from Vietnam south of the delta region of Hanoi and *K. daranini sp. nov.* from Western and northern Myanmar and *K. mcconnachiei sp. nov.* from the Isthmus of Kra, in southern Thailand.

All six preceding species are separated from the morphologically similar species *K. margaritophorus* (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) by the following suite of characters: Dorsal scales forming the median 7-13 rows are weakly keeled; nuchal region often with a butterfly or W-shaped collar with moderate or dense speckling; intensely black blotch (IBB) usually present on the seventh (and last) supralabial (rarely absent except in *K. danielmannixi sp. nov.*); ventral shields usually more than 148; belly speckling usually dense, often large blotches are present, but the prevalence of this last character is also somewhat species dependent (see below).

By contrast *K. margaritophorus* is diagnosed and separated from the preceding species as follows: Dorsal scales are entirely smooth (no keels); nuchal region usually with pink, cream or yellow, entire or tripartite collar or spot without fine brown speckling; IBB usually absent on the seventh supralabial (very rarely present); ventral shields usually fewer than 158; belly speckling usually sparse, in particular anteriorly (adapted from Hauser 2017).

The type form of *K. macularius* is readily separated from *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: dorsum is mainly light brown with a very slight orange tinge; scattered dark brownish-black scales are arranged into indistinct cross bands or similar and with obvious white tips at the anterior end, therefore being only visible on the outward curved side of the snake, with the white being hidden under a scale on the inward curved side of the snake. Where bands form across the body, they are more-or-less continuous, with most scales in a given row being dark and few if any lighter gap scales are present. The top of the head is greyish brown and peppered all over. Labials have white on them near the lip and if the white is prominent it is always well barred with dark brown.

K. tongzhoujiae sp. nov. is readily separated from all of *K. macularius*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by having the following unique combination of characters: Dorsum is a dark olive brown and the dark blackish-brown scales scattered on the dorsum are clustered to form a distinctive series of spots all over the dorsal surface, as opposed to cross bands. The spots are irregularly spaced. The anterior upper surface of the head is uniformly grey.

K. danielmannixi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by being generally dark brown dorsally, with dark near black scales being generally arranged in cross-bands, but these are well spaced with more lighter coloured scales between the dark ones, making the banding indistinct on the fore-body, becoming absent on the posterior end of the body and tail. The side of the head and snout, anterior to the eye are dark grey, but the upper lip has a series of 3-5 small but well-defined white triangles, with base of each on the lip and point facing up. These small triangles do not go anywhere near reaching the eye. The upper surface of the head and snout are black, other than for some brown blotches on the upper surface, these having ill defined boundaries.

The IBB on the last supralabial is absent and this scale is merely strongly peppered with grey.

K. rodneykingi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following character suite: Similar to *K. macularius* as described above, but separated from it by having a dark iris, versus light orangeish to red in *K. macularius.* The upper lip is bounded by a distinctive thick white line (sometimes yellowish) and if barring is present it is usually incomplete and/or indistinct.

The dorsum is greyish with a slight orangeish tinge. Snout is yellowish with grey peppering.

The belly of *K. rodneykingi sp. nov.* is heavily speckled with peppering and also with dark blotches, versus not so in *K. macularius.*

K. daranini sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: The dorsal side, with rows of keeled scales, is nearly completely black and shows no cross-bands of bicolored spots as seen in the other five species. A speckled, W-shaped nuchal collar typical of the other five species cannot be distinguished. On the belly there are rows of squarish, black blotches. The seventh (last) supralabial does not show a distinct IBB, but is heavily mottled with black or alternatively is completely black.

K. mcconnachiei sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. daranini sp. nov.* by possessing a distinctive W-shaped collar with two distinctive ‘tails’ extending backwards. The W-shaped collar configuration is not seen in any of the other species. Otherwise *K. mcconnachiei sp. nov.* is similar in most other respects to *K. macularius.*

The putative species *K. tamdaoensis* (Bourret, 1935) from northern Vietnam and nearby southern China is herein treated as valid and is most like *K. rodneykingi sp. nov.* as described herein (separating it from the other species as well), but *K. tamdaoensis* is separated from that species by having reduced white on the upper lip (as compared to *K. rodneykingi sp. nov.*) and a very prominent IBB on the last supralabial.

All the preceding species and *K. margaritophorus* (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) are separated from all other species within *Katrinahoserserpenea* as defined by Hoser (2012b) by having a uniform brown, yellowish brown or blue gray above with a pattern including single dark (near black) scales forming cross-bands, broken cross bands or spotting, the single dark scales usually having a white tip at the anterior, which is exposed when the snake turns to face the surface outwards to stretch that surface. Venter brownish white, spotted or peppered with brown and sometimes with spots or squares. Rostral a little broader than deep; internasals about half the length of the prefrontals; latter entering the eye; frontal a little longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals; supraocular moderate, nearly half the width of the frontal; a small loreal; one preocular, one postocular and three or more suboculars, excluding the labials from the eye; temporals much elongate, 2+2; seven upper labials, seventh very large; three pairs of large chin-shields. 15 midbody rows, dorsals may be weakly keeled, anal entire.

A photo of the type form of *K. macularius* in life can be found in Hauser (2017) on page 31 at top or online at:
https://www.flickr.com/photos/herpguide/4094975909/
and:
https://www.flickr.com/photos/rushen/15360955943/
and:
https://www.flickr.com/photos/tontantravel/15765143819/

A photo of *K. tongzhoujiae sp. nov.* in life can be found in Hei (2008) in Fig. 16 (page 4 bottom).

A photo of *K. danielmannixi sp. nov.* in life can be found in black and white in Yang and Rao (2008).

A photo of *K. margaritophorus* (Jan, 1866) in life can be found in Hauser (2017) on page 30 at top.

K. margaritophorus (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) is formally split three ways in this paper.

The relevant species are *K. margaritophorus* (Jan, 1866) restricted to Thailand generally north of Phuket and Nakhon Si Thammarat (8 degrees north) as well as Laos, South Vietnam and south east Myanmar., *K. bobbottomi sp. nov.*, restricted to the Malay Peninsula south of about 8 degrees north and potentially nearby Sumatra, Indonesia and *K. evanwhittoni sp.*

nov. from Hong Kong, nearby parts of China and adjacent parts of north Vietnam.

Distribution: *K. daranini sp. nov.* occurs in hilly western parts of Myanmar, generally near the type locality region.

Etymology: *K. daranini sp. nov.* is named in honour of Dara Nin, of Ringwood, Victoria, Australia, who for more than a decade has worked with Snakebusters, Reptile Parties and Reptile Shows to educate thousands of people about wildlife and conservation as well as other important wildlife research and conservation work.

KATRINAHOSERSERPENEA (*KATRINAHOSERSERPENEA*) *MCCONNACHIEI SP. NOV.*

LSIDurn:lsid:zoobank.org:act:BC507D5A-FE66-4AD3-B998-3D8D00EB0BC6

Holotype: A preserved specimen at the Queen Saovabha Memorial Institute (QSMI) in Pathum Wan, Pathum Wan District, Bangkok 10330, Thailand, specimen number QSMI-0234, collected at Thung Song, Thailand, Latitude 8.1587 N., Longitude 99.6740 E. This facility allows access to its holdings.

Diagnosis: *Katrinahoserserpenea (Katrinahoserserpenea) macularius* (Theobold, 1868) has until now been treated as a wide-ranging species with a distribution encompassing potentially India (Darjeeling, Sikkim, West Bengal) (those records being doubted by Hauser 2017), Bangladesh, Myanmar (= Burma): Kachin, Mandalay, Mon, Shan, Tanintharyi, Yangon, Thailand (Chiang Mai), Laos (Xiangkhouang), Vietnam (Bac Kan, Cao Bang, Hai Duong, Hoa Binh, Lai Chau, Nghe An, Quang Binh, Vinh Phuc), Northern West Malaysia, South China (Yunnan, Guangxi, Guangdong, Guizhou).

However previous studies including the molecular evidence, of Wang *et al*. (2020) and Deepak *et al.* (2020), as well as the morphological evidence of Hauser (2017) have confirmed that a number of species have been lumped within this putative taxon.

Five relevant species are formally named in this paper.

The nominate form of *K. macularius* is from hilly parts of southern Myanmar and nearby western Thailand.

The newly described species are *K. tongzhoujiae sp. nov.* from Hainan, China, *K. danielmannixi sp. nov.* from Yunnan, China, *K. rodneykingi sp. nov.* from Vietnam south of the delta region of Hanoi and *K. daranini sp. nov.* from Western and northern Myanmar and *K. mcconnachiei sp. nov.* from the Isthmus of Kra, in southern Thailand.

All six preceding species are separated from the morphologically similar species *K. margaritophorus* (Jan, 1866) by the following suite of characters: Dorsal scales forming the median 7-13 rows are weakly keeled; nuchal region often with a butterfly or W-shaped collar with moderate or dense speckling; intensely black blotch (IBB) usually present on the seventh (and last) supralabial (rarely absent except in *K. danielmannixi sp. nov.*); ventral shields usually more than 148; belly speckling usually dense, often large blotches are present, but the prevalence of this last character is also somewhat species dependent (see below).

By contrast *K. margaritophorus* (*sensu lato*) as defined by Hauser (2017) is diagnosed and separated from the preceding species as follows: Dorsal scales are entirely smooth (no keels); nuchal region usually with pink, cream or yellow, entire or tripartite collar or spot without fine brown speckling; IBB usually absent on the seventh supralabial (very rarely present); ventral shields usually fewer than 158; belly speckling usually sparse, in particular anteriorly (adapted from Hauser 2017).

The type form of *K. macularius* is readily separated from *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: dorsum is mainly light brown with a very slight orange tinge; scattered dark brownish-black scales are arranged into indistinct cross bands or similar and with obvious white tips at the anterior end, therefore being only visible on the outward curved side of the snake, with the white being hidden under a scale on the inward curved side of the snake. Where bands form across the body, they are more-or-less continuous, with most scales in a given row being dark and few if any lighter gap scales are present. The top of the head is greyish brown and peppered all over. Labials have white on them near the lip and if the white is prominent it is always well barred with dark brown.

K. tongzhoujiae sp. nov. is readily separated from all of *K. macularius*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by having the following unique combination of characters: Dorsum is a dark olive brown and the dark blackish-brown scales scattered on the dorsum are clustered to form a distinctive series of spots all over the dorsal surface, as opposed to cross bands. The spots are irregularly spaced. The anterior upper surface of the head is uniformly grey.

K. danielmannixi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. rodneykingi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by being generally dark brown dorsally, with dark near black scales being generally arranged in cross-bands, but these are well spaced with more lighter coloured scales between the dark ones, making the banding indistinct on the fore-body, becoming absent on the posterior end of the body and tail. The side of the head and snout, anterior to the eye are dark grey, but the upper lip has a series of 3-5 small but well-defined white triangles, with base of each on the lip and point facing up. These small triangles do not go anywhere near reaching the eye. The upper surface of the head and snout are black, other than for some brown blotches on the upper surface, these having ill defined boundaries.

The IBB on the last supralabial is absent and this scale is merely strongly peppered with grey.

K. rodneykingi sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. daranini sp. nov.* and *K. mcconnachiei sp. nov.* by the following character suite: Similar to *K. macularius* as described above, but separated from it by having a dark iris, versus light orangeish to red in *K. macularius.* The upper lip is bounded by a distinctive thick white line (sometimes yellowish) and if barring is present it is usually incomplete and/or indistinct.

The dorsum is greyish with a slight orangeish tinge. Snout is yellowish with grey peppering.

The belly of *K. rodneykingi sp. nov.* is heavily speckled with peppering and also with dark blotches, versus not so in *K. macularius.*

K. daranini sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. mcconnachiei sp. nov.* by the following suite of characters: The dorsal side, with rows of keeled scales, is nearly completely black and shows no cross-bands of bicolored spots as seen in the other five species. A speckled, W-shaped nuchal collar typical of the other five species cannot be distinguished. On the belly there are rows of squarish, black blotches. The seventh (last) supralabial does not show a distinct IBB, but is heavily mottled with black or alternatively is completely black.

K. mcconnachiei sp. nov. is readily separated from all of *K. macularius*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov.* and *K. daranini sp. nov.* by possessing a distinctive W-shaped collar with two distinctive ‘tails’ extending backwards. The W-shaped collar configuration is not seen in any of the other species. Otherwise *K. mcconnachiei sp. nov.* is similar in most other respects to *K. macularius.*

The putative species *K. tamdaoensis* (Bourret, 1935) from northern Vietnam and nearby southern China is herein treated as valid and is most like *K. rodneykingi sp. nov.* as described herein (separating it from the other species as well), but *K. tamdaoensis* is separated from that species by having reduced white on the upper lip (as compared to *K. rodneykingi sp. nov.*) and a very prominent IBB on the last supralabial.

All the preceding species and *K. margaritophorus* (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) are separated from all other species within *Katrinahoserserpenea* as defined by Hoser (2012b) by having a uniform brown, yellowish brown or blue gray above with a pattern including single dark (near black) scales forming cross-bands, broken cross bands or spotting, the single dark scales usually having a white tip at the anterior, which is exposed when the snake turns to face the surface outwards to stretch that surface. Venter brownish white, spotted or peppered with brown and sometimes with spots or squares. Rostral a little broader than deep; internasals about half the length of the prefrontals; latter entering the eye; frontal a little longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals; supraocular moderate, nearly half the width of the frontal; a small loreal; one preocular, one postocular and three or more suboculars, excluding the labials from the eye; temporals much elongate, 2+2; seven upper labials, seventh very large; three pairs of large chin-shields. 15 midbody rows, dorsals may be weakly keeled, anal entire.

A photo of the type form of *K. macularius* in life can be found in Hauser (2017) on page 31 at top or online at:
https://www.flickr.com/photos/herpguide/4094975909/
and:
https://www.flickr.com/photos/rushen/15360955943/
and:
https://www.flickr.com/photos/tontantravel/15765143819/

A photo of *K. tongzhoujiae sp. nov.* in life can be found in Hei (2008) in Fig. 16 (page 4 bottom).

A photo of *K. danielmannixi sp. nov.* in life can be found in black and white in Yang and Rao (2008).

A photo of *K. margaritophorus* (Jan, 1866) in life can be found in Hauser (2017) on page 30 at top.

K. margaritophorus (Jan, 1866) (*sensu lato*) as defined by Hauser (2017) is formally split three ways in this paper.

The relevant species are *K. margaritophorus* (Jan, 1866) restricted to Thailand generally north of Phuket and Nakhon Si Thammarat (8 degrees north) as well as Laos, South Vietnam and south east Myanmar., *K. bobbottomi sp. nov.*, restricted to the Malay Peninsula south of about 8 degrees north and potentially nearby Sumatra, Indonesia and *K. evanwhittoni sp. nov.* from Hong Kong, nearby parts of China and adjacent parts of north Vietnam.

Distribution: *K. mcconnachiei sp. nov.* occurs on the Isthmus of Kra, in southern Thailand and potentially nearby parts of northern Peninsula Malaysia.

Etymology: *K. mcconnachiei sp. nov.* is named in honour of Scott McConnachie, of Reservoir, Victoria, Australia of the Victorian Dog Academy and Reservoir Dogs. Scott has worked with Daniel Mannix and Tongzhou Ji, (AKA Josie) originally from northern China, but both now living in Sunbury, Victoria, Australia at the Victorian Dog Training Academy (VDTA) (see elsewhere in this paper).

Scott McConnachie is recognized for his contributions to animal welfare and wildlife conservation, through his work with this author with Daniel Mannix and Tongzhou Ji doing Snake Avoidance training for dogs. This training saves lives of both snakes and dogs and besides the animal welfare benefits, also has positive outcomes for wildlife conservation in that dogs do not unnecessarily kill snakes.

KATRINAHOSERSERPENEA (*KATRINAHOSERSERPENEA*) *BOBBOTTOMI SP. NOV.*

LSIDurn:lsid:zoobank.org:act:DB43742B-D3F6-4F92-A372-18D26CB3D96A

Holotype: A preserved specimen at the Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany, specimen number ZFMK 70584 collected from north of Kuala Lumpur, Malaysia.

Paratype: A preserved female specimen of about 30 cm in total length, at the Zoological Reference Collection at the Raffles Museum of Biodiversity Research at the National University of Singapore specimen number ZRC 2.7018, collected at Punggol Island, Singapore (since moved to the Lee Kong Chian Natural History Museum in 2014). The holotype is also depicted in colour Tan and Lim (2013).

Diagnosis: Until now *Katrinahoserserpenae bobbottomi sp. nov.* of Peninsula Malaysia has been treated as a southern population of *K. margaritophorus* (Jan, 1866) (*sensu lato*) as defined by Hauser (2017).

K. evanwhittoni sp. nov. is from Hong Kong, nearby parts of China and adjacent parts of north Vietnam and has also been treated as putative *K. margaritophorus.*

K. margaritophorus (Jan, 1866) is restricted to Thailand generally north of Phuket and Nakhon Si Thammarat (8 degrees north) as well as Laos, South Vietnam and south east Myanmar.

K. bobbottomi sp. nov. is restricted to the Malay Peninsula south of about 8 degrees north and potentially nearby Sumatra, Indonesia based on nine images published on the internet at: www.flickr.com, posted "Kurt (Orionmystery) G.
See for example image at:
http://www.flickr.com/photos/orionmystery/43307992385/
taken on 9 July 2018.

K. evanwhittoni sp. nov. is known from Hong Kong, nearby parts of China and adjacent parts of north Vietnam.

All three species are most readily separated from one another on the basis of colouration.

K. bobbottomi sp. nov. (adults) are readily separated from both other species by the presence of a continuous broad orange band of at least two scales width across the back of the nape and significant white peppering of the rear upper labials. While some (aberrant) specimens of *K. margaritophorus* from Thailand may also have orange or pink across the rear of the nape it is not as brilliant as seen in *K. bobbottomi sp. nov.*, is invariably broken, or fails to go fully across the neck and the rear upper labials are not peppered with white, but are instead either grey or white, the white forming well a well defined bar or rectangle on the upper lip.

Most *K. margaritophorus* have irregularly shaped yellow or white blotches or markings across the rear of the nape.

K. evanwhittoni sp. nov. is separated from the preceding two species by having a distinctively grey head and nape, with grey upper labials to the lower point of the lip with only slight white peppering and no white on the upper lip. The spotted scales are distinctively black, versus very dark brown in the other two species. Any marking or bar across the rear of the nape is either absent or grey in colour, and therefore indistinct.

Female *K. evanwhittoni sp. nov.* have over 50 subcaudals, versus less than 50 in the other two species.

K. macularius, *K. mcconnachiei sp. nov.*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov., K. daranini sp. nov., K. tamdaoensis* (Bourret, 1935), *K. margaritophorus* (Jan, 1866), *K. bobbottomi sp. nov.* and *K. evanwhittoni sp. nov.* are separated from all other species within *Katrinahoserserpenea* as defined by Hoser (2012b) by having a uniform brown, yellowish brown or blue gray above with a pattern including single dark (near black) scales forming cross-bands, broken cross bands or spotting, the single dark scales usually having a white tip at the anterior, which is exposed when the snake turns to face the surface outwards to stretch that surface. Venter brownish white, spotted or peppered with brown and sometimes with spots or squares. Rostral a little broader than deep; internasals about half the length of the prefrontals; latter entering the eye; frontal a little longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals; supraocular moderate, nearly half the width of the frontal; a small loreal; one preocular, one postocular and three or more suboculars, excluding the labials from the eye; temporals much elongate, 2+2; seven upper labials, seventh very large ; three pairs of large chin-shields. 15 midbody rows, dorsals may be weakly keeled, anal entire.

The holotype of *K. bobbottomi sp. nov.* is also depicted in colour Tan and Lim (2013).

A photo of the type form of *K. margaritophorus* (Jan, 1866) in life (conforming with the original species description) can be found in Hauser (2017) on page 30 at top.

A photo of *K. evanwhittoni sp. nov.* in life can be found online at: https://www.biosch.hku.hk/ecolofy/hkreptiles/snake/Pareas_margaritophorus.html

Distribution: *K. bobbottomi sp. nov.* is known to occur on the Malay Peninsula south of 8 Degree North, southwards to Singapore (where it is probably introduced) and probably also on Sumatra.

Etymology: Named in honour of investigative journalist Bob (Robert) Bottom, formerly of New South Wales, Australia, but more recently of Queensland, Australia, in recognition of a stellar career exposing organised crime and political corruption in Australia, including through several best-selling books.

KATRINAHOSERSERPENEA (*KATRINAHOSERSERPENEA*) *EVANWHITTONI SP. NOV.*

LSIDurn:lsid:zoobank.org:act:5D023578-0437-43E5-8130-D27B38F551FA

Holotype: A preserved specimen at the Field Museum of Natural History, Chicago, Illinois, USA, specimen number FMNH 256973 collected at Hong Kong (China). This facility allows access to its holdings.

Paratypes: Two preserved specimens at the Natur-Museum und Forschungs-Institut Senckenberg, Frankfurt-am-Main, Germany, specimen numbers SMF 20791 and SMF 20792 collected from Hong Kong (China).

Diagnosis: Until now *Katrinahoserserpenae bobbottomi sp. nov.* of Peninsula Malaysia has been treated as a southern population of *K. margaritophorus* (Jan, 1866).

K. evanwhittoni sp. nov. is from Hong Kong, nearby parts of China and adjacent parts of north Vietnam and has also been treated as putative *K. margaritophorus.*

K. margaritophorus (Jan, 1866) is restricted to Thailand generally north of Phuket and Nakhon Si Thammarat (8 degrees north) as well as Laos, South Vietnam and south east Myanmar.

K. bobbottomi sp. nov. is restricted to the Malay Peninsula south of about 8 degrees north and potentially nearby Sumatra, Indonesia based on nine images published on the internet at: www.flickr.com, posted "Kurt (Orionmystery) G.

See for example image at: http://www.flickr.com/photos/orionmystery/43307992385/ taken on 9 July 2018.

K. evanwhittoni sp. nov. is known from Hong Kong, nearby parts of China and adjacent parts of north Vietnam.

All three species are most readily separated from one another on the basis of colouration.

K. bobbottomi sp. nov. (adults) are readily separated from both other species by the presence of a continuous broad orange band of at least two scales width across the back of the nape and significant white peppering of the rear upper labials. While some (aberrant) specimens of *K. margaritophorus* from Thailand may also have orange or pink across the rear of the nape it is not as brilliant as seen in *K. bobbottomi sp. nov.*, is invariably broken, or fails to go fully across the neck and the rear upper labials are not peppered with white, but are instead either grey or white, the white forming well a well defined bar or rectangle on the upper lip.

Most *K. margaritophorus* have irregularly shaped yellow or white blotches or markings across the rear of the nape.

K. evanwhittoni sp. nov. is separated from the preceding two species by having a distinctively grey head and nape, with grey upper labials to the lower point of the lip with only slight white peppering and no white on the upper lip. The spotted scales are distinctively black, versus very dark brown in the other two species. Any marking or bar across the rear of the nape is either absent or grey in colour, and therefore indistinct.

Female *K. evanwhittoni sp. nov.* have over 50 subcaudals, versus less than 50 in the other two species.

K. macularius, *K. mcconnachiei sp. nov.*, *K. tongzhoujiae sp. nov.*, *K. danielmannixi sp. nov.*, *K. rodneykingi sp. nov., K. daranini sp. nov., K. tamdaoensis* (Bourret, 1935), *K. margaritophorus* (Jan, 1866), *K. bobbottomi sp. nov.* and *K. evanwhittoni sp. nov.* are separated from all other species within *Katrinahoserserpenea* as defined by Hoser (2012b) by having a uniform brown, yellowish brown or blue gray above with a pattern including single dark (near black) scales forming cross-bands, broken cross bands or spotting, the single dark scales usually having a white tip at the anterior, which is exposed when the snake turns to face the surface outwards to stretch that surface. Venter brownish white, spotted or peppered with brown and sometimes with spots or squares. Rostral a little broader than deep; internasals about half the length of the prefrontals; latter entering the eye; frontal a little longer than broad, longer than its distance from the end of the snout, a little shorter than the parietals; supraocular moderate, nearly half the width of the frontal; a small loreal; one preocular, one postocular and three or more suboculars, excluding the labials from the eye; temporals much elongate, 2+2; seven upper labials, seventh very large ; three pairs of large chin-shields. 15 midbody rows, dorsals may be weakly keeled, anal entire.

The holotype of *K. bobbottomi sp. nov.* is also depicted in colour Tan and Lim (2013). A photo of the type form of *K. margaritophorus* (Jan, 1866) in life (conforming with the original species description) is in Hauser (2017) on page 30 at top.

A photo of *K. evanwhittoni sp. nov.* in life can be found online at: https://www.biosch.hku.hk/ecolofy/hkreptiles/snake/Pareas_margaritophorus.html

Distribution: *K. evanwhittoni sp. nov.* is restricted to Hong Kong and southern China and adjacent parts of north-east Vietnam.

Etymology: *K. evanwhittoni sp. nov.* is named in honour of Sydney-based Australian investigative journalist Evan Whitton, who wrote numerous best-selling books on judicial corruption.

ZILONEAR GEN. NOV.

LSIDurn:lsid:zoobank.org:act:0E81DC7B-D13E-4C90-A4C9-8AF5D907B829

Type species: *Platypteryx perroteti* Duméril, Bibron and Duméril, 1854

Diagnosis: Until now snakes within the genus *Zilonear gen. nov.* have been treated as species within the genus *Xylophis* Beddome, 1878, with a type species of *Geophis stenorhynchus* Günther, 1875.

Xylophis Beddome, 1878, is also the type species of the subfamily, Xylophiinae Deepak *et al.* (2019).

Recognition of a new family by Deepak *et al.* (2019) and a new species closely related to the most divergent species within the genus *Xylophis* as recognized as of 2020, by Deepak *et al.* (2020) led to this review of the genus-level classification and found sufficient divergence both genetically and morphologically to warrant genus-level division as done herein.

Zilonear gen. nov. species have until now been treated as *Xylophis* and would until now be diagnosed as being of this genus and in turn the entirety of the subfamily Xylophiinae.

Zilonear gen. nov. species are readily separated from *Xylophis* by having dorsal scales in 13 rows at midbody; supraocular notably larger than postocular; six or more infralabials.

By comparison *Xylophis* species have dorsal scales in 15 rows at midbody; supraocular and postocular shields subequal in size; five infralabials. Deepak *et al.* (2019), found a divergence of the two preceding genera of over 30 MYA.

Both genera are separated from all other snakes by the following unique suite of characters: Maxillary teeth 20 to 25, small and of equal size; mandibular teeth equal. Head not distinct from neck; eye small, with round pupil; nostril pierced between two small nasals; internasals small; no preocular,

loreal and prefrontal entering the eye. Body cylindrical: scales smooth in 13 or 15 rows, without apical pits; ventrals rounded. Tail short, subcaudals in two rows. Hypapophyses developed throughout the vertebral column. As a result of the preceding, the genus *Xylophis* comprises just two recognized species, namely *Xylophis stenorhynchus* (Günther, 1875) (type for genus) and *X. captaini* Gower and Winkler, 2007.

Distribution: South-west India.

Eytmology: The name *Zilonear* is wholly made up. It is a hybrid of “Xylophis” and the word “near”, or close to, with the “X” and “y”, being converted to “”Zi”, hence “*Zilonear*”.

Content: *Zilonear perroteti* (Duméril, Bibron and Duméril, 1854) (type species); *Z. mosaicus* (Deepak, Narayanan, Das, Rajkumar, Easa, Sreejith and Gower, 2000).

REFERENCES CITED

Anderson, J. 1871. On some Indian reptiles. *Proc. Zool. Soc. London* 1871:149-211.

Angel, M. F. 1920. Liste de reptiles récémment déterminés et entrés dans les collections et description d’une nouvelle espèce du genre *Amblycephalus. Bull. Mus. nation. Hist. nat., Paris* 1920:112-114.

Athreya, R. 2006. *Eaglenest Biodiversity Project (2003-2006): Conservation resources for Eaglenest wildlife sanctuary.* Kaati Trust, Pune:196 pp.

Barbour, T. 1912. Some Chinese Vertebrates: Amphibia and Reptilia. *Mem. of the Mus. of Comparative Zool.* 40(4):125-136.

Beddome, R. H. 1878. Description of a new genus of snakes of the family Calamaridae, from Southern India. *Proc. Zool. Soc. London* 1878:576.

Bourret, R. 1935a. Notes Herpétologiques sur l’Indochine Française. X. Les serpents de la station d’altitude du Tam-dao. *Bulletin Général de l’Instruction Publique* (April 1935), Hanoi:1-8.

Bourret, R. 1935b. Notes Herpétologiques sur l’Indochine Française. XI. Sur quelques recoltés en 1934. *Bulletin Général de l’Instruction Publique* (May 1935), Hanoi:1-8.

Bourret, R. 1937. Notes Herpétologiques sur l’Indochine Française. XIII. Serpents récemment récoltés au Tonkin et en Annam. *Bull. Général de l’Instruction Publique* (May 1937), Hanoi:27-36.

Bourret, R. 1939. Notes Herpétologiques sur l’Indochine Française. *Bull. Général de l’Instruction Publique*, Hanoi:5-60.

Bhupathy, S. and Sathishkumar, N. 2013. Status of reptiles in Meghamalai and its environs, Western Ghats, Tamil Nadu, India. *Journal of Threatened Taxa* 5(15):4953-4961.

Boulenger, G. A. 1890. *The Fauna of British India, Including Ceylon and Burma. Reptilia and Batrachia*. Taylor and Francis, London, UK:xviii+541 pp.

Boulenger, G. A. 1893. *Catalogue of the snakes in the British Museum* (Natural History), Vol. I. London (Taylor and Francis):448 pp.

Boulenger, G. A. 1896. *Catalogue of the Snakes in the British Museum* (Natural History), Vol. 3. British Mus., London:727 pp.

Boulenger, G. A. 1900a. Description of new reptiles and batrachians from Borneo. *Proc. Zool. Soc. of Lond.*, 69:182-187.

Boulenger, G. A. 1900b. Description of new reptiles from Perak, Malay Peninsula. *Ann. Mag. Nat. Hist.* 7 Ser. 5:306-308.

Boulenger, G. A. 1905. Descriptions of two new snakes from Upper Burma. *Bombay Natural History Society* 16:235-236.

Boulenger, G. A. 1914. Descriptions of new species of snakes in the collection of the British Museum. *Ann. Mag. Nat. Hist.* (8)14(84):482-485.

Bourret, R. 1935. Notes herpétologiques sur l’Indochine Française X. Les serpents de la station d’altitude du Tam-dao. *Bull. Gen. Instr. Pub. Hanoi* 8 (avril):259-271(1-13).

Cantor, T. E. 1839. Spicilegium serpentium indicorum [part 1]. *Proc. Zool. Soc. London* 1839:31-34.

Chan-ard, T., Parr, J. W. K. and Nabhitabhata, J. 2015. *A field guide to the reptiles of Thailand.* Oxford Uni. Press, NY, USA:352 pp.

Chew, I. S. Y. 2017. White-spotted slug snake at Portsdown Road. *Singapore Biodiversity Records* 2017:105.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh Edition). CSIRO Publishing, Collingwood, Victoria, Australia:1033 pp.

Das, A., Uttam Saikia, B. H. C. K., Murthy, S. D. and Dutta, S. K. 2009. A herpetofaunal inventory of Barail Wildlife Sanctuary and adjacent regions, Assam, north-eastern India. *Hamadryad* 34(1):117-134.

Das, I. 1996. *Biogeography of the Reptiles of South Asia*. Krieger Publishing Company, Malabar, Florida, USA.

Das, I. 2012. *A Naturalist’s Guide to the Snakes of South-East Asia: Malaysia, Singapore, Thailand, Myanmar, Borneo, Sumatra, Java and Bali.* Oxford John Beaufoy Pub.: 176 pp.

Deepak, V., Ruane, S. and Gower, D. J. 2019. A new subfamily of fossorial colubroid snakes from the Western Ghats of peninsular India. *Journ. Natural History*, 52(45-46):2919-2934.

Deepak, V., Narayanan, S., Das, S., Rajkumar, K. P., Easa, K. A., Sreejith, K. A. and Gower, D. G. 2020. Description of a new species of *Xylophis* Beddome, 1878 (Serpentes: Pareidae: Xylophiinae) from the Western Ghats, India. *Zootaxa* (PRINO) (online) 4755(2):231-250.

De Rooij, N. 1917. *The Reptiles of the Indo-Australian Archipelago: Ophidia, Vol. 2.* Hardpress Pub., Leiden:277 pp.

Dubois, A., Bauer, A. M., Ceriaco, L. M. P., Dusoulier, F., Fretey, T., Lobl, I., Lorvelec, O., Ohler, A., Stopiglia, R. and Aescht, E. 2019. The Linz Zoocode project: a set of new proposals regarding the terminology, the Principles and Rules of zoological nomenclature. First report of activities (2014-2019). *Bionomina* (online), 17:1-111.

Duméril, A. M. C., Bibron, G. and Duméril A. H. A.1854. Erpétologie générale ou Histoire Naturelle complète des Reptiles. Vol. 7 (partie 1). Paris, France:xvi+780 S.

Dunaev, E. A. and Orlova V. F. 2003. *Diversity of snakes* (on the materials of the exposition of the Zoological Museum of the Moscow State University). Moscow: Moscow State University Press, Russia:376 pp.

Figueroa, A., McKelvy, A. D., Grismer, L. L., Bell, C. D. and Lailvaux, S. P. 2016. A species-level phylogeny of extant snakes with description of a new colubrid subfamily and genus. *PLoS ONE* 11(9):e0161070.

Ganesh, S. R., Chandramouli, S. R. and Gowri Shankar, P. 2012. Record lengths of two endemic caenophidian snakes from the Western Ghats Mountains, India. *Hamadryad* 36(1):44-46.

Goris, R. C. and Maeda, N. 2004. *Guide to the Amphibians and Reptiles of Japan.* Krieger, Malabar, 285 pp.

Götz, M. 2002. The feeding behaviour of the snail-eating snake *Pareas carinatus* Wagler, 1830 (Squamata: Colubridae). *Amphibia-Reptilia*, 23:487-493.

Gower, D. J. and Winkler, J. D. 2007. Taxonomy of The Indian snake *Xylophis* Beddome (Serpentes: Caenophidia), with description of a new species. *Hamadryad* 31:(2):315-329.

Grossmann, W. and Tillack, F. 2003. On the taxonomic status of *Asthenodipsas tropidonotus* (Van Lidth de Jeude, 1923) and *Pareas vertebralis* (Boulenger, 1900) (Serpentes: Colubridae: Pareatinae). *Russian Journal of Herpetology*, 10:175-190.

Günther, A. 1858. *Catalogue of Colubrine snakes of the British Museum.* London, UK:I-XVI, 1-281.

Günther, A. 1864. *The Reptiles of British India.* Taylor and Francis, London UK:xxvii+452 pp.

Günther, A. 1875. Second report on collections of Indian Reptiles obtained by the British Museum. *Proc. Zool. Soc. London* 1875:224-234.

Guo, K. and Deng, X. 2009. A new species of *Pareas* (Serpentes: Colubridae: Pareatinae) from the Gaoligong Mountains, southwestern China. *Zootaxa* (Online) (PRINO) 2008:53-60.

Guo, Y. H. and Zhang, Q. L. 2015. Review of systematics on the Asian Snail-eating snakes. *Chinese Journal of Zoology* 50(1):153-158. [in Chinese]

Guo, Y. H., Wu, Y. K., He, S. P., Shi, H. T. and Zhao, E. M. 2011. Systematics and molecular phylogenetics of Asian snail-eating snakes (Pareatidae). *Zootaxa* (Online) (PRINO) 3001(1):57-64.

Hauser, S. 2017. On the validity of *Pareas macularius* Theobald, 1868 (Squamata: Pareidae) as a species distinct from *Pareas margaritophorus* (Jan in Bocourt, 1866). *Tropical Natural History* 17(1):25-52.

Hei, S. Y. 2008. Herping in Hainan. 6 page document posted online at: https://www.biosch.hku.hk/ecology/fpimages/ monthly/Hainan/herping%20in%20Hainan_27Aug08.pdf

Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Sydney, NSW, Australia:238 pp.

Hoser, R. T. 1991. *Endangered Animals of Australia.* Pierson and Co., Mosman, NSW, 240 pp.

Hoser, R. T. 1993. *Smuggled: The Underground Trade in Australia's Wildlife.* Apollo Publishing, Moss Vale, NSW. 160 pp.

Hoser, R. T. 1996. *Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia.* Kotabi Publishing, Doncaster, Victoria, 3108, Australia:280 pp.

Hoser, R. T. 2009. Creationism and contrived science: A review of recent python systematics papers and the resolution of issues of taxonomy and nomenclature. *Australasian Journal of Herpetology* 2:1-34. (3 February).

Hoser, R. T. 2012a. Exposing a fraud! *Afronaja* Wallach, Wüster and Broadley 2009, is a junior synonym of *Spracklandus* Hoser 2009! *Australasian Journal of Herpetology* 9 (3 April 2012):1-64.

Hoser, R. T. 2012b. A new genus of Asian snail-eating snake (Serpentes: Pareatidae). *Australasian Journal of Herpetology* 12:12-15.

Hoser, R. T. 2012c. Robust taxonomy and nomenclature based on good science escapes harsh fact-based criticism, but remains unable to escape an attack of lies and deception. *Australasian Journal of Herpetology* 14:37-64.

Hoser, R. T. 2013. The science of herpetology is built on evidence, ethics, quality publications and strict compliance with the rules of nomenclature. *Australasian Journal of Herpetology* 18:2-79.

Hoser, R. T. 2015a. Dealing with the "truth haters" ... a summary! Introduction to Issues 25 and 26 of *Australasian Journal of Herpetology.* Including "A timeline of relevant key publishing and other events relevant to Wolfgang Wüster and his gang of thieves." and a "Synonyms list". *Australasian Journal of Herpetology* 25:3-13.

Hoser, R. T. 2015b. The Wüster gang and their proposed "Taxon Filter": How they are knowinglypublishing false information, recklessly engaging in taxonomic vandalism and directly attacking the rules and stability of zoological nomenclature. *Australasian Journal of Herpetology* 25:14-38.

Hoser, R. T. 2015c. Best Practices in herpetology: Hinrich Kaiser's claims are unsubstantiated.*Australasian Journal of Herpetology* 25:39-52.

Hoser, R. T. 2015d. PRINO (Peer reviewed in name only) journals: When quality control in scientific publication fails. *Australasian Journal of Herpetology* 26:3-64.

Hoser, R. T. 2015e. Rhodin *et al.* 2015, Yet more lies, misrepresentations and falsehoods by a band of thieves intent on stealing credit for the scientific works of others. *Australasian Journal of Herpetology* 27:3-36.

Hoser, R. T, 2015f. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see *BZN* 70: 234-237; comments *BZN* 71:30-38, 133-135). (unedited version) *Australasian Journal of Herpetology* 27:37-42.

Hoser, R. T. 2016. Not a monotypic genus! *Aplopeltura boa* (Boie, 1828) divided! *Australasian J. of Herpetology* 33:42-51.

Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian Journal of Herpetology* 39:23-52.

Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian Journal of Herpetology* 39:53-63.

Hoso, M. 2017. Asymmetry of mandibular dentition is associated with dietary specialization in snail-eating snakes. *PeerJ* 5: e3011.

Hoso, M, and Hori, M. 2008. Divergent shell shape as an antipredator adaptation in tropical land snails. *American Naturalist* 172(5):726-732.

Hoso, M., Kameda. Y., Wu, S. P., Asami, T., Kato, M. and Hor, M. 2010. A speciation gene for left-right reversal in snails results in anti-predator adaptation. *Nature Communications* 1:133.

Huang, Q. Y. 2004. *Pareas macularius* Theobald, 1868 should be a junior synonym of *Pareas margaritophorus* Jan, 1866. *Sichuan Journal of Zoology*, 23:207-208 [In Chinese].

Iesa, I. 2018. A white spotted snake at Hillview Avenue. *Singapore Biodiversity Records* 2018:41.

Inger, R. F., Bradley Shaffer, H., Koshy, M. and Bakde, R. 1984. A report on a collection of amphibians and reptiles from the Ponmudi, Kerala, South India. *J. Bombay Nat. Hist. Soc.* 81(3):551-570.

Jan, G. 1866. In Bocourt, F., Notes sur les reptiles, les batraciens et les poissons recueillis pendant un voyage dans le royaume de Siam. *Nouvelles Archives Muséum Naturale Histoire*, 2(2):4-20.

Jerdon, T. C. 1865. Remarks on observations contained in Dr. Günther's work on the reptiles of British India. *Ann. Mag. Nat. Hist.* (3)15:416-418.

Jiang, Y. M. 2004. *Pareas chinensis* (Babour, 1912) should be a junior synonym of *Pareas formosensis* (Van Denburgh, 1909). *Sichuan Journal of Zoology*, 23:209-210 [In Chinese].

Kaiser, H. 2012a. SPAM email sent out to numerous recipients on 5 June 2012.

Kaiser, H. 2012b. Point of view. Hate article sent as attachment with SPAM email sent out on 5 June 2012 (actually written by Wolfgang Wüster according to a later email from Hinrich Kaiser).

Kaiser, H. 2013. The Taxon Filter, a novel mechanism designed to facilitate the relationship between taxonomy and nomenclature, vis-à-vis the utility of the Code's Article 81 (the Commission's plenary power). *Bulletin of Zoological Nomenclature* 70(4) December 2013:293-302.

Kaiser, H. 2014a. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published. *Bulletin of Zoological Nomenclature*, 71(1):30-35.

Kaiser H. 2014b. Best Practices in Herpetological Taxonomy: Errata and Addenda. *Herpetological Review*, 45(2):257-268.

Kaiser, H., Crother, B. L., Kelly, C. M. R., Luiselli, L., O'Shea, M., Ota, H., Passos, P., Schleip, W. D. and Wüster, W. 2013. Best practices: In the 21st Century, Taxonomic Decisions in Herpetology are Acceptable Only When supported by a body of Evidence and Published via Peer-Review. *Herpetological Review* 44(1):8-23.

Kelly, C. M., Barker, N. P. and Villet, M. H. 2003. Phylogenetics of advanced snakes (Caenophidia) based on four mitochondrial genes. *Systematic Biology* 52(4):439-459.

Kraus, F. and Brown, W. M. 1998. Phylogenetic relationships of colubroid snakes based on mitochondrial DNA sequences. *Zoological Journal of the Linnean Society*, 122:455-487.

Lalbiakzuala and Lalremsanga, H. T. 2019. Geographic Distribution: *Pareas margaritophorus* (White-spotted Slug-eating Snake) India: Mizoram: Lunglei District. *Herp. Review* 50(2):332.

Hoser 2020 - Australasian Journal of Herpetology 47:42-56.

Laltanpuia, T. C., Lalrinchhana, C. Lalnunsanga, L., Hmingthansanga, R., Kumari, A., Renthlei, V. Lalrintluangi, S. and Lalremsanga, H. T. 2008. Snakes (Reptilia: Serpentes) of Mizoram University Campus, Tanhril, Aizawl with notes on their identification keys. *Science Vision*, 8:112-127.

Lawson, R., Slowinski, J. B., Crother, B. I. and Burbrink, F. T. 2005. Phylogeny of the Colubroidea (Serpentes): new evidence from mitochondrial and nuclear genes. *Molecular Phylogenetics and Evolution*, 37:581-601.

Lenz, N. 2012. *Von Schmetterlingen und Donnerdrachen - Natur und Kultur in Bhutan*. Karlsruher Naturhefte 4, Naturkundemuseum Karlsruhe:124 pp.

Loredo, A. I., Wood Jr, P. L., Quah, E. S. H., Anuar, S., Greer, L. F., Ahmad, N. and Grismer, L. 2013. Cryptic speciation within *Asthenodipsas vertebralis* (Boulenger, 1900) (Squamata: Pareatidae), the description of a new species from Peninsular Malaysia, and the resurrection of *A. tropidonotus* (Lidth de Jude (sic), 1923) from Sumatra: an integrative taxonomic analysis. *Zootaxa* (online) (PRINO), 3664:505-524 .

Maki, M. 1931. Monograph of the Snakes of Japan. *Dai-ichi Shobo*, Tokyo.(1),7:240 pages.

Maki, M. 1937. A new subspecies, *Amblycephalus formosensis iwasakii*, belonging to Amblycephalidae from Ishigaki-jima. *Trans. Nat. hist. Soc. Formosa* 27:217-218.

Malkmus, R., Manthey, U., Vogel, G., Hoffmann, P. and Kosuch, J. 2002. *Amphibians and reptiles of Mount Kinabalu* (North Borneo). Koeltz Scientific Books, Rugell:404 pp.

Nguyen, S. V., Ho, C. T. and Nguyen, T. Q. 2009. *Herpetofauna of Vietnam*. Chimaira, Frankfurt, Germany:768 pp.

Ota, H., Lin, J. T., Hirata, T. and Chen, S. L. 1997. Systematic review of colubrid snakes of the genus *Pareas* in the East Asian Islands. *Journal of Herpetology*, 31:79-87.

Palot, M. J. 2015. A checklist of reptiles of Kerala, India. *Journal of Threatened Taxa* 7(13):8010-8022.

Pope, C. H. 1928. Four new snakes and a new lizard from South China. *American Museum Novitates* 325:1-4.

Pyron, R. A., Burbrink, F. T., Colli, G. R., de Oca, A. N., Vitt, L. J., Kuczynski, C. A. and Wiens, J. J. 2011. The phylogeny of advanced snakes (Colubroidea), with discovery of a new subfamily and comparison of support methods for likelihood trees. *Molecular Phylogenetics and Evolution*, 58:329-342.

Rao, D. Q. and Yang, D. T. 1992. Phylogenetic systematics of Pareatinae (Serpentes) of Southeastern Asia and adjacent islands with relationship between it and the geology changes. *Acta Zoologica Sinica*, 38:139-150. [In Chinese].

Ride, W. D. L. (*ed.*) *et al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature*. The Natural History Museum - Cromwell Road, London SW7 5BD, UK.

Ruane, S. and Austin, C. C. 2017. Phylogenomics using formalin-fixed and 100+ year-old intractable natural history specimens. *Molecular Ecology Resources*, 17(5):1003-1008.

Santhoshkumar, P. and Kannan, P. 2017. Impacts of Roads on the Mortality of Endemic Striped Narrow Headed Snake *Xylophis perroteti* (Family: Xenodermatidae) in Nilgiris, Tamil Nadu. *Russ. J. Herpetol.* 24(2):87-90.

Santhoshkumar, P. and Kannan, P. 2017. Striped Narrow-headed Snake - Diet of the endemic *Xylophis perroteti* in Nilgiris. *Zoo's Print* 32(5):22-23.

Savage, J. 2015. What are the correct family names for the taxa that include the snake genera *Xenodermus*, *Pareas*, and *Calamaria. Herpetological Review* 46(4):664-665.

Schleich, H. H. and Kästle, W. 2002. *Amphibians and Reptiles of Nepal.* Koeltz, Königstein:1,211 pp.

Sharma, R. C. 2004. *Handbook Indian Snakes*. Akhil Books, New Delhi, India:292 pp.

Smith, M. A. 1923. On a collection of reptiles and batrachians from the island of Hainan. *J. Nat. Hist. Soc. Siam* 6:195-212.

Smith, M. A. 1930. The Reptilia and Amphibia of the Malay Peninsula. *Bulletin of the Raffles Museum*, 3:1-135.

Smith, M. A. 1943. *The Fauna of British India, Ceylon and Burma, Including the Whole of the Indo-Chinese Sub-Region. Reptilia and Amphibia. 3* (*Serpentes*). Taylor and Francis, London, UK:583 pp.

Stanley, A. 1917. Two new species of Chinese snakes. *Jour. North-China Branch Royal Asiatic Soc., Shanghai*, 47[1916]:83-84.

Stejneger, L. 1910. The batrachians and reptiles of Formosa. *Proc. US Natl. Mus*. 38:91-114.

Tan, S. K. and Lim, K. K. P. 2013. White spotted slug snake on Punggol Island, Singapore, *Pareas margaritophorus. Singapore Biodiversity Record*, 2013:8.

Taylor, E. H. 1965. The serpents of Thailand and adjacent waters. *University of Kansas Science Bulletin*, 45:609-1096.

Theobald, W. 1868. Catalogue of the reptiles of British Burma, embracing the provinces of Pegu, Martaban, and Tenasserim; with descriptions of new or little-known species. *Zool. J. Linnean Soc.* 10:4-67.

Van Denburgh, J. 1909. New and previously unrecorded species of reptiles and amphibians from the island of Formosa. *Proc. Cal. Acad. Sci.* (4)3(3):49-56.

Vidal, N., Delmas, A. S., David, P., Cruaud, C., Couloux, A. and Hedges, S. B. 2007. The phylogeny and classification of caenophidian snakes inferred from seven nuclear protein-coding genes. *Comptes Rendus Biologie*, 330:182-187.

Vogel, G. 2010. On the distribution of *Pareas hamptoni* (Boulenger, 1905) in Thailand (Serpentes: Paraetinae). *Russ. J. Herpetol.* 17(3):219-222.

Vogel, G. 2015. A New Montane Species of the Genus *Pareas* Wagler, 1830 (Squamata: Pareatidae) from Northern Myanmar. *Taprobanica* 7(1):1-7.

Wall, F. 1908. Notes on a collection of snakes from the Khasi Hills, Assam. *J. Bombay nat. Hist. Soc*. 18:312-337.

Wall, F. 1909. Remarks on some little known Indian Ophidia. *Records of the Indian Museum* 3(2):145-150.

Wall, F. 1919. Notes on a collection of Snakes made in the Nilgiri Hills and the adjacent Wynaad. *Journal of the Bombay Natural History Society* 26:552-584.

Wallach, V., Williams, K. L. and Boundy, J. 2014. *Snakes of the World: A Catalogue of Living and Extinct Species*. Taylor and Francis, CRC Press, USA:1237 pp.

Wang, P., Che, J., Liu, Q., Li, K., Jin, J. Q., Jiang, K., Shi, L. and Guo, P. 2020. A revised taxonomy of Asian snail-eating snakes *Pareas* (Squamata, Pareidae): evidence from morphological comparison and molecular phylogeny. *ZooKeys* 939:45-64.

Yang, J. -H., Huang, X. -Y., Ye, J. -F., Yang, S.-P., Zhang, X. -.C. and Chan, B. P. -L. 2019. A report on the herpetofauna of Tengchong Section of Gaoligongshan National Nature Reserve, China. *Journal of Threatened Taxa* 11(11):14434-14451.

You, C., Poyarkov, N. A. and Lin, S. 2015. Diversity of the snail-eating snakes *Pareas* (Serpentes, Pareatidae) from Taiwan. *Zoologica Scripta.* 13 pp.

Zaher, H., Murphy, R. W., Arredondo, J. C., Graboski, R., Machado-Filho, P. R., Mahlow, K, *et al*. 2019. Large-scale molecular phylogeny, morphology, divergence-time estimation, and the fossil record of advanced caenophidian snakes (Squamata: Serpentes). *PLoS ONE* 14(5):e0216148.

Zhao, E. M. 2006. *The snakes of China* [in Chinese]. Hefei, China, Anhui Science and Technology Publishing House, Vol. I, 372 pp., Vol. II (color plates), 280 pp.

Zhao, E. and Adler, K. 1993. *Herpetology of China*. SSAR, Oxford/Ohio, USA:522 pp.

Ziegler, T. 2002. *Die Amphibien und Reptilien eines Tieflandfeuchtwald-Schutzgebietes in Vietnam*. Natur und Tier Verlag (Münster):342 pp.

CONFLICTS OF INTEREST - NONE

Australasian Journal of Herpetology 47:57-63.
Published 9 July 2020.

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

Four new species of frog in the genus *Assa* from eastern Australia.

LSIDURN:LSID:ZOOBANK.ORG:PUB:6A3BBABD-1FEC-47E8-B8DE-F1C370ED0FFD

RAYMOND T. HOSER
LSID urn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.
Phone: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au

Received 10 October 2018, Accepted 28 February 2020, Published 9 July 2020.

ABSTRACT

The Australian frog genus *Assa* Tyler, 1972 has been treated by all publishing authors since 1972 as monotypic for the type species *A. darlingtoni* (Loveridge, 1933), originally described as *Crinia darlingtoni.*

However an audit of the known populations in New South Wales and Queensland found them to be deeply divergent morphologically and separated by well defined biogeographic barriers of antiquity.

Therefore four new species are formally identified and named according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended online since.

Due to the limited distributions of each, all are vulnerable to extinction and increased measures to ensure the survival of each should be implemented as a matter of urgency.

Keywords: Taxonomy; amphibia; nomenclature; frog; Australia; Myobatrachidae; Queensland; New South Wales; Gautam Mukherji; Brian Champion; James Bond; Robert Ekstein*, Assa*; darlingtoni; new species; *guatammukherjii*; *brianchampioni*; *jamesbondi*; *roberteksteini.*

INTRODUCTION

The Australian frog genus *Assa* Tyler, 1972 has been treated by all publishing authors since 1972 as monotypic for the type species *A. darlingtoni (*Loveridge, 1933), originally described as *Crinia darlingtoni.*

This is a divergent genus characterised by the presence of an inguinal pouch on either side in males.

During summer, larvae in various stages, including metamorphosing individuals are found in them, as they develop from egg to small frog in these pouches (Anstis 2013).

Known populations tend to be strongly associated with Antarctic Beech *Nothofagus moorei* (Mueller, 1866) forests or similar moist high altitude rainforests.

An audit of the known populations in New South Wales and Queensland completed during a field trip to New South Wales and Queensland in 2019 found these populations to be deeply divergent morphologically and separated by well defined biogeographic barriers of antiquity.

Therefore four new species are formally identified and named according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended online since.

Due to the limited distributions of each, all are vulnerable to extinction and increased measures to ensure the survival of each should be implemented as a matter of urgency. In saying the preceding, merely outlawing private ownership of the said species as is presently the case, will not on its own ensure their survival.

MATERIALS, METHODS AND RESULTS

These are inferred in both the abstract as well as the introduction and self evident in the descriptions that follow.

Live specimens of all relevant species (named and until now unnamed) were examined both live in the wild and via museum collections and their records, including all State and Territory Museums on mainland Australia. Furthermore photos and data with accurate locality data was also assessed, as was all relevant previously published scientific literature and the so-called grey literature in the form of popular mass-market books, internet web domains, blogs, photo-sharing sites and the like.

The final results of this audit found that the species originally described as *Crinia darlingtoni* Loveridge, 1933, more recently transferred to the monotypic genus *Assa* by Tyler in 1972 is in fact at least five.

With no names available for any of the unnamed populations, four new species are formally identified and named for the first time in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended online since.

An illegal armed raid and theft of materials on 17 Aug 2011 effectively stopped the publication of a variant of this paper being published back then and a significant amount of materials taken in that raid was not returned. This was in spite of court orders telling the relevant State Wildlife officers to do so (Court of Appeal 2014, Victorian Civil and Administrative Tribunal 2015).

Rather than run the risk of species becoming threatened or extinct due to non-recognition of them as shown in Hoser (2019a, 2019b), I have instead opted to publish this paper in its current form, even though a significant amount of further data was intended to be published and is not.

Naming of taxa is perhaps the most important step in their ultimate preservation and it is with this in mind (protection of biodiversity) as to why I have chosen to publish this paper.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

There is no conflict of interest in terms of this paper or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked, as are relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal descriptions, spellings should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature.

In the unlikely event two newly named taxa are deemed conspecific by a first reviser, then the name to be used and retained is that which first appears in this paper by way of page priority and as listed in the abstract keywords.

Some material in descriptions for taxa may be repeated for other taxa in this paper and this is necessary to ensure each fully complies with the provisions of the *International Code of Zoological Nomenclature* (Fourth edition) (Ride *et al.* 1999) as amended online since.

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 5 January 2020, unless otherwise stated and was accurate in terms of the context cited herein as of that date.

Unless otherwise stated explicitly, colour descriptions apply to living adult specimens of generally good health and not under any form of stress by means such as excessive cool, heat, dehydration or abnormal skin reaction to chemical or other input.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant species has already been spelt out and/or is done so within each formal description and does not rely on material within publications not explicitly cited herein.

Each newly named species is readily and consistently separable from their nearest congener and that which until now it has been previously treated as.

Delays in recognition of these species could jeopardise the long-term survival of these taxa as outlined by Hoser (2019a, 2019b) and sources cited therein.

Therefore attempts by taxonomic vandals like the Wolfgang Wüster gang via Kaiser (2012a, 2012b, 2013, 2014a, 2014b) and Kaiser *et al.* (2013) (as frequently amended) to unlawfully suppress the recognition of these taxa on the basis they have a personal dislike for the person who formally named it/them should be resisted (Dubois *et al.* 2019).

Claims by the Wüster gang against this paper and the descriptions herein will no doubt be no different to those the gang have made previously, all of which were discredited long ago as outlined by Dubois *et al.* (2019), Hoser, (2007, 2009, 2012a, 2012b, 2013a, 2015a-f, 2019a, 2019b) and sources cited therein.

Published references of relevance to the genus *Assa* Tyler, 1972 as currently understood and relevant to the taxonomic and nomenclatural decisions within this paper include the following: Anstis (2013), Barker *et al.* (1995), Cogger (2014), Cogger *et al.* (1983), Dubois *et al.* (2019), Ehmann and Swan (1985), Eipper and Rowland (2018), Hines *et al.* (1999), Loveridge (1933), Parker (1940), Ride *et al.* (1999), Roberts and Maxon (1986), Schäuble *et al.* (2000), Tyler (1972), Vanderduys (2012), Wells and Wellington (1985) and sources cited therein.

ASSA GUATAMMUKHERJII SP. NOV.

LSIDurn:lsid:zoobank.org:act:69BBEF53-CAA8-4410-8686-E1087935E6EC

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.96797, collected at the Cedar Valley Walking Track, Cedar Creek, Gibraltar Range National Park, New South Wales, Australia, Latitude -29.4750 S., Longitude 152.333 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.96912 collected at the West Fork of Oorowin Rd, 4.0 km north of The Sugarloaf in Washpool State Forest, New South Wales, Australia, -29.3958 S., Longitude 152.3722 E.

Diagnosis: All species of the genus *Assa* Tyler, 1972 are separated from all other Australian frogs by way of the diagnosis presented by Tyler (1972) or alternatively Cogger (2014) in an abridged form at page 73.

Where each species live, they are found in high numbers and easily located by lifting surface ground cover, under which they hide, enabling specimens of both sexes to be found.

The five relevant species are all geographically allopatric and the three southern-most species seem to be associated almost exclusively with Antarctic Beech *Nothofagus moorei* (Mueller, 1866) forests.

The two northern species seem to be associated with wet sclerophyll forest at (usually) high altitude, although the species from the Conondale Range does extend to as low as 300 metres above sea level, versus more than 600 metres for all others.

The five relevant species are all variable in colour between individuals and even the relative state of the specimen in terms of day versus night, or hot versus cold, but in spite of this, they are readily distinguished from one another by colouration in males (as defined below).

Assa darlingtoni (Loveridge, 1933) from the border ranges area of New South Wales and Queensland, (Australia) including the McPherson Range, Main Range National Park and Mount Warning is readily separated from the other four species by the following suite of characters: There is a dark bar under the eye to the lip bounded by white, markings on the back are semi-distinct, however there is well defined boundary on the mid upper back where pigment lightens to form a well defined whitish line which indents anteriorly in the mid back, leaving a dark brown “mountain shape” on the back posterior to this; there are well defined bands on the dorsal surface of the upper back legs; there is no distinct line of black on the dorso-lateral line, but instead one or more broken areas of black peppering or irregular spotting.

Assa guatammukherjii sp. nov. is the taxon from the Gibralter Range in New South Wales, Australia and is separated from the other four species by the following suite of characters: There are very prominent markings on the back, including two blackish chevrons across the back, with light brown between them. There is also a distinct unbroken line of black on the dorso-lateral line. There are well defined bands on the dorsal surface of the upper back legs. There is a well defined black (as opposed to any other colour) line running from below the eye, down to the lip.

Assa brianchampioni sp. nov. from the Dorrigo Plateau area of New South Wales, Australia is separated from the other four species by the following suite of characters: Indistinct markings on body and the dark bar under the eye is absent or indistinct; white spots or marks on upper and lower labial area are prominent. There are orange spots on dorsal surface of the upper hind legs.

Assa jamesbondi; *sp. nov.* from the Conondale Range, in the Sunshine Coast hinterland, Queensland, Australia is readily separated from the other four species by the following suite of characters: Indistinct dorsal markings, including an indistinct dark bar under the eye and obvious orange spotting around the lips and on front limbs; there are no obvious markings on the dorsum of the upper back legs, save for scattered orange spots and obvious orange blotches on the dorsal surface of the lower hind limbs. There is no distinct line of black on the dorso-lateral line. Flanks are brownish-greyish-black with a somewhat broken ridge of lighter brown on the margin between the flank and the dorsum.

Assa robertekssteini sp. nov. from the D'Aguilar Range north west of the Brisbane City centre, including Mount Glorious, in Queensland, Australia, is similar in most respects to *Assa jamesbondi*; *sp. nov.* but with semidistinct markings on middle of back and no orange spots on forelimbs. Brown upper flanks have no black on the margin with dorsum and there is little markings of any sort delineating the boundary between the lateral and dorsal surfaces. There is prominent white spotting on the lips. There are indistinct dark or light markings on the upper surfaces of the upper hind legs.

Females of each species (above) are similar in that the demarcation between upper flank and dorsal surface is bounded by a well-defined dark line, which on the lower serface fades into the lighter colour of the venter, either suddenly and well defined, or alternatively by way of streaking, spotting or otherwise fading. Patterning in adult females varies significantly and may include similar markings to the males or alternatively a pattern generally including a dark mid-dorsal area and light on the sides of the back, often bold in nature.

Assa darlingtoni (Loveridge, 1933) in life is depicted in Cogger (2014) on page 73 (two images), Vanderduys (2012) on page 133 and Anstis (2013) on pages 527 (except far right), 528, 529 and 531 (left).

Assa guatammukherjii sp. nov. in life is depicted at:

https://www.flickr.com/photos/23031163@N03/38440057655/in/photolist-21yPkUK-2cTcvxu-99fzrX

and

https://www.flickr.com/photos/reptileshots/45868003902/in/photolist-21yPkUK-2cTcvxu-99fzrX/

and

https://www.flickr.com/photos/stephenmahony/5344230197/in/photolist-21yPkUK-2cTcvxu-99fzrX/

Assa brianchampioni sp. nov. in life is depicted in Anstis (2013) on page 526 (far right) and online at:

https://www.flickr.com/photos/ryanfrancis/24546774504/in/photolist-Dp7CS5-EdB8xF

and

https://www.flickr.com/photos/ryanfrancis/25084209441/in/photolist-Dp7CS5-EdB8xF/

Assa jamesbondi; *sp. nov.* in life is depicted online at:

https://www.flickr.com/photos/reptileshots/38477704112/in/photolist-21C9hTA-PZup5z

and:

https://www.flickr.com/photos/44269129@N05/31499349141/in/photolist-21C9hTA-PZup5z/

Assa robertekssteini sp. nov. in life is depicted online at:

https://www.flickr.com/photos/129794304@N02/29857633724/in/photolist-Muqbhm-MZMmMu

and:

https://www.flickr.com/photos/129794304@N02/30189944790/in/photolist-Muqbhm-MZMmMu/

Distribution: *Assa guatammukherjii sp. nov.* is only known from the Gibralter Range in New South Wales, Australia, where it is usually found within Antarctic Beech *Nothofagus moorei* (Mueller, 1866) forests.

Etymology: Named in honour of Gautam Mukherji a Melbourne, Australia based barrister for services to wildlife conservation, including dealing with anti-conservation-minded criminals, reptile thieves and trademark infringing thieves in court proceedings. These police-protected criminals have sought to undermine the valuable conservation work of the Snakebusters and Reptile Party teams purely for their own financial self-gratification.

Members of the cohort also have criminal track records including crimes such as theft, sex offences, child sex offences, (all of which they have been convicted of), vexatious litigation, copyright fraud, trademark infringement, misleading and deceptive conduct in business (a serious criminal offence) and other activities that have caused untold destruction and damage to the wildlife conservation cause and society in general. At times in his role as barrister in legal proceedings, Gautam Mukherji has been one of the main objects holding back and preventing yet more damage being caused by some of these evil individuals.

ASSA BRIANCHAMPIONI SP. NOV.

LSIDurn:lsid:zoobank.org:act:4B2808EB-5E3B-4101-A358-94215422ECA3

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.145797, collected about 2 km west of Never Never Picnic Area, on Dome Road in Dorrigo National Park, New South Wales, Australia, Latitude -30.3561 S., Longitude 152.7867 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.145771, collected about 2 km west of Never Never Picnic Area, on Dome Road in Dorrigo National Park, New South Wales, Australia, Latitude -30.3561 S., Longitude 152.7867 E.

Diagnosis: All species of the genus *Assa* Tyler, 1972 are separated from all other Australian frogs by way of the diagnosis presented by Tyler (1972) or alternatively Cogger (2014) in an abridged form at page 73.

Where each species occurs, they are found in high numbers and easily located by lifting surface ground cover, under which they hide, enabling specimens of both sexes to be found.

The five relevant species are all geographically allopatric and the three southern-most species seem to be associated almost exclusively with Antarctic Beech *Nothofagus moorei* (Mueller, 1866) forests.

The two northern species seem to be associated with wet sclerophyll forest at (usually) high altitude, although the species from the Conondale Range does extend to as low as 300 metres above sea level, versus more than 600 metres for all others.

The five relevant species are all variable in colour between individuals and even the relative state of the specimen in terms of day versus night, or hot versus cold, but in spite of this, they are readily distinguished from one another by colouration in males (as defined below).

Assa darlingtoni (Loveridge, 1933) from the border ranges area of New South Wales and Queensland, (Australia) including the McPherson Range, Main Range National Park and Mount Warning is readily separated from the other four species by the following suite of characters: There is a dark bar under the eye to the lip bounded by white, markings on the back are semi-distinct, however there is well defined boundary on the mid upper back where pigment lightens to form a well defined whitish line which indents anteriorly in the mid back, leaving a dark brown "mountain shape" on the back posterior to this; there are well defined bands on the dorsal surface of the upper back legs; there is no distinct line of black on the dorso-lateral line, but instead one or more broken areas of black peppering or irregular spotting.

Assa guatammukherjii sp. nov. is the taxon from the Gibralter Range in New South Wales, Australia and is separated from the other four species by the following suite of characters: There are very prominent markings on the back, including two blackish chevrons across the back, with light brown between them. There is also a distinct unbroken line of black on the dorso-lateral line. There are well defined bands on the dorsal surface of the upper back legs. There is a well defined black (as opposed to any other colour) line running from below the eye, down to the lip.

Assa brianchampioni sp. nov. from the Dorrigo Plateau area of New South Wales, Australia is separated from the other four species by the following suite of characters: Indistinct markings on body and the dark bar under the eye is absent or indistinct; white spots or marks on upper and lower labial area are prominent. There are orange spots on dorsal surface of the upper hind legs.

Assa jamesbondi; *sp. nov.* from the Conondale Range, in the Sunshine Coast hinterland, Queensland, Australia is readily separated from the other four species by the following suite of characters: Indistinct dorsal markings, including an indistinct dark bar under the eye and obvious orange spotting around the lips and on front limbs; there are no obvious markings on the dorsum of the upper back legs, save for scattered orange spots and obvious orange blotches on the dorsal surface of the lower hind limbs. There is no distinct line of black on the dorso-lateral line. Flanks are brownish-greyish-black with a somewhat broken ridge of lighter brown on the margin between the flank and the dorsum.

Assa roberteksteini sp. nov. from the D'Aguilar Range north west of the Brisbane City centre, including Mount Glorious, in Queensland, Australia, is similar in most respects to *Assa jamesbondi*; *sp. nov.* but with semidistinct markings on middle of back and no orange spots on forelimbs. Brown upper flanks have no black on the margin with dorsum and there is little markings of any sort delineating the boundary between the lateral and dorsal surfaces. There is prominent white spotting on the lips. There are indistinct dark or light markings on the upper surfaces of the upper hind legs.

Females of each species (above) are similar in that the demarcation between upper flank and dorsal surface is bounded by a well-defined dark line, which on the lower serface fades into the lighter colour of the venter, either suddenly and well defined, or alternatively by way of streaking, spotting or otherwise fading. Patterning in adult females varies significantly and may include similar markings to the males or alternatively a pattern generally including a dark mid-dorsal area and light on the sides of the back, often bold in nature.

Assa darlingtoni (Loveridge, 1933) in life is depicted in Cogger (2014) on page 73 (two images), Vanderduys (2012) on page 133 and Anstis (2013) on pages 527 (except far right), 528, 529 and 531 (left).

Assa guatammukherjii sp. nov. in life is depicted online at:

https://www.flickr.com/photos/23031163@N03/38440057655/in/photolist-21yPkUK-2cTcvxu-99fzrX

and

https://www.flickr.com/photos/reptileshots/45868003902/in/photolist-21yPkUK-2cTcvxu-99fzrX/

and

https://www.flickr.com/photos/stephenmahony/5344230197/in/photolist-21yPkUK-2cTcvxu-99fzrX/

Assa brianchampioni sp. nov. in life is depicted in Anstis (2013) on page 526 (far right) and online at:

https://www.flickr.com/photos/ryanfrancis/24546774504/in/photolist-Dp7CS5-EdB8xF

and

https://www.flickr.com/photos/ryanfrancis/25084209441/in/photolist-Dp7CS5-EdB8xF/

Assa jamesbondi; *sp. nov.* in life is depicted online at:

https://www.flickr.com/photos/reptileshots/38477704112/in/photolist-21C9hTA-PZup5z

and

https://www.flickr.com/photos/44269129@N05/31499349141/in/photolist-21C9hTA-PZup5z/

Assa roberteksteini sp. nov. in life is depicted online at:

https://www.flickr.com/photos/129794304@N02/29857633724/in/photolist-Muqbhm-MZMmMu

and

https://www.flickr.com/photos/129794304@N02/30189944790/in/photolist-Muqbhm-MZMmMu/

Distribution: *Assa brianchampioni sp. nov.* is only known from the Dorrigo Plateau area, in New South Wales, Australia where it is strongly associated with Antarctic Beech *Nothofagus moorei* (Mueller, 1866) forests.

Etymology: Named in honour of Brian Champion of near Parramatta, (Sydney), New South Wales, Australia in recognition of his contributions to herpetology in Australia spanning some decades, including through captive breeding various species such as Green Pythons *Chondropython viridis*.

ASSA JAMESBONDI SP. NOV.

LSIDurn:lsid:zoobank.org:act:A8D1156E-6121-48D4-9247-4E7C2751ACDF

Holotype: A preserved male specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J86637, collected at Bundaroo Creek, Conondale National Park, Queensland, Australia, Latitude -26.6958 S., Longitude 152.6119 E.

This government-owned facility allows access to its holdings.

Paratypes: 1/ A preserved male specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J86635, collected at South Booloumba Creek, Conondale Forest Reserve, Queensland, Australia, Latitude -26.7122 S., Longitude 152.6189 E.

2 and 3/ Two preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J34334 and J34335 collected from Kondalilla, Queensland, Australia, Latitude Latitude -26.7 S., Longitude 152.9 E.

Diagnosis: All species of the genus *Assa* Tyler, 1972 are separated from all other Australian frogs by way of the diagnosis presented by Tyler (1972) or alternatively Cogger (2014) in an abridged form at page 73.

Where each species occurs, they are found in high numbers and easily located by lifting surface ground cover, under which they hide, enabling specimens of both sexes to be found.

The five relevant species are all geographically allopatric and the three southern-most species seem to be associated almost exclusively with Antarctic Beech *Nothofagus moorei* (Mueller, 1866) forests.

The two northern species seem to be associated with wet sclerophyll forest at (usually) high altitude, although the species from the Conondale Range does extend to as low as 300 metres above sea level, versus more than 600 metres for all others.

The five relevant species are all variable in colour between individuals and even the relative state of the specimen in terms of day versus night, or hot versus cold, but in spite of this, they are readily distinguished from one another by colouration in males (as defined below).

Assa darlingtoni (Loveridge, 1933) from the border ranges area of New South Wales and Queensland, (Australia) including the McPherson Range, Main Range National Park and Mount Warning is readily separated from the other four species by the following suite of characters: There is a dark bar under the eye to the lip bounded by white, markings on the back are semi-distinct, however there is well defined boundary on the mid upper back where pigment lightens to form a well defined whitish line which indents anteriorly in the mid back, leaving a dark brown "mountain shape" on the back posterior to this; there are well defined bands on the dorsal surface of the upper back legs; there is no distinct line of black on the dorso-lateral line, but instead one or more broken areas of black peppering or irregular spotting.

Assa guatammukherjii sp. nov. is the taxon from the Gibralter Range in New South Wales, Australia and is separated from the other four species by the following suite of characters: There are very prominent markings on the back, including two blackish chevrons across the back, with light brown between them. There is also a distinct unbroken line of black on the dorso-lateral line. There are well defined bands on the dorsal surface of the upper back legs. There is a well defined black (as opposed to any other colour) line running from below the eye, down to the lip.

Assa brianchampioni sp. nov. from the Dorrigo Plateau area of New South Wales, Australia is separated from the other four species by the following suite of characters: Indistinct markings on body and the dark bar under the eye is absent or indistinct; white spots or marks on upper and lower labial area are prominent. There are orange spots on dorsal surface of the upper hind legs.

Assa jamesbondi; *sp. nov.* from the Conondale Range, in the Sunshine Coast hinterland, Queensland, Australia is readily separated from the other four species by the following suite of characters: Indistinct dorsal markings, including an indistinct dark bar under the eye and obvious orange spotting around the lips and on front limbs; there are no obvious markings on the dorsum of the upper back legs, save for scattered orange spots and obvious orange blotches on the dorsal surface of the lower hind limbs. There is no distinct line of black on the dorso-lateral line. Flanks are brownish-greyish-black with a somewhat broken ridge of lighter brown on the margin between the flank and the dorsum.

Assa robertekstein sp. nov. from the D'Aguilar Range north west of the Brisbane City centre, including Mount Glorious, in Queensland, Australia, is similar in most respects to *Assa jamesbondi*; *sp. nov.* but with semidistinct markings on middle of back and no orange spots on forelimbs. Brown upper flanks have no black on the margin with dorsum and there is little markings of any sort delineating the boundary between the lateral and dorsal surfaces. There is prominent white spotting on the lips. There are indistinct dark or light markings on the upper surfaces of the upper hind legs.

Females of each species (above) are similar in that the demarcation between upper flank and dorsal surface is bounded by a well-defined dark line, which on the lower serface fades into the lighter colour of the venter, either suddenly and well defined, or alternatively by way of streaking, spotting or otherwise fading. Patterning in adult females varies significantly and may include similar markings to the males or alternatively a pattern generally including a dark mid-dorsal area and light on the sides of the back, often bold in nature.

Assa darlingtoni (Loveridge, 1933) in life is depicted in Cogger (2014) on page 73 (two images), Vanderduys (2012) on page 133 and Anstis (2013) on pages 527 (except far right), 528, 529 and 531 (left).

Assa guatammukherjii sp. nov. in life is depicted online at: https://www.flickr.com/photos/23031163@N03/38440057655/in/photolist-21yPkUK-2cTcvxu-99fzrX

and

https://www.flickr.com/photos/reptileshots/45868003902/in/photolist-21yPkUK-2cTcvxu-99fzrX/

and

https://www.flickr.com/photos/stephenmahony/5344230197/in/photolist-21yPkUK-2cTcvxu-99fzrX/

Assa brianchampioni sp. nov. in life is depicted in Anstis (2013) on page 526 (far right) and online at:

https://www.flickr.com/photos/ryanfrancis/24546774504/in/photolist-Dp7CS5-EdB8xF

and

https://www.flickr.com/photos/ryanfrancis/25084209441/in/photolist-Dp7CS5-EdB8xF/

Assa jamesbondi; *sp. nov.* in life is depicted online at:

https://www.flickr.com/photos/reptileshots/38477704112/in/photolist-21C9hTA-PZup5z

and

https://www.flickr.com/photos/44269129@N05/31499349141/in/photolist-21C9hTA-PZup5z/

Assa robertekstein sp. nov. in life is depicted online at:

https://www.flickr.com/photos/129794304@N02/29857633724/in/photolist-Muqbhm-MZMmMu

and

https://www.flickr.com/photos/129794304@N02/30189944790/in/photolist-Muqbhm-MZMmMu/

Distribution: *Assa jamesbondi sp. nov.* is only known from the Conondale Range and nearby areas west of the Sunshine Coast urban areas in south-east Queensland, Australia.

Etymology: Named in honour of James Bond of Park Road in Park Orchards, Victoria, Australia where he has lived for decades in recognition of the huge amount of logistical work he has done over many years to assist the wildlife research, education and conservation work of the team at Snakebusters: Australia's best reptile shows.

ASSA ROBERTEKSTEINI SP. NOV.

LSIDurn:lsid:zoobank.org:act:E6D1869A-5186-41BB-8558-CF759AE430D4

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J51584, collected at 1 km south of the junction of Tennison Woods Mountain Road and Wivenhoe Highway, in the D'Aguilar National Park, Queensland, Australia, Latitude -26.6958 S., Longitude 152.6119 E. This government-owned facility allows access to its holdings.

Diagnosis: All species of the genus *Assa* Tyler, 1972 are separated from all other Australian frogs by way of the diagnosis presented by Tyler (1972) or alternatively Cogger (2014) in an abridged form at page 73.

Where each species lives, they are found in high numbers and easily located by lifting surface ground cover, under which they hide, enabling specimens of both sexes to be found.

The five relevant species are all geographically allopatric and the three southern-most species seem to be associated almost exclusively with Antarctic Beech *Nothofagus moorei* (Mueller, 1866) forests.

The two northern species seem to be associated with wet sclerophyll forest at (usually) high altitude, although the species from the Conondale Range does extend to as low as 300 metres above sea level, versus more than 600 metres for all others.

The five relevant species are all variable in colour between individuals and even the relative state of the specimen in terms of day versus night, or hot versus cold, but in spite of this, they are readily distinguished from one another by colouration in males (as defined below).

Assa darlingtoni (Loveridge, 1933) from the border ranges area of New South Wales and Queensland, (Australia) including the McPherson Range, Main Range National Park and Mount Warning is readily separated from the other four species by the following suite of characters: There is a dark bar under the eye to the lip bounded by white, markings on the back are semi-distinct, however there is well defined boundary on the mid upper back where pigment lightens to form a well defined whitish line which indents anteriorly in the mid back, leaving a dark brown "mountain shape" on the back posterior to this; there are well defined bands on the dorsal surface of the upper back legs; there is no distinct line of black on the dorso-lateral line, but instead one or more broken areas of black peppering or irregular spotting.

Assa guatammukherjii sp. nov. is the taxon from the Gibralter Range in New South Wales, Australia and is separated from the other four species by the following suite of characters: There are very prominent markings on the back, including two blackish chevrons across the back, with light brown between them. There is also a distinct unbroken line of black on the dorso-lateral line. There are well defined bands on the dorsal surface of the upper back legs. There is a well defined black (as opposed to any other colour) line running from below the eye, down to the lip.

Assa brianchampioni sp. nov. from the Dorrigo Plateau area of New South Wales, Australia is separated from the other four species by the following suite of characters: Indistinct markings on body and the dark bar under the eye is absent or indistinct; white spots or marks on upper and lower labial area are prominent. There are orange spots on dorsal surface of the upper hind legs.

Assa jamesbondi; *sp. nov.* from the Conondale Range, in the Sunshine Coast hinterland, Queensland, Australia is readily separated from the other four species by the following suite of characters: Indistinct dorsal markings, including an indistinct dark bar under the eye and obvious orange spotting around the lips and on front limbs; there are no obvious markings on the dorsum of the upper back legs, save for scattered orange spots and obvious orange blotches on the dorsal surface of the lower hind limbs. There is no distinct line of black on the dorso-lateral line. Flanks are brownish-greyish-black with a somewhat broken ridge of lighter brown on the margin between the flank and the dorsum.

Assa robertekssteini sp. nov. from the D'Aguilar Range north west of the Brisbane City centre, including Mount Glorious, in Queensland, Australia, is similar in most respects to *Assa jamesbondi*; *sp. nov.* but with semidistinct markings on middle of back and no orange spots on forelimbs. Brown upper flanks have no black on the margin with dorsum and there is little markings of any sort delineating the boundary between the lateral and dorsal surfaces. There is prominent white spotting on the lips. There are indistinct dark or light markings on the upper surfaces of the upper hind legs.

Females of each species (above) are similar in that the demarcation between upper flank and dorsal surface is bounded by a well-defined dark line, which on the lower serface fades into the lighter colour of the venter, either suddenly and well defined, or alternatively by way of streaking, spotting or otherwise fading. Patterning in adult females varies significantly and may include similar markings to the males or alternatively a pattern generally including a dark mid-dorsal area and light on the sides of the back, often bold in nature.

Assa darlingtoni (Loveridge, 1933) in life is depicted in Cogger (2014) on page 73 (two images), Vanderduys (2012) on page 133 and Anstis (2013) on pages 527 (except far right), 528, 529 and 531 (left).

Assa guatammukherjii sp. nov. in life is depicted online at:

https://www.flickr.com/photos/23031163@N03/38440057655/in/photolist-21yPkUK-2cTcvxu-99fzrX

and

https://www.flickr.com/photos/reptileshots/45868003902/in/photolist-21yPkUK-2cTcvxu-99fzrX/

and

https://www.flickr.com/photos/stephenmahony/5344230197/in/photolist-21yPkUK-2cTcvxu-99fzrX/

Assa brianchampioni sp. nov. in life is depicted in Anstis (2013) on page 526 (far right) and online at:

https://www.flickr.com/photos/ryanfrancis/24546774504/in/photolist-Dp7CS5-EdB8xF

and

https://www.flickr.com/photos/ryanfrancis/25084209441/in/photolist-Dp7CS5-EdB8xF/

Assa jamesbondi; *sp. nov.* in life is depicted online at:

https://www.flickr.com/photos/reptileshots/38477704112/in/photolist-21C9hTA-PZup5z

and

https://www.flickr.com/photos/44269129@N05/31499349141/in/photolist-21C9hTA-PZup5z/

Assa robertekssteini sp. nov. in life is depicted online at:

https://www.flickr.com/photos/129794304@N02/29857633724/in/photolist-Muqbhm-MZMmMu

and

https://www.flickr.com/photos/129794304@N02/30189944790/in/photolist-Muqbhm-MZMmMu/

Distribution: *Assa robertekssteini sp. nov.* is only known from the D'Aguilar Range, including Mount Glorious in south-east Queensland, Australia.

Etymology: Named in honour of Robert Ekstein of Forestville (Sydney) in New South Wales, Australia for numerous services to assist this author and the team at Snakebusters: Australia's best reptile shows to aid the wildlife conservation, education and research activities undertaken.

ASSA SPECIES CONSERVATION.

While all five species in the genus *Assa* Tyler, 1972 are found in wildlife conservation areas and do not appear to have declined in number since European settlement of Australia, more than 200 years ago, none can be described as being particularly secure into the future.

If the Australian government persists with its "Big Australia Policy", (see for example Saunders 2019), that being a long-term aim to increase the human population in Australia to over 100 million people by year 2150 (from the present 25 million as of 2019), all sorts of unforseen threats to the survival of these species may emerge.

Due to unforseen potential threats I recommend further research on the relevant species and including means to identify likely potential threats.

These may include direct human activities (e.g. land clearing for homes, agriculture, etc), as well as potential threats caused by changed vegetation regimes, fires and fire management, introduced pests and potential pathogens, including those introduced via the legal importation of foreign reptiles and amphibians by government-owned zoos and associated entities. Added to the preceding are global issues such as global warming, caused principally by global overpopulation of humans as detailed in Hoser (1991), which if it occurs as predicted in the taboid media, may also reduce habitat for the relevant species as available habitat becomes hotter and potentially drier and wholly unsuitable for all five species.

This is not an abstract concept in this case as historically, the genus must have had a continuous distribution through its current range, which has receded at least in the interglacial period at lower altitude areas simply because they are too warm and dry for them.

Due to the risk of unforseen calamity, like the manner Chytrid fungus (*Batrachochytrium dendrobatidis*) decimated populations of frogs in the 1970's to 1990's in Australia (Greshko 2018), it would be prudent for captive populations of all five species in the genus to be established and maintained by government-finded zoos and any other interested parties willing to put time, money and effort into such a project.

REFERENCES CITED

Anstis, M. 2013. *Tadpoles and frogs of Australia*. Reed / New Holland, Sydney, Australia:829 pp.

Barker, J., Grigg, G. C. and Tyler, M. J. 1995. *A Field Guide to Australian Frogs*. Surrey Beatty and Sons, New South Wales.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh Edition). CSIRO Publishing, Collingwood, Victoria, Australia:1033 pp.

Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia* (*1*) *Amphibia and Reptilia*, Australian Government Publishing Service, Canberra, ACT, Australia:319 pp.

Court of Appeal Victoria. 2014. *Hoser v Department of*

Sustainability and Environment [2014] VSCA 206 (5 Sep. 2014).

Dubois, A., Bauer, A. M., Ceriaco, L. M. P., Dusoulier, F., Fretey, T., Lobl, I., Lorvelec, O., Ohler, A., Stopiglia, R. and Aescht, E. 2019. The Linz Zoocode project: a set of new proposals regarding the terminology, the Principles and Rules of zoological nomenclature.First report of activities (2014-2019). *Bionomina* (online), 17:1-111.

Ehmann, H. and Swan, G. 1985. 'Reproduction and development in the marsupial frog, *Assa darlingtoni* (Myobatrachidae, Anura).' *Biology of Australasian Frogs and Reptiles*. Grigg, G., Shine, R. and Ehmann, H. (eds.), Royal Zoological Society New South Wales, Australia:279-285.

Eipper, S. and Rowland, P. 2018. *A Naturalist's Guide to the Frogs of Australia.* John Beaufoy Publishing, Oxford, UK:176 pp.

Greshko, M. 2018 Ground Zero of Amphibian 'Apocalypse' Finally Found. National Geographic, online at: https://www.nationalgeographic.com/news/2018/05/amphibians-decline-frogs-chytrid-fungi-bd-animals-science/

Hines, H., Mahony, M. and McDonald, K. 1999. An assessment of frog declines in wet subtropical Australia. in *Declines and Disappearances of Australian Frogs*. Campbell, A. (ed.), Environment Australia, Canberra:44-63.

Hoser, R. T. 1989. *Australian Reptiles and Frogs.* Pierson and Co., Sydney, NSW, Australia:238 pp.

Hoser, R. T. 2007. Wells and Wellington - It's time to bury the hatchet. *Calodema* Supplementary Paper 1:1-9.

Hoser, R. T. 2009. Creationism and contrived science: A review of recent python systematics papers and the resolution of issues of taxonomy and nomenclature. *Australasian Journal of Herpetology* 2:1-34. (3 February).

Hoser, R. T. 2012a. Exposing a fraud! *Afronaja* Wallach, Wüster and Broadley 2009, is a junior synonym of *Spracklandus* Hoser 2009! *Australasian Journal of Herpetology* 9 (3 April 2012):1-64.

Hoser, R. T. 2012b. Robust taxonomy and nomenclature based on good science escapes harsh fact-based criticism, but remains unable to escape an attack of lies and deception. *Australasian Journal of Herpetology* 14:37-64.

Hoser, R. T. 2013. The science of herpetology is built on evidence, ethics, quality publications and strict compliance with the rules of nomenclature. *Australasian Jour. of Herp.* 18:2-79.

Hoser, R. T. 2015a. Dealing with the "truth haters" ... a summary! Introduction to Issues 25 and 26 of *Australasian Journal of Herpetology*. Including "A timeline of relevant key publishing and other events relevant to Wolfgang Wüster and his gang of thieves." and a "Synonyms list". *Australasian Journal of Herpetology* 25:3-13.

Hoser, R. T. 2015b. The Wüster gang and their proposed "Taxon Filter": How they are knowingly publishing false information, recklessly engaging in taxonomic vandalism and directly attacking the rules and stability of zoological nomenclature. *Australasian Journal of Herpetology* 25:14-38.

Hoser, R. T. 2015c. Best Practices in herpetology: Hinrich Kaiser's claims are unsubstantiated. *Australasian Journal of Herpetology* 25:39-64.

Hoser, R. T. 2015d. PRINO (Peer reviewed in name only) journals: When quality control in scientific publications fails. *Australasian Journal of Herpetology* 26:3-64.

Hoser, R. T. 2015e. Rhodin *et al.* 2015, Yet more lies, misrepresentations and falsehoods by a band of thieves intent on stealing credit for the scientific works of others. *Australasian Journal of Herpetology* 27:3-36.

Hoser, R. T, 2015f. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see *BZN* 70: 234-237; comments *BZN* 71:30-38, 133-135). *Australasian Journal of Herpetology* 27:37-54.

Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian Journ. of Herpetology* 39:23-52.

Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian Jour. of Herp.* 39:53-63.

Kaiser, H. 2012a. SPAM email sent out to numerous recipients on 5 June 2012.

Kaiser, H. 2012b. Point of view. Hate article sent as attachment with SPAM email sent out on 5 June 2012.

Kaiser, H. 2013. The Taxon Filter, a novel mechanism designed to facilitate the relationship between taxonomy and nomenclature, vis-à-vis the utility of the Code's Article 81 (the Commission's plenary power). *Bulletin of Zoological Nomenclature* 70(4) December 2013:293-302.

Kaiser, H. 2014a. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published. *Bulletin of Zoological Nomenclature*, 71(1):30-35.

Kaiser H. 2014b. Best Practices in Herpetological Taxonomy: Errata and Addenda. *Herpetological Review*, 45(2):257-268.

Kaiser, H., Crother, B. L., Kelly, C. M. R., Luiselli, L., O'Shea, M., Ota, H., Passos, P., Schleip, W. D. and Wüster, W. 2013. Best practices: In the 21st Century, Taxonomic Decisions in Herpetology are Acceptable Only When supported by a body of Evidence and Published via Peer-Review. *Herpetological Review* 44(1):8-23.

Loveridge, Á. 1933. Four new crinine frogs from Australia. *Occasional papers of the Boston Society of Natural History* 8:55-60.

Mueller, F. J. H. von 1866. Fragmenta Phytographiae Australiae. 5:109.

Parker, H. W. 1940. The Australasian frogs of the family Leptodactylidae. *Novit. Zool.*, 42(1) :1-106.

Ride, W. D. L. (*ed.*) *et al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature*. The Natural History Museum - Cromwell Road, London SW7 5BD, UK.

Roberts, J. D. and Maxson, L. R. 1986. Phylogenetic-Relationships in the Genus *Limnodynastes* (Anura, Myobatrachidae) - a Molecular Perspective. *Australian Journal of Zoology*, 34(4):561-573.

Saunders, S. 2019. Morrison and Shorten's Big Australia: The overpopulation problem. News article published 17 April 2019 and downloaded from:

https://independentaustralia.net/politics/politics-display/morrison-and-shortens-big-australia-the-overpopulation-problem,12584

Schäuble, C. S., Moritz, C. and Slade, R. W. 2000. A Molecular Phylogeny for the Frog Genus *Limnodynastes* (Anura: Myobatrachidae). *Molecular Phylogenetics and Evolution*, 16(3):379-391.

Tyler, M. J. 1972. A new genus for the Australian Leptodactylid frog *Crinia Darlingtoni. Zool. Mededelingen* 47(15):194-201.

Vanderduys, E. 2012. *Field guide to the frogs of Queensland.* CSIRO, Collingwood, Victoria, Australia:192 pp.

Victorian Civil and Administrative Tribunal (VCAT). 2015. *Hoser v Department of Environment Land Water and Planning* (Review and Regulation) [2015] VCAT 1147 (30 July 2015, judgment and transcript).

Wells, R. W. and Wellington, C. R. 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology, Supplementary Series*, (1):1-61.

CONFLICTS OF INTEREST

None.

Australasian Journal of Herpetology

ISSUE 47, PUBLISHED 9 JULY 2020

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)