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*Litotescincus martinekae sp. nov.* from 2.5 km east of Tooradin, Victoria.
Photo: Raymond Hoser.

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## Contents




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# *Antaresia* (Pythonidae), Taxonomy and Nomenclature: Fixing up errors and oversights including that *Antaresia maculosa peninsularis* Esquerre *et al*. 2021 is a junior synonym of *A. maculosa brentonoloughani* Hoser, 2003. ICZN Code Rule of Priority applies (Article 23).

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## ABSTRACT

Since Hoser (2003) formally named the so-called Blonde Spotted Python as *A. maculosa brentonoloughani* numerous others have conducted research into the genus confirming the taxonomy and nomenclature of Hoser (2003, 2004, 2009) and the earlier Hoser (2000), being the definitive recent works on the taxonomy of the genus.

Significantly in 2021, renegade reptile hobbyist Damien Esquerre and friends published molecular corroboration of the earlier papers of Hoser with respect of the genus *Antaresia* Wells and Wellington, 1984.

In an act of egregious taxonomic vandalism they renamed *A. maculosa brentonoloughani* Hoser, 2003 as *Antaresia maculosa peninsularis* Esquerre *et al*. 2021.

Through websites their cohort control, including "The Reptile Database" at: http://www.reptile-database.org/, as well as via next-level "search engine optimisation" (SEO) they have aggressively promoted their new name since April 2021, which fails to comply with the *International Code of Zoological Nomenclature* (including each of Articles 8, 9 and 23) and is therefore not available in zoological nomenclature.

Simultaneously they have aggressively suppressed the ability of others to even locate the correct ICZN name *A. maculosa brentonoloughani.*

To counteract this unscientific activity, this paper cites Article 23 of *the International Code of Zoological Nomenclature* (Ride *et al.* 1999) (the Code), being the rule of priority to formally synonymise *A. maculosa peninsularis* with the correct ICZN name *A. maculosa brentonoloughani* without the need to invoke other sections of the Code rendering the later nomen effectively unavailable.

The taxon to which the name *A. papuensis* Esquerre *et al.,* 2021 was applied is also effectively unnamed because of non-compliance with the Code.

However to satisfy the urge of Esquerre *et al*. to be able to claim to have "discovered" a species of snake (as per their many thousands of tweets and the like), it is not renamed herein, so as to allow Esquerre *et al*. a chance to fix their nomenclatural mess, best satisfied by republication in a Code compliant manner.

In line with Hoser (1989) and other later publications of Hoser, Esquerre *et al*. (2021) also found the Kimberley population of putative *A. childreni* to be distinct from all others in Australia.

By oversight this population has not been formally named by anyone, even though Hoser (1989) recognized it as unique and divergent.

Esquerre *et al*. (2021) decided to synonymise it with *A. childreni* (Gray, 1842), in what is believed to be a taxonomic error and so is herein named according to the Code as *A. kimberleyae sp. nov*..

**Keywords:** Snakes; taxonomy; nomenclature; Australia; Queensland; Northern Territory, New South Wales; Queensland; Western Australia; Pythons; Children's Python; Spotted python; Ant-hill python; blonde spotted python; *Antaresia*; *stimsoni*; *perthensis*; *saxacola*; *campbelli*; *maculosa*; *childreni*; *brentonoloughani*; *papuensis*; taxonomic vandalism; *peninsularis*; new species; *kimberleyae.*

**INTRODUCTION**

There have been numerous major publications over the past 40 years dealing with the taxonomy and nomenclature of the so-called Children's Pythons, genus *Antaresia* Wells and Wellington ,1984.

Between them Cogger (1975, 2000, 2014), Cogger *et al*. (1983), Hoser (1981a-c, 1982, 1988, 1989, 1991b, 1993b, 1994, 1995, 1999a-d, 2000, 2003, 2004, 2009, 2012a-c) and Wells and Wellington (1983, 1984) have set out the relevant taxonomies, available names and synonymies.

Relevant herein has been the formal recognition of *Antaresia perthensis* Stull, 1932 as a valid species (then placed in the genus *Liasis* Gray, 1842), first done in recent times by Hoser (1981). Prior to that publishing authors such as Cogger (1975) had synonymised it with *A. childreni* (Gray, 1842) which was a consensus position in Australian herpetology at the time.

Wells and Wellington (1984) and again in a second paper dated 1985, in the first major revision of the taxonomy of Australian herpetofauna, erected the genus *Antaresia* for the so-called Children's Pythons, including the Ant-hill Python, being *A. perthensis* and at the same time named a species, *A. saxacola* with a type locality of Barrow Creek in the Northern Territory.

They recognized the tropical snakes as *A. childreni* and the east coast spotted ones as *A. maculosa* (Peters, 1873).

A year later in 1986 Smith renamed the putative species from arid Australia as "*A. stimsoni* Smith, 1985" based on material from Western Australia.

The paper was published in 1986, but backdated a year to try to claim priority over *A. saxacola*, by Wells and Wellington the year prior.

Since then, most Australian herpetologists have recognized the species as first delineated by Wells and Wellington in 1984 and 1985, but for which they have publicly been given zero credit for.

The three main species, being *A. maculosa*, for the spotted East Australian forms (generally called Spotted Pythons), *A. stimsoni* or Stimson's Pythons for all the well-marked specimens from arid parts of Australia and *A. childreni* for the so-called Children's Pythons from the top end of the Northern Territory and Kimberley district have formed the cornerstone of the classification of the genus ever since, with the now widely recognized *A. perthensis* seen as an outlier in the group, based on its significantly different morphology and body size.

*A. perthensis* was placed in the subgenus *Rawlingspython* by Hoser (2009), affirmed by Hoser in (2012).

Wells and Wellington have both contended since 1985, that their *A. saxacola* was of a different species to *A. stimsoni* and so while publicly protesting acts of taxonomic vandalism against other taxa named by them, they have been content to let *A. stimsoni* be the name of choice for all the arid zone snakes pending later revalidation of their allegedly different form *A. saxacola.*

Other taxonomic acts and events relevant to the genus were as follows:

1/ The naming of a second western Australian population of *A. stimsoni* as *A. stimsoni orientalis* by Smith in his same paper of 1986, backdated to 1985 (both placed in *Liasis* at the time).

The subspecies has been rarely recognized as distinct since that date.

2/ Cogger (2000) formally adopted use of the name *Antaresia* for the relevant snakes, being the general precursor for the name being accepted as correct within Australia.

3/ Hoser (2000) treated *A. saxacola* as a senior synonym of *A. stimsoni*, consistent in all subsequent papers by the same author to present and also formally named as a subspecies the western New South Wales population, as *A. saxacola campbelli* Hoser, 2000.

4/ Hoser (2003) formally named the so-called Blonde Spotted Pythons from far north Queensland as *A. maculosa brentonoloughnani*, a designation rapidly accepted within the hobbyist and breeder community, but generally not adopted in printed material such as books, which instead simply continued to refer to them as "blonde macs" due mainly to the actions of Wolfgang Wüster and his cohort as detailed by Hoser (2009, 2012a-c, 2013, 2015a-f, 2017 2019a-b) and Hawkeswood (2021).

5/ Adoption of the Wells and Wellington and Hoser taxonomies and nomenclature was hampered by a series of at least three failed applications to the ICZN by Wolfgang Wüster and his gang of thieves to formally suppress the names proposed by the three authors (Hoser 2007, ICZN 1991, 2001, 2021).

While the applications all ultimately failed, the Wüster gang deliberately gave the impression to others that the names would be ruled invalid by the ICZN as per Shine (1987), Shea (1987) and Rhodin *et al.* (2015), detailed by Hoser (2015a-f, 2019a-b, 2021), Wellington (2015) and Hawkeswood (2021) and so many publishing authors were cautious and simply avoided using the correct ICZN names.

The intent of the applications by Wolfgang Wüster and his cohort was always stated as being to enable them to steal "name authority" for the same taxa. See for example Kaiser (2012a, 2012b, 2013) and Kaiser *et al*. (2013), the latter and Kaiser (2012b) being a document actually written by Wüster himself as stated by Kaiser (2012a), where he explicitly states he is not a co-author of a document that a year later had the heading amended to bear his name as the lead author.

In terms of the relevant Hoser names, they were subject of an ICZN Application by Rhodin *et al*. (2015), which the authors said superseded their claims in Kaiser *et al.* (2013) which ultimately failed (ICZN 2021).

That is the ICZN ruled all Hoser names were available for nomenclature.

This final outcome is significant in terms of what follows.

6/ Also in published in 2021, was a summary of a study of the genus *Antaresia* by Esquerré, Donnellan, PavónVázqueza, Fenkera and Scott Keogh (2021), which had some molecular data. This paper renamed *A. maculosa brentonoloughnani* as *A. maculosa peninsularis* in line with the dishonest edicts of the Wüster gang, not to cite works of Hoser or Wells and Wellington (see the explicit instruction in Kaiser *et al*. (2013) or much the same in Rhodin *et al*. (2015), even though all the most substantive features of the paper were effectively lifted directly from these earlier authors.

In an act of plagiarism, Esquerré *et al*. (2021) made a point of not citing or acknowledging the essential earlier works of Wells and Wellington (1984, 1985) or Hoser (1981a-c, 1982, 1988, 1989, 1991b, 1993b, 1995, 1999a-d, 2000, 2003, 2004, 2009, 2012a-c).

7/ Esquerré *et al*. (2021) also formally named the New Guinea *Antaresia* as *A. papuensis* based on a newly obtained specimen. That this taxon was a different species had been known for many years and it was the absence of material that had delayed its formal description by anyone else, including both Wells and Wellington or Hoser.

8/ That Esquerré *et al*. (2021) had published the new synonym name *A. maculosa peninsularis* in anticipation of an ICZN ruling against the works of Hoser including Hoser (2003), giving their name priority over any later ones, was confirmed by the stated submission date to their journal of 2 December 2020 and an alleged publication date of 21 April 2021, which predated the publication of the ICZN ruling in favour of Hoser's publications by some 9 days (30 April 2022).

9/ *A. maculosa brentonoloughnani* Hoser, 2003 with a Zoobank registration of:

LSIDurn:lsid:zoobank.org:act:78D58A61-6FE9-40BA-9137-C6057DDD75FB

has a holotype of specimen number R16772 at the Australian Museum, Sydney, Australia, type locality being 16 km east of Coen, Queensland (Lat. 13° 55' S, Long. 143° 11' E).

*A. maculosa peninsularis* was published in the online PRINO (peer reviewed in name only) journal *Molecular Phylogenetics*

*and Evolution.*

It was confirmed as an online only journal on the first page of the pdf for the 19 page paper, which reads "Available online 21 April 2021". The document citation and header, does not have page numbers as would be the case in a printed paper, instead reading as follows:

"*Molecular Phylogenetics and Evolution* 161 (2021) 107181"

The latter number cannot be any relevant page numbers in some forthcoming printed document, as it does not match a document of 19 pages.

The holotype for their alleged new subspecies was written as "Holotype. SAMA R12797 (female), collected at Cooktown, Queensland, Australia (15.47◦S; 142.25◦E) by H. Ehmann in November 1971."

Cooktown is proximal to Coen and as seen on Fig 3, of page 7 of Esquerré *et al*. (2021), these authors have identified the two type forms as being of one and the same subspecies.

**NON COMPLIANCE WITH THE INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE BY ESQUERRE *ET AL*. 2021 AND ALSO ESQUERRE *ET AL*. 2020.**

In terms of the recent acts by Esquerré *et al*. (2021) the following is important:

1/ The *International Code of Zoological Nomenclature* (Ride *et al.* 1999) (The Code), states in the preamble:

"*Priority of publication is a basic principle of zoological nomenclature*"

In the rules themselves there is **Article 23**, which says:

***"Article 23. Principle of Priority***

***23.1. Statement of the Principle of Priority. The valid name of a taxon is the oldest available name applied to it."***

Because *A. maculosa brentonoloughnani* with a Zoobank registration of:

LSIDurn:lsid:zoobank.org:act:78D58A61-6FE9-40BA-9137-C6057DDD75FB

and with a holotype of specimen number R16772 at the Australian Museum, Sydney, Australia, type locality being 16 km east of Coen, Queensland (Lat. 13° 55' S, Long. 143° 11' E), has an 18 year date priority over *A. maculosa peninsularis* that is the name that must be applied to this taxon.

2/ On the basis of the preceding, I hereby formally synonymise *A. maculosa peninsularis* with *A. maculosa brentonoloughnani* Hoser, 2003, with *A. maculosa brentonoloughnani* hereby being the only correct available name and valid name for the taxon.

3/ As of 27 May 2022, the name *A. maculosa peninsularis* was not registered with Zoobank (at: http://www.zoobank.org/), the ICZN repository for new names.

Under the ICZN's amendment to the Code, published online, Zoobank registration is mandatory for new names published electronically.

In any event the publication of Esquerré *et al*. (2021) violates Article 9.9 of the "*Amendment of Articles 8, 9, 10, 21 and 78 of the International Code of Zoological Nomenclature to expand and refine methods of publication*" as published online at:

https://www.mapress.com/zootaxa/2012/f/zt03450p007.pdf.

in 2012 (ICZN 2012), making their new name *A. maculosa peninsularis* unavailable for nomenclature.

The same applies for their other new name *A. papuensis* also unavailable for nomenclature.

4/ The preceding also applies almost in identical form for the coined name *Nawaran* Esquerré, Donnellan, Brennan, Lemmon, Lemmon, Zaher, Grazziotin and Keogh, 2020, which they alleged had a type species of "*Nictophylopython oenpelliensis* Gow 1977" (sic) or "*Python oenpelliensis* Gow, 1977".

That genus name is an objective junior synonym of *Nyctophilopython* Wells and Wellington, 1985, with the same type species of *Python oenpelliensis* Gow, 1977, so on that basis is unavailable for zoological nomenclature for this taxon, relying again on Article 23 of the Code.

13/ Once again, Esquerré *et al.* (2020) had published a rubbish paper without Zoobank registration in a PRINO online journal without Zoobank registration, making the publication and name in violation of Article 9.9 of the "*Amendment of Articles 8, 9, 10, 21 and 78 of the International Code of Zoological Nomenclature to expand and refine methods of publication*" as published online at:

https://www.mapress.com/zootaxa/2012/f/zt03450p007.pdf.

in 2012 (ICZN 2012), making their new name *Nawaran* further unavailable for nomenclature.

5/ In terms of putative *A. papuensis* it would be easy for me to rush to print and erect a new name for the taxon, to claim "name authority", but to do so would be arguably unethical. This is exactly the sort of thing Wolfgang Wüster and the gang do regularly, and for me to be seen to be doing the same, would drag me down to their low level of egregious behaviour.

6/ So as to allow Damien Esquerré to satisfy his urge to have "discovered" a new species (evidenced by the many thousands of boastful twitter posts himself and his cohort made in April 2021), I instead make it known his errors and suggest he fix up the nomenclature of his "new species" in order to make the name available for use in zoological nomenclature. This clearly and self-evidently includes by way of proper Zoobank Registration for his next online incursion into taxonomy.

He and his co-authors will be sent copies of this paper shortly after publication in hard copy and/or via email.

**THE OTHER *ANTARESIA* SPECIES**

While most of what Esquerré *et al*. (2021) was not in itself new, they did in effect publish a molecular corroboration of what had been known for decades.

Significantly they did also show with their new-found, taxpayer funded, molecular data the following:

1/ *Antaresia perthensis* diverged from other *Antaresia* by their estimate between 5 and 10 MYA, confirming that the Hoser (2009) sub-genus level separation into *Rawlingspython* was correct.

2/ *Antaresia saxacola* as originally described by Wells and Wellington (1985) was a separate entity to "*A. stimsoni* Smith, 1985". While Esquerré *et al*. decided to lump all bar the *A. maculosus* group and *A. perthensis* into the synonymy of *A. childreni*, they could have easily gone the opposite way and split in line with the six clades they identified in their Fig 3 on page 7, which were identified as "the six identified genetic populations (K) for the *childreni* / *stimsoni* dataset, sorted by clade".

The decision to lump taxa was allegedly driven by evidence of admixture between populations at the margins of distribution and populations intersecting.

However in reality it was probably more deeply driven by a desire to not be forced to recognize taxa formally identified and named in the first instance by Wells and Wellington (1984, 1985) as set out in Hoser (2007) and ICZN (1991, 2001) and the taxa of Hoser (2000, 2003) as set out in Kaiser (2012a, 2012b, 2013), Kaiser *et al*. (2013) and detailed in Hoser (2012a, 2012b, 2013, 2015a-f, 2019a-b).

While Esquerré *et al*. (2021) alleged admixture of all populations of putative "*A. stimsoni*" and "*A. childreni*" at the edges of each population, giving rise to the decision to synonymise all forms into *A. childreni*, the decision to treat *A. maculosa* as separate must be further called into question bearing in mind captive hybridisation and wild hybridisation between both *A. maculosa* and putative "*A. stimsoni*" from eastern Australia has been known for years. See for example Eipper and Eipper (2019), who in their relatively small book refer to hybridisation between the two species in the wild twice.

3/ Putative *A. saxacola campbelli* with a centre of distribution in the Western Murray/Darling Basin and nearby ranges to the immediate west was also shown to be distinct, with potential for elevation to full species.

4/ A suspected taxon on western lower Cape York was flagged as distinct, but for the time being is herein left unnamed.

5/ The authors confirmed at species level, the divergence of the Eastern Cape York population formally named by Hoser in 2003 as detailed already (see above), asserting that *A. maculosa brentonoloughnani* Hoser, 2003 (which they misidentified as *A. maculosa peninsularis*) diverged from their nearest relative (type *A. maculosa*) somewhere between 1.47 and 3.15 MYA, which is clearly a species-level divergence .

6/ The authors confirmed, what had long been known in that New Guinea *Antaresia* were of a different species to the Australian ones (see above). Their name is not ICZN Code compliant, meaning the taxon currently remains effectively unnamed.

7/ There was insufficient evidence to recognise *A. stimsoni orientalis* Smith, 1986 as a valid subspecies, which has been agreed with herein.

8/ The morphologically divergent Kimberley population identified as distinct by Hoser (1989), was identified as such by Esquerré *et al*. (2021) with minimal admixture of genetic material from outside.

With that in mind, and the relevant comments in Hoser (2020), based on a potentially similar situation with regards to the taxonomy of closely related forms as outlined in that paper, I revisited earlier publications and specimens with a view to naming this as a potential new taxon.

**MATERIALS AND METHODS**

Inspection of original descriptions of all *Antaresia* species or subspecies was undertaken.

This in turn was combined with relevant morphological and molecular studies that have been published including estimated dates of divergence and reconciliation of these with biogeographical and climatic events and changes.

The known distributions were matched with known biogeographical barriers and areas of likely absence, to confirm that given populations were or were not interbreeding.

Finally relevant specimens, living, dead or from photos with good quality location data was inspected to confirm consistent differences and included determination whether or not the Kimberley form of putative *A. childreni* was distinct at either the species or subspecies level.

Literature relevant to the taxonomy and nomenclature of the Kimberley form of putative *A. childreni*

included Boulenger (1893), Cogger (1975, 2000, 2014, Cogger *et al.* (1983), Esquerre *et al*. (2012), Gray (1842), Hoser (1981b, 1988, 1989, 1991b, 1992, 1993b, 1994, 1995, 1999a-d, 2000, 2003, 2004, 2009, 2012b, 2020), ICZN (1991, 2001, 2021), Eipper and Eipper (2019), Kluge (1963), O'Shea *et al*. (2004), Peters (1873), Ride *et al.* (1999), Smith (1986), Stull (1932), Wells and Wellington (1984, 1985) and sources cited therein.

The vast body of literature that merely rehashes what is published in the preceding books or papers is not cited or necessary in terms of this paper, but is mentioned as this body of literature is huge and I do not wish to be accused of failing to consult the relevant literature or plagiarising some uncited source.

However I note that based on past performances the Wolfgang Wüster gang will lie about this sort of thing anyway (see Hoser 2015a-f for example).

**RESULTS**

Based my field observations of a distinct break between each of putative *A. childreni* from the Northern Territory, *A. stimsoni* from the Pilbara and Great Sandy Desert, and then the Kimberley form of putative *A. childeni*, derived from more than 50 years of working with the relevant taxa, I had no hesitation in giving putative *A. childreni* from the Kimberley district of Western Australia full taxonomic recognition.

The only question was whether or not this should be in terms of being a species or subspecies.

Notwithstanding the decision of Esquerré *et al*. (2021) to synonymise all putative *A. childreni* with *A. stimsoni* which I disagree with, I find that on the same evidence, the divergence of the relevant populations (1 to 1.5 MYA) is sufficiently strong and ancient as to warrant formal description as a full species.

The decision is also made in line of the significant morphological divergence of the relevant forms.

I note that there are no pre-existing names for the relevant taxon.

Both *A. childreni* (Gray, 1842) and *Nardoa gilberti* Gray, 1842 are of the Northern Territory variant of *A. childreni*, making neither name available for the Kimberley population, with that taxon restricted to this area. All of *A. stimsoni* (Smith, 1986) , *A. stimsoni orientalis* (Smith, 1986) and *A. saxacola* Wells and Wellington, refer to different putative taxa from the arid zone of central-west Australia, with *A. campbelli* Hoser, 2003, referring to a taxon from the arid zone of eastern Australia.

The species *A. maculosus* (Peters, 1873) type specimen is from Mackay, Queensland, being south of the Burdekin Gap, making it not applicable to the Kimberley taxon.

North of the Burdekin Gap (i.e. about Townsville and north), north of which on the coast is *A. brentonoloughani* (Hoser, 2003), herein elevated to a full species and restricted to the eastern Cape York region. The name *A. peninsularis* Esquerre *et al*. (2012), is a synonym of *A. brentonoloughani* and therefore not a valid name under Article 23 of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999, as amended online in 2012, via ICZN 2012). In any event, it breaches Article 9.9 of the Code, and therefore is an unavailable name also.

The name *A. papuensis* Esquerre *et al*. (2021) applies to the New Guinea taxon only and in any event was also published in breach of Article 9.9 of the Code, and therefore is not an available name.

A photo of *A. brentonoloughani* in life from the type locality is depicted online at:
https://www.inaturalist.org/observations/84723997
and clearly matches the relevant images for putative "*A. maculosus peninsularis* Esquerre *et al*. (2012)", the invalid junior synonym.

Because the Kimberley taxon, currently being treated as a population of *A. childreni* is taxonomically divergent and distinct, and there is no available name, it is formally described below according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999, as amended online in 2012, via ICZN 2012) as a new species, being *Antaresia kimberleyae sp. nov.*

**INFORMATION RELEVANT TO THE FORMAL DESCRIPTION THAT FOLLOWS**

In terms of the description that follows, the following should be noted:

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, spelling 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).

This includes if gender assignment of relevant suffix seems incorrect, Latinisation is wrong, apparent spelling mistakes and so on (see Article 32.5.1 of the Code).

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 27 May 2022 (including if also viewed prior), unless otherwise stated and was accurate in terms of the content cited herein as of that date.

Any online citations within this paper, including copied emails and the like, are not necessarily cited in the references part of this paper and have the same most recent viewing date as just given.

Unless otherwise stated explicitly, colour and other descriptions

apply to living and **fully mature adult specimens** of generally good health, as seen by day, 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 species has already been spelt out and/or is done so within the formal description and does not rely on material within publications not explicitly cited herein.

***ANTARESIA KIMBERLEYAE SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:CE83292D-52F5-4964-8CBE-8E28C5370DC5**

**Holotype:** A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number WAM R60694 collected from the Mitchell Plateau, in Western Australia, Australia, Latitude 14.8026° S., Longitude 125.8232° E.

This government owned facility allows access to its holdings.

**Description of holotype:** In life it is depicted in Smith (1985) in figure 1 at the top of page 259.

**Paratype:** A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number WAM R60677 collected from the Mitchell Plateau, in Western Australia, Australia, Latitude 14.8026° S., Longitude 125.8232° E.

**Diagnosis:** *Antaresia kimberleyae sp. nov.*, from the Kimberley district of Western Australia, treated until now as a variant of the Children's Python, *Antaresia childreni* Gray, 1842, from the tropics between western Cape York, Queensland in the east and the far east Kimberley in Western Australia in the west is most easily separated from that taxon by having smaller dark spots or blotches on the dorsal surface, than seen in type *A. childreni.* If these are counted in a line slightly left or right of the mid dorsal line, running from the nape to the body posteriorly to the pelvic girdle, there are more than 100 in *A. kimberleyae sp. nov.* (usually about 110 in most specimens, with N = 10), versus less than 100, (usually about 88 in most specimens, with N = 10).

Some specimens in both *A. kimberleyae sp. nov.* (commonly) and *A. children* (uncommonly) may appear faded in patterning to make the dorsal pattern hard to detect, especially in aged specimens, where fading occurs, a situation also seen in *A. perthensis* Stull, 1932, examples of which are published in Hoser (1989) at page 191.

The iris of *A. kimberleyae sp. nov.* is a strong reddish-orange colour, versus beige, yellowish or orange-tinged in *A. childreni.* The upper labials of *A. kimberleyae sp. nov.* while lightish in colour are not an immaculate cream or white as is the case in *A. childreni.*

*A. kimberleyae sp. nov.* also has a head that is relatively shorter in length in adults than in *A. childreni.* In *A. childreni* it is 2.3 times as long as wide (N = 10), versus 2 times as long as wide in *A. kimberleyae sp. nov.* (N = 10).

The shape of the head is also different in both species. In *A. kimberleyae sp. nov.* the narrowing from back of head to snout is more-or-less even, including as one moves just posterior to the eye in a forward direction. By contrast in *A. childreni* the head narrows significantly just posterior to the eye moving in an anterior direction.

*A. kimberleyae sp. nov.* and *A. childreni* are separated from all other species in the genus *Antaresia* Wells and Wellington, 1984, by having a dorsal body pattern that is reduced somewhat, or if prominent, usually only anteriorly, (although the pattern is usually seen for the entire body length) with smallish spots or blotches arranged in longitudinal series and if larger blotches are present, even these are invariably broken or differentiated along the mid-dorsal line, and there is little or no evidence of a pale stripe along the lower part of neck and anterior body.

This is in contrast to the other six similar species in the genus, these being *A. saxacola* Wells and Wellington, 1985, *A. stimsoni* (Smith, 1985), *A. campbelli* (Hoser, 2003), *A. maculosa* (Peters, 1873), *A. brentonoloughani* (Hoser, 2003) and the currently unnamed species from Torres Strait and New Guinea.

In these species the dorsal spotting or banding typically crosses and runs over the mid-dorsal line, at least occasionally, and the pattern is bold being on a light cream, beige or yellow background.

*A. saxacola* Wells and Wellington, 1985, *A. stimsoni* (Smith, 1985) and *A. campbelli* (Hoser, 2003) are separated from *A. maculosa* by having a dorsal pattern of well-defined smooth edged blotches, bars, bands or similar and having a well-developed pale stripe on the lower part of the neck. In contrast, *A. maculosa* (Peters, 1873), *A. brentonoloughani* (Hoser, 2003) and the currently unnamed species from Torres Strait and New Guinea all have a dorsum with a pattern of dark, ragged edged blotches which invariably coalesce on the anterior and posterior parts of the body and there is either no pale stripe along the lower part of the neck and anterior body, or it is otherwise not prominent.

The other species in the genus *A. perthensis* (Stull, 1932) (subgenus *Rawlingspython* Hoser, 2009), is readily separated from the others in *Antaresia* Wells and Wellington, 1984, by having 35 or fewer mid-body rows and less than 250 ventrals, versus higher than this in all other species.

Pythons in the genus *Antaresia* Wells and Wellington, 1984 are separated from all other Australian pythons by having a unique combination of teeth on the premaxilla, scales on the rear of the body with at least one or two apical pits and two or more loreal scales.

*A. kimberleyae sp. nov*. in life is depicted in Smith (1985) on page 259 in two images and online at:

https://www.inaturalist.org/observations/118893592

and

https://www.inaturalist.org/observations/4994463

and

https://www.flickr.com/photos/54876436@N08/14185849617/

*A. childreni* in life is online at:

https://www.flickr.com/photos/moloch05/46133708832/

and

https://www.flickr.com/photos/92868532@N06/38985827370/

and

https://www.flickr.com/photos/chrisjolly1989/35063248976/

In line with Esquerre *et al*. (2021), and in contrast to Eipper and Eipper (2019), the putative taxon *A. stimsoni orientalis* Smith, 1986 is not regarded herein as valid and so is effectively disregarded in terms of the preceding formal description. The characters of *A. stimsoni* as outlined herein, also apply to putative *A. stimsoni orientalis* Smith, 1986.

**Distribution:** *A. kimberleyae sp. nov.* is essentially confined to the Kimberley District of Western Australia, excluding the far east Kimberley region, being a western Australian endemic.

**Etymology:** The species *A. kimberleyae sp. nov.* is named in honour of my daughter, Adelyn Kimberley Hoser, this name being taken from her middle name, Kimberley, in recognition of her contributions to herpetology over her lifetime spanning more than 20 years so far.

It is coincidental that the species is effectively confined to the Kimberley region of Western Australia, but the suffix "ae" reflects the snake is named in honour of a female person, as opposed to "ensis" as would be the case if it was named in reflection of where it comes from.

**SUMMARY**

While the conservation status of the new species *A. kimberleyae sp. nov.* appears to be secure, such situations have changed rapidly for other species.

In the long term the best hope for this and other Kimberley forms is to keep global and local human population growth low, preferably reducing human numbers long term, in line with the

comments in Hoser (1989, 1991a, 1993a, 1996).

In terms of the long-term conservation of this species and potential declines through unforseen circumstances, the comments of Hoser (2019a, 2019b) also apply.

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**CONFLICTS OF INTEREST**

None.

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# Two new species of Pipe Snake, Genus *Cylindrophis* (Squamata: Cylindrophiidae) from Timor and Flores, Indonesia.

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## ABSTRACT

Until now, Pipe Snakes Genus *Cylindrophis* Wagler, 1828 from the Lesser Sunda Islands, Indonesia have been treated as either *Cylindrophis* (*Cylindrophis*) *boulengeri* Roux, 1911 from Timor and Wetar or alternatively *Cylindrophis* (*Motteramus*) *opisthorhodus* (Boulenger, 1897) from Lombok, Sumbawa, Komodo and Flores.

Inspection of specimens from the relevant islands show morphologically divergent populations likely to have been isolated from one another from 1.3 to 1.5 MYA.

Therefore putative *C. boulengeri* from Timor and *C. opisthorhodus* from Flores and nearby Komodo are formally described and named in the scientific literature as two new species in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

These snakes are not believed to be particularly common on the relevant islands, although this scarcity may be linked to their secretive habits. However it would be remiss for them to become extinct as a result of non-recognition of the said taxa.

**Keywords:** Herpetology; taxonomy; snake; nomenclature; Indonesia; Sunda; pipesnake; Timor; Sumbaya; Flores; Wetar; Komodo; Lombok; *Cylindrophis*; *Motteramus*; *boulengeri*; *wilsoni*; opisthorhodus; new species; *floresensis*; *timorensis*.

## INTRODUCTION

It is common knowledge the diversity of reptile taxa in the Lesser Sunda Islands of Indonesia has until now, been seriously underestimated as shown for example by the recent papers of Hoser (2022a, 2022b, 2022c) and sources cited therein.

Within the fossorial lineage *Cylindrophis* Wagler, 1828 *sensu lato* it has been common knowledge for years that the diversity of the genus has been severely under estimated.

As part of an ongoing audit of Indonesian reptiles, *Cylindrophis* from the Lesser Sundas were reviewed with a view to confirming or refuting the current taxonomy.

As of 2022 there were two species recognized from these islands, being *Cylindrophis* (*Cylindrophis*) *boulengeri* Roux, 1911 with a type locality of Wetar Island, but also believed to be on nearby Timor, and the divergent taxon *Cylindrophis* (*Motteramus*) *opisthorhodus* (Boulenger, 1897) with a type locality of Lombok, but also apparently found on nearby Sumbawa, Komodo and Flores.

Specimens were audited from the known ranges of both putative species in order to confirm they were conspecific or otherwise, with a view to identifying and naming any hitherto unnamed forms.

## MATERIALS AND METHODS

Specimens of *Cylindrophis* Wagler, 1828 from the Lesser Sundas were audited, including from museums, as well as quality published photos of specimens with known locality data.

Of particular interest was morphological divergences between populations known to have remained separated during recent ice-age maxima and using means to estimate likely divergence between extant island populations.

Relevant published literature was also examined, including Amarasinghe *et al*. (2015), Boulenger (1897), De Lang (2011a, 2011b, 2013), De Rooij (1915), Hoser (2013), Kieckbusch *et al*. (2018), McDiarmid *et al.* (1999), McDowall (1975), Mertens (1930), O'Shea *et al*. (2015), Roux (1911), Smith and Sidik (1998), Wallach *et al.* (2014) and sources cited therein.

Papers relating to divergences of similarly constrained species in the Lesser Sundas were also referred to, including Hoser (2022a-c), Pyron *et al*. (2013) and Reilly *et al.* (2017, 2019a-b, 2021).

## RESULTS

Putative *Cylindrophis* (*Cylindrophis*) *boulengeri* Roux, 1911 from Timor are clearly divergent from the specimens on Wetar, the type locality, evolving separately and hence they are formally named herein as a new species, *C. timorensis sp. nov.*. Based

on the findings of Reilly *et al.* (2021) with respects of putative *Euanedwardsserpens subradiatus* (Schlegel, 1837) he found the Timor and Wetar populations diverged from one another 1.3 MYA, being a likely minimum divergence for the similarly constrained *Cylindrophis* populations, herein also treated as separate species.

Putative *Cylindrophis* (*Motteramus*) *opisthorhodus* (Boulenger, 1897) with a type locality of Lombok, but also apparently found on nearby Sumbawa, Komodo and Flores, also formed two distinct groups along the same line as the biogeographic barrier formed by the deep water gap between Sumbawa and Komodo, meaning the Lombok/Sumbawa populations formed one putative species and the Komodo/Flores population another.

Again, based on the fact that they are self-evidently divergent and evolving as different species, I again have no hesitation in naming the Komodo/Flores form as a new species *C. floresensis sp. nov.*.

Based on the findings of Reilly *et al.* (2021) with respects of putative *Euanedwardsserpens subradiatus* (Schlegel, 1837) he found the Lombok/Sumbawa and Komodo/Flores populations diverged from one another 1.5 MYA, being a likely divergence for the similarly constrained *Cylindrophis* populations, herein also treated as separate species.

In terms of the formal descriptions that follow, the descriptions in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as part of the official scientific record are based on normal adult specimens in good health and without obvious signs of ill health, aging or any obvious abnormality.

***CYLINDROPHIS (CYLINDROPHIS) TIMORENSIS SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:556D67FD-E132-4F6F-B966-53DB24776607**

**Holotype:** A preserved specimen at the Australian National Wildlife Collection, Canberra, ACT, Australia, specimen number ANWC Reptiles R02024 (labelled as "*Cylindrophis ruffus*") collected from Dili, East Timor, Latitude -8.5667 S., Longitude 125.5667 E.

This government-owned facility allows access to its holdings.

**Paratype:** A preserved specimen at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, specimen number MCZ Herp R-192946 collected from the Manatuto District, East Timor.

**Diagnosis:** *Cylindrophis* (*Cylindrophis*) *timorensis sp. nov.* from the island of Timor is separated from the closely related species *Cylindrophis* (*Cylindrophis*) *boulengeri* Roux, 1911 from nearby Wetar Island, by the having the light orangeish-yellow side bars meeting or nearly meeting at the mid-dorsal line, versus being well separated in *C. boulengeri*. On the body of *C. timorensis sp. nov.* the yellow-orange side bars meet or get close to the mid dorsal line, versus not so in *C. boulengeri,* where they are either reduced to the flanks or absent. Anterior to each eye in *C. timorensis sp. nov.* is a large yellow patch running from the upper labial to the upper surface of the snout. These whitish areas are absent or very reduced in *C. boulengeri*.

*C. timorensis sp. nov.* is in many respects similar to *Cylindrophis* (*Motteramus*) *wilsoni* Hoser, 2013 but along with *C. boulengeri* is separated from that species by having more than 190 ventrals, versus less than that in *C. wilsoni* and 11-12 as opposed to 14 dentary teeth (McDowall, 1975). For further differences and diagnostic characters of *C. wilsoni* refer to Hoser (2013).

In addition to the preceding characters: *C. boulengeri* and *C. timorensis sp. nov.* are separated from all other species of *Cylindrophis* by the following suite of characters: No longitudinal stripes on the body; less than 210 ventrals, but more than 190; 19-21 mid body rows (excluding ventrals); 11-14 dentary teeth; very tip of snout is dark; a pale bar or part thereof across the dorsum or flank of tail; a pale collar of some sort (may be broken) but extending up the sides of the back of the head to at least the level of the eye; ventrals no wider than the scales of next row on either side (versus being wider in similar or related species).

*C. timorensis sp. nov.* in life is depicted in O'Shea *et al*. (2015), in fig. 34 on page 112.

*C. boulengeri* is depicted in De Lang (2011b) on pages 132-133.

Refer to Hoser (2013) for further diagnostic features of the genus *Cylindrophis* and other genera or subgenera within the family Cylindrophiidae.

**Distribution:** *Cylindrophis* (*Cylindrophis*) *timorensis sp. nov.* is believed to be confined to the island of Timor and potentially Semau and Roti to the immediate south-west.

**Conservation:** The comments of Hoser (2019a, 2019b) apply to this taxon.

**Etymology:** *C. timorensis sp. nov.* is named in reflection of the type locality and where it occurs.

***CYLINDROPHIS (MOTTERAMUS) FLORESENSIS SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:CAB00E7D-8D8A-4B66-9130-87C3DC05B8FC**

**Holotype:** A preserved specimen at Museum Zoologicum Bogoriense, Bogor, Indonesia, specimen number MZB 1515, collected from Flores, East Nusa Tenggara, Indonesia.

This facility allows access to its holdings.

**Paratype:** A preserved specimen at the Florida Museum of Natural History, University of Florida, Florida, USA, specimen number UF Herp 28763 collected from Lolavi, Komodo Island, Indonesia.

**Diagnosis:** *Cylindrophis* (*Motteramus*) *floresensis sp. nov.* from the islands of Flores and Komodo is separated from the morphologically similar and closely related species *Cylindrophis* (*Motteramus*) *opisthorhodus* (Boulenger, 1897) with a type locality of Lombok and occurring on the adjacent Sumbawa by the following suite of characters: 1/ The dorsum is more-or-less a uniform brown colour, versus a heavily black peppered brown in *C. opisthorhodus*; 2/ There is either an absence of dark coloured scales or spots on the flanks, or they are faded, versus prominent black coloured scales or spots (these being scattered) in *C. opisthorhodus*; 3/ Thin mid-dorsal stripe is reasonably prominent, versus not so or effectively absent in *C. opisthorhodus*; 4/ Venter is mainly black, but with large irregularly shaped, but squareish white blotches running down either side of the belly in an irregular form, versus a venter in which the white forms mainly well-defined cross bands with jagged edges along all or most of the body length, broken up with black in *C. opisthorhodus*; 5/ Dorsum generally brown, versus with a strong greyish tinge in *C. opisthorhodus*;

The two species *C. floresensis sp. nov.* and *C. opisthorhodus* are separated from all other species within *Cylindrophis* Wagler, 1828 by the following unique suite of characters:

1/ Dorsum with longitudinal stripes of some form either along the mid dorsal line and/or along the flank, this contrasting with the otherwise paler dorsum; 2/ 23 midbody rows (excluding ventrals); 3/ 184-213 ventrals.

*C. floresensis sp. nov.* in life is depicted in De Lang (2011b) on pages 137-139 and online at:
https://www.inaturalist.org/observations/10229714
(last downloaded on 5 July 2022)

*C. opisthorhodus* in life is depicted in De Lang (2011b) on page 135 and online at:
https://www.inaturalist.org/observations/100137266
(last downloaded on 5 July 2022)

Refer to Hoser (2013) for further diagnostic features of the genus *Cylindrophis* and others within the family Cylindrophiidae.

**Distribution:** *C. floresensis sp. nov.* is believed to be confined to the islands of Flores and Komodo, but possibly also occurs in the islands on Rinca, Adonara and Lembata, being a single landmass in recent glacial maxima.

**Conservation:** The comments of Hoser (2019a, 2019b) apply to this taxon.

**Etymology:** *C. floresensis sp. nov.* is named in reflection of the type locality and where the taxon occurs.

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**CONFLICT OF INTEREST**

None.

**Cite this paper as:**

**Hoser, R. T. 2022.**
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***Australasian Journal of Herpetology***
**59:10-12.**

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# *Delma honlami sp. nov.*: A new species of Pygopodid legless lizard from South Australia (Squamata: Gekkota: Pygopodidae: *Delma*: *Honlamopus*).

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## ABSTRACT

Hoser (2017) confirmed the previously underestimated diversity of Australian Pygopodids by formally naming six new genera, two new subgenera and 13 new species. This was followed up with three more species in Hoser (2018).

This paper formally names as a new species, a population until now treated as a geographically and morphologically divergent population of *Delma* (*Honlamopus*) *inornata* Kluge, 1974, from South Australia.

*Delma honlami sp. nov*. is restricted to grasslands west of the lower Murray River, near Lake Alexandrina. It is most readily separated from *D inornata* of Victoria, New South Wales and Queensland and the closely related *D. megleesae* Hoser, 2017 of the Australian Capital Territory and New South Wales by the presence of a single pair of internasals, versus two pairs and a greyish, rather than brownish upper surface of the head.

**Keywords:** Herpetology; taxonomy; nomenclature; Australia; South Australia; *Delma*; *Honlamopus*; *inornata*; *megleesae*; new species; *honlami*.

## INTRODUCTION

Following a major review of the Australian legless lizards (Pygopodidae), Hoser (2017) confirmed the previously underestimated diversity of Australian Pygopodids by formally naming six new genera, two new subgenera and 13 new species. This was followed up with three more species in Hoser (2018), giving an Australia-wide total in excess of 50 species.

The Hoser papers also followed a number of major revisions of the group as cited by Hoser (2017) and again cited in this paper.

For many years, a population of putative *Delma impar* Kluge, 1974 from south-east South Australia, on the western side of Lake Alexandrina has been known to be geographically separated from the main population which is found in a wide region from western Victoria, extending across drier parts of that state and along the western slopes and nearby plains of New South Wales, to south-east Queensland.

The South Australian population has also been known to be morphologically distinct for many years as well. It was inadvertently omitted from the papers of Hoser (2017) and Hoser (2018) which formally named numerous Australian pygopodids, even though it was obvious that this population warranted formal taxonomic recognition.

To correct this anomaly, the purpose of this paper is to formally name as a new species this hitherto unnamed taxon.

## MATERIALS AND METHODS

Live and dead specimens of putative *Delma* (*Honlamopus*) *inornata* Kluge, 1974 from across the known range of the putative species (Qld, NSW, ACT and SA) were inspected over some decades in field trips across this region (in all states and territories of relevance), as were relevant museum holdings in Australia.

Literature as cited by Hoser (2017, 2018) was also reviewed, including literature specifically relevant to *Delma inornata*, to confirm that the South Australian population from west of Lake Alexandrina should be given taxonomic recognition as either a species or subspecies.

References relevant to the taxonomy of *Delma* (*Honlamopus*) *inornata* Kluge, 1974 *sensu lato* included Boulenger (1885, 1903), Brennan (2014), Brennan *et al*. (2015), Cogger (2014), Cogger *et al.* (1983), Duméril and Bibron (1839), Fischer (1882), Glauert (1956), Gray (1831, 1867), Günther (1873), Hoser (2017, 2018), Kinghorn (1926), Kluge (1974, 1976), Ride *et al.* (1999), Shea (1987, 1991), Wells (2007), Wells and Wellington (1984, 1985), Wilson and Knowles 91988), Wilson and Swan (2017) and sources cited therein.

## RESULTS

Morphologically the specimens from the South Australian population from west of Lake Alexandrina were consistently divergent from their allopatric eastern counterparts in terms of several features including virtually all specimens having a single pair of internasals as opposed to an obvious two pairs in the nominate form of *D. inornata* from western Victoria (type locality of Kewell, Victoria), as well as having a greyish, rather than brownish upper surface of the head.

With the added knowledge that each population was separated by a wide zone where putative *D. inornata* are absent, it is clear that each population are evolving as separate species. Therefore in light of the preceding, I have no hesitation in naming the South Australian population from west of Lake Alexandrina as a new species, being *Delma* (*Honlamopus*) *honlami sp. nov.*.

This is done in accordance with the rules of the *International code of Zoological Nomenclature* (Ride *et al*. 1999).

***DELMA (HONLAMOPUS) HONLAMI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:CAE029C6-0C37-4909-AC95-D4BBA1AA6D06**

**Holotype:** A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R23530 collected from Lake Alexandrina, South Australia, Australia, Latitude -35.1900 S., Longitude 139.1300 E.

This government-owned facility allows access to its holdings.

**Paratypes:** Two preserved specimens at the South Australian Museum, Adelaide, South Australia, Australia, specimen numbers R23870 and R26138 collected from Lake Alexandrina, South Australia, Australia, Latitude -35.1900 S., Longitude 139.1300 E.

**DIAGNOSIS**

Until now *Delma* (*Honlamopus*) *honlami sp. nov.* has been treated as a western population of *D. inornata* Kluge, 1974. The following description refers to adult specimens in normal health and condition.

*D. honlami sp. nov.* is readily separated from *D. inornata* and the similar *D. megleesae* Hoser, 2017 by having a single pair of internasals, versus an obvious two pairs in *D. inornata* and *D. megleesae*, as well as a greyish upper surface of the head, versus brownish in the other two species.

In rare cases, one or other relevant character may not be present in *D. honlami sp. nov.,* but so far none have been seen without both.

Upper labials of *D. honlami sp. nov.* are greyish brown, versus whitish, cream or yellow in *D. inornata* and *D. megleesae.*

The ear opening of *D. honlami sp. nov.* is obviously larger than the immediately surrounding scales in the second row above it, versus only slightly so in *D. inornata* and *D. megleesae.*

In *D. honlami sp. nov.* the posterior end of each dorsal scale (or any), does not have any black tip or similar. That feature is particularly common in *D. inornata* from north-west New South Wales and south-east Queensland.

*D. megleesae* Hoser, 2017 is readily separated from *D. inornata* and *D. honlami* by a strongly yellow chin, snout and upper labials, versus cream or at best light yellow in *D. inornata* and while sometimes yellow under the chin in *D. honlami*, this does not extend to the upper labials*. D. megleesae* is also readily separated from *D. inornata* by the absence of obviously dark etched scales on the top and sides of the head and neck, which is seen in *D. inornata*.

In *D. inornata* the dark etched scales are formed by the rear of each scale having a dark etching, giving the entirety of each brownish scale a dark etched appearance.

In *D. inornata* the posterior pair of internasals are either the same size as or larger than the anterior pair. By contrast in *D. megleesae* the posterior pair of internasals are very reduced in size to be smaller than or much smaller than the anterior pair.

The subgenus *Honlamopus* Hoser, 2017 which includes the species *D. inornata*, *D. honlami* and *D. megleesae* Hoser, 2017 are separated from the other subgenus *Delma* Gray, 1831 by the following suite of characters:

Conspicuous dorsal cross-bands are not present on the head and nape in adults; ventral scales lack dark edges; there are usually fewer than 16 scales along a line across the top of the head and fewer than 17 scales along a line across the throat, each line extending from the angle of the mouth on each side; no dark dorso-lateral stripe extending from the posterior third of the body to the tail, no conspicuous lip pattern and flesh coloured ventral surfaces (in life).

Brennan (2014) at page 52 in Fig.III.5, found the species within *Honlamopus* Hoser, 2017 to have diverged from other *Delma* species more than 20 MYA, confirming that the genus or subgenus level designation is correct and appropriate.

The genus *Delma* Gray, 1831 is readily separated from the genera *Aclys* Kluge, 1974, *Crottyopus* Hoser, 2017, *Pseudodelma* Fischer, 1882, *Sloppopus* Hoser, 2017, *Wellingtonopus* Hoser, 2017 and *Wellsopus* Hoser, 2017 by the following suite of characters:

Anterior nasals in contact, or fewer than 20 mid-body rows, and smooth dorsal scales; no pale stripes on the body or tail; nasal and first supralabial are not fused anterior to the nostril; one or no dark transverse bands posterior either to the parietal scales or to any dark transverse band fully or partly enclosing the parietal scales; usually fewer than 18 mid-body scale rows; usually seven scales on top of the snout between the rostral and frontal; usually three pre-anal scales; lateral lip pattern and dorsal head bands may be present or absent; fourth or fifth supralabial is usually below the eye; dark pigment on the throat or venter may be present or absent; and one or other of the following two sets of characters:

1/ Conspicuous dorsal cross-bands are present on the head and nape; there is rarely a conspicuous dark lateral stripe present posteriorly; rostral noticeably projecting between the anterior pair of supranasals; strong dark bars or reticulations on the throat; usually more than five infralabials and three hindlimb scales (*D. fraseri* and *D. petersoni*), or:

2/ Conspicuous dorsal cross-bands are not present on the head and nape in adults; ventral scales lack dark edges; there are usually fewer than 16 scales along a line across the top of the head and fewer than 17 scales along a line across the throat, each line extending from the angle of the mouth on each side; no dark dorso-lateral stripe extending from the posterior third of the body to the tail (*D. grayi*, *D. inornata*, *D. megleesae* or *D. honlami sp. nov.*).

The genus *Delma* Gray, 1831, and the six genera *Aclys* Kluge, 1974, *Crottyopus* Hoser, 2017, *Pseudodelma* Fischer, 1882, *Sloppopus* Hoser, 2017, *Wellingtonopus* Hoser, 2017 and *Wellsopus* Hoser, 2017 (all until now treated as being within *Delma*) are separated from all other Australasian Pygopodids by the following suite of characters: The head is covered with enlarged symmetrical shields; the ventral scales are smooth; there are no pre-anal pores; parietal scales are present; the external ear opening is present and obvious; there are more than 8 scales along a line across the top of the head joining the angle of the mouth on each side.

*D. honlami sp. nov*. in life is depicted online at:
https://www.inaturalist.org/observations/84128409
and
https://www.inaturalist.org/observations/105537457
and
https://www.inaturalist.org/observations/66288250
and
https://www.flickr.com/photos/128497936@N03/52039313989/

*D. inornata* in life is depicted online at:
https://www.inaturalist.org/observations/37549164
and
https://www.inaturalist.org/observations/108425006

*D. megleesae* in life is depicted online at:
https://www.inaturalist.org/observations/78279474
and
https://www.inaturalist.org/observations/6491957
and
https://www.flickr.com/photos/171250498@N08/51408275885/
and
https://www.flickr.com/photos/171250498@N08/51394014293/
and
https://www.flickr.com/photos/189037423@N06/51375190376/

and

https://www.flickr.com/photos/189037423@N06/50935343492/

All the preceding urls were most recently checked as correct and showing as indicated above on 1 June 2022.

**Distribution:** *Delma* (*Honlamopus*) *honlami sp. nov.* is a range-restricted endemic that is confined to a region west of the Murray River near its mouth in coastal south-east, South Australia, generally south of Murray Bridge and Adelaide and including drier parts of the Fleurieu Peninsula. It should be listed as Vulnerable by the South Australian National Parks and Wildlife Service as well as the Federal Australian counterpart.

**Etymology:** As for the subgenus *Honlamopus* Hoser, 2017, this species is named in honour of Mr Hon Lam, owner of the Park Orchards, Fish Cafe, for his magnificent efforts catering to the staff at Snakebusters, Australia's best reptiles displays over more than a decade preceding year 2022. People who work hard to give logistical support to frontline conservationists and educators should not have their efforts go unrecognized.

**Conservation:** The relevant comments of Hawkeswood (2021), Hoser (1989, 1991, 1993, 1996, 2007, 2009, 2012a-c, 2013, 2015a-f, 2019a, 2019b, 2020, 2021) apply to this taxon.

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**CONFLICTS OF INTEREST**

None.

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# The Iconic Australian Copper-tailed Skink *Ctenotus taeniolatus* (White, 1790) split. A sign of severely under-estimated species diversity in Australia's smaller lizards.

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## ABSTRACT

For decades it has been known that species diversity in Australia's lizards has been severely under-estimated (Wells and Wellington, 1983, 1985).

In the case of the well-known Copper-tailed Skink *Ctenotus taeniolatus* (White, 1790), with a type locality of New South Wales, this putative taxon occurs from Victoria to North Queensland, along the coast, ranges and nearby slopes.

Wells and Wellington formally named *Ctenotus miowera* from the town with the same name, which is between Proserpine and Bowen, north Queensland in 1985.

But as for most other skinks formally named by the pair in that paper, a group known as the Wolfgang Wüster gang of thieves has done an excellent job at forcing most other publishing herpetologists to pretend that the works of Wells and Wellington did not exist and likewise that the taxa they identified did not exist either.

At least one species formally identified by Wells and Wellington (1985), being resurrected from earlier synonymy, has now become extinct arising from the anti-science suppression actions of the Wolfgang Wüster gang of thieves (Hoser 2019a, 2019b).

Relying on inspection of living and dead specimens and the molecular study of Colgan *et al.* (2009), this paper formally recognizes *Ctenotus miowera* as a valid species and formally names another related species in the complex as *C. robertcooki sp. nov*. being from the New England Region of northern New South Wales and with a divergence of 1.75 MYA or more from the nominate form of *C. taeniolatus.*

**Keywords:** Taxonomy; nomenclature; Australia; Queensland; New South Wales; New England; lizard; skink Copper-tailed skink; *Ctenotus*; *taeniolatus*; *miowera*; new species; *robertcooki.*

## INTRODUCTION

For decades it has been known that species diversity in Australia's lizards has been severely under-estimated (Wells and Wellington, 1983, 1985).

In issues 55 and 56 of *Australasian Journal of Herpetology* published in 2022 are formal descriptions of dozens of species of small Australian lizards.

Earlier issues of the same journal over the previous decade have formally named well over 100 Australian reptile species at a time when Kaiser (2012a, 2012b), Kaiser (2013) and Kaiser *et al*. (2013) had repeatedly complained that I, Raymond Hoser had already named everything in herpetology that could be named and had left them with no other species to name.

The majority of these new species are in the form of splits of well known and wide-ranging putative taxa, generally supported by morphological, molecular and biogeographical evidence.

Further descriptions of yet more species are either in peer review or otherwise awaiting publication, having already been subjected to peer review and appropriate editing or changes.

It is somewhat astounding that even for common, well-known and widespread putative taxa, that in 2022, here in Australia there remain taxa not yet formally recognized by science.

In the case of the well-known Copper-tailed Skink *Ctenotus taeniolatus* (White, 1790), with a type locality of New South Wales, this putative taxon occurs from Victoria to North Queensland, along the coast, ranges and nearby slopes.

Wells and Wellington (1985) on page 28 formally named *Ctenotus miowera* from the town with the same name, which is between Proserpine and Bowen, north Queensland in 1985.

While their description was brief to put it bluntly, a cursory inspection of their said species, when compared to the type form of *C. taeniolatus* showed it to be sufficiently divergent morphologically to be regarded as a separate species to *C. taeniolatus*, noting there is no evidence of intermediate forms.

But as for most other skinks formally named by Wells and Wellington in their papers, a group known as the Wolfgang

Wüster gang of thieves has done an excellent job at forcing most other publishing herpetologists to pretend that the works of Wells and Wellington did not exist and likewise that the taxa they identified did not exist either.

In the case of *C. miowera* I have been unable to find a single use of the name as correct for that taxon since the original publication of Wells and Wellington, 1985.

In fact it does not even appear on any so-called synonyms lists!

A view of Peter Uetz's allegedly complete "The Reptile Database" at:
https://reptile-database.reptarium.cz/species?genus=Ctenotus&species=taeniolatus

Contains no fewer than 8 synonyms of *C. taeniolatus*, including of course the original:

"*Lacerta taeniolata* WHITE 1790: 245"
but no mention of the Wells and Wellington name, or for that matter, even their paper of 1985.

The most recent check of that site was 6 May 2022 and there was definitely no mention of Wells and Wellington (1985) or their putative taxon, on that page.
I should also make it clear, that there is no way known that Uetz had created another page recognising the Wells and Wellington taxon either.

No such webpage existed!

By his own admission, as recently as 2022, Uetz has made sure he has censored more than 1000 papers by numerous authors from his database in line with the dictates of the Wolfgang Wüster gang of thieves, who effectively control Uetz and his "The reptile database" website (Uetz 2022).

A submission to the ICZN in 1987 authored by Richard Shine of Sydney (Shine 1987) and supported by the rest of the Wolfgang Wüster gang of thieves failed in 1991 (ICZN 1991) and a second attempt at the same caper failed in 2001 (ICZN 2001), which should have ended the matter in terms of forced suppression of the works of Wells and Wellington.

However the forced suppression of the works of Wells and Wellington by the Wolfgang Wüster gang of thieves continues to the present date in 2022, even going past another ICZN ruling against the Wolfgang Wüster gang of thieves (ICZN 2021), resulting in an ongoing under estimation of and knowledge of, the reptile species diversity in Australia.

At least one species formally identified by Wells and Wellington (1985), being resurrected from earlier synonymy, that being *Tympanocryptis pinguicolla* (Mitchell, 1948) has now become extinct arising directly from the anti-science suppression actions of the Wolfgang Wüster gang of thieves (Hoser 2019a, 2019b).

The species was ignored by government (as it allegedly did not exist) and quietly slipped into extinction at a time when the government's own dysfunctional "Zoos Victoria" business was milking taxpayers for millions of dollars a year to supposedly "fight extinction" (Hoser 2019b).

In the case of *C. taeniolatus* that there may be more than one species within the range of this putative taxon was flagged again in the paper of Colgan *et al.* (2009), in which they presented compelling molecular evidence for the fact that *C. taeniolatus* consisted of more than one species.

This was also based on a sample of limited geographical range in the overall range of the putative species.

On reading the paper of Colgan *et al.* (2009), it was obvious that the authors had made a deliberate choice not to formally describe the newly identified species, in that they made such a statement.

It is also self-evident that the authors had chosen not to do so, as in doing so, they would also have to revisit previously synonymised forms, of which only one stood out as distinct.

That was *C. miowera* Wells and Wellington, 1985.

Self-evidently and in line with past practices, the authors chose instead to publish their molecular data and pretend that the works of Wells and Wellington did not exist.

**MATERIALS AND METHODS**

I am not constrained by the dictates and bullying of the Wolfgang Wüster gang of thieves as detailed in Hoser (2007, 2009, 2012a-b, 2013, 2015a-f, 2019a-b), Hawkeswood (2021) and ICZN (1991, 2001 and 2021), but instead am dictated by science and the scientific method.

In the first instance I revisited the papers of Colgan *et al.* (2009), and that of Wells and Wellington (1984 and 1985), as well as the relevant taxonomic references of White (1790), Cogger (2014) and Cogger *et al*. (1983) to confirm a lack of available names for any other forms.

On their own, both Wells and Wellington (1985) and Colgan *et al.* (2009) flagged potential new species in the *C. taeniolatus* complex, but neither had compelling evidence of this, which in turn necessitated inspection of live specimens of both putative forms and at the same time comparative inspection of the type form of *C. taeniolatus* with each of the others.

This was done on a number of trips to Queensland and the relevant parts of Northern New South Wales, as well as reinspection of the type form from the Sydney area, as well as via a review of other literature relevant to *C. taeniolatus*, none of which ultimately assisted me in my investigations and also by way of inspection of good quality photos of specimens with good locality data.

I noted that Colgan *et al.* (2009), found a divergence of 1.75 MYA or more for the relevant candidate species identified in their paper.

**RESULTS**

Comparative inspection of specimens of *C. taeniolatus* from the Sydney region, being of the type form and the northern New England Region of northern New South Wales, revealed consistent differences between the two enabling me to make species level diagnosis.

A similar inspection of specimens of putative *C. taeniolatus* from the Bowen/Proserpine region of north-east Queensland also confirmed that they were sufficiently divergent from the other two to warrant ongoing recognition as the species first named as *C. miowera* Wells and Wellington, 1985.

Significantly, I found that specimens conforming to this form (*C. miowera*) extended along the Queensland coast, south to Brisbane in south-east Queensland.

Specimens conforming to the putative species identified by Colgan *et al.* (2009) appeared to be restricted to the northern New England region of New South Wales and immediately adjacent southern Queensland only.

As a result of the preceding, I herein formally name as new, the northern New England Region population as *C. robertcooki sp. nov.*.

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).

This includes if Latinisation is wrong, apparent spelling mistakes and so on.

Any online citations within this paper, including copied emails and the like, are not as a rule cited in the references part of this paper and have the same most recent viewing and checking date of 6 May 2022 (at which time they were still online as cited).

Unless otherwise stated explicitly, colour and other descriptions apply to living adult specimens of generally good health, as seen by day 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 genera, subgenera, 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.

***CTENOTUS ROBERTCOOKI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:06433CD4-CA71-4164-B6F4-11F979AED2CC**

**Holotype:** A preserved specimen at the Australian Museum in Sydney, New South Wales, specimen number R.157111 collected from Kingsgate Road, about 34km east of Glen Innes, New South Wales, Australia, Latitude -29.80166 S., Longitude 151.98249 E. This government-owned facility allows access to its holdings.

**Paratype:** A preserved specimen at the Australian Museum in Sydney, New South Wales, specimen number R.159789 collected from near the rubbish tip at Bolivia Hill, (between Glen Innes and Tenterfield) in New South Wales, Australia, Latitude -29.32138 S., Longitude 151.91804 E.

**Diagnosis:** The species *Ctenotus taeniolatus* (White, 1790) is readily separated from *Ctenotus robertcooki sp. nov*. by the possession of a pale snout with distinctive dark spots or blotches vs none in *C. robertcooki sp. nov.*. Furthermore *C. taeniolatus* has black on the outer side of the two middle whitish lines, versus not so in *C. robertcooki sp. nov.*.

In common with *C. robertcooki sp. nov.*, *C. miowera* Wells and Wellington, 1985 has a dark coloured snout and does not have black on the outer side of the two middle whitish lines. However in contrast to both *C. robertcooki sp. nov.* and *C. taeniolatus* the black band running down the midline of the body in *C. miowera* extends all or most of the way down the (original) tail, versus less than a third of the way down in *C. robertcooki sp. nov.* and less than half way down in *C. taeniolatus.*

The black band running down the midline of the body terminates on the tail less than the length of the extended hind limb and toes in *C. robertcooki sp. nov.*, versus always past this in *C. taeniolatus.*

The black band running down each flank of the tail is thin in *C. robertcooki sp. nov.*, medium in *C. taeniolatus* and thick in *C. miowera.*

*C. taeniolatus*, *C. robertcooki sp. nov.* and *C. miowera* as a trio are separated from all other East Australian lizards in the genus *Ctenotus* Storr, 1964 by the following suite of characters:

Well defined, black mid-dorsal stripe running from nape past the base of the tail; no prominent spots on the body of the adult; nasal is not or is only very weakly grooved; 18-22 subdigital lamellae under the fourth toe, each with a blunt keel; eight yellow-white longitudinal stripes on the flanks and back, with well-defined brown or black stripes intervening; a narrow pale upper lateral stripe is always continuous from the ear opening to the groin; tail is commonly, but not always a copper-red colour at the posterior end.

*Ctenotus taeniolatus* (White, 1790) in life is depicted in Hoser (1989) on pages 11 and 88 (at bottom left), Cogger (2014) at page 525 at bottom right (and front cover), Swan, Shea and Sadlier (2009) on page 119 and online at:
https://www.inaturalist.org/observations/27179813
and
https://www.inaturalist.org/observations/41436549

*C. robertcooki sp. nov.* in life is depicted in Wilson and Swan (2017) on page 275 at bottom left and online at:
https://www.inaturalist.org/observations/39394957
and
https://www.inaturalist.org/observations/41586030
and
https://www.inaturalist.org/observations/103123932

*C. miowera* Wells and Wellington, 1985 in life is depicted online at:
https://www.inaturalist.org/observations/111504510

**Distribution:** *C. robertcooki sp. nov.* appears to be restricted to the northern New England region of New South Wales and immediately adjacent southern Queensland in the so-called Granite-belt only. This is an area generally between Armidale in the South in New South Wales and Girraween in the north in Queensland, not including the nearby slopes and plains to the east or west.

*Ctenotus taeniolatus* as defined herein is distributed generally south and also to the immediate west and south-west of the northern New England region of northern New South Wales, south along the coast, ranges and slopes into north-east Victoria.

*C. miowera* as defined herein appears to occupy most of the east coast, ranges and nearby slopes of Queensland south of about Cooktown and not including the Granite Belt of the southern highlands near the New South Wales border.

**Etymology:** *C. robertcooki sp. nov.* is named in honour of Robert Cook, originally of Auburn, New South Wales, in recognition of his services to herpetology. Robert Cook was with Richard Wells when they collected the holotype of *C. miowera* on 24 December 1973.

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**CONFLICTS OF INTEREST**

None.

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# The Australian skink genus *Notoscincus* Fuhn, 1969 revised!

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## ABSTRACT

The diminutive Australian skink originally described as *Ablepharus ornatus* Broom, 1896, type locality Muldiva, north Queensland, was placed in a monotypic genus *Notoscincus*, proposed by Fuhn in 1969 and been placed there ever since.

The species *Ablepharus wotjulum* Glauert, 1959, from the West Kimberley division of Western Australia has been synonymised with *Notoscincus ornatus* by most authors since, although also generally treated as a subspecies.

Exceptional to this has been Greer (1974) as well as Wells and Wellington (1985), who also described a centralian population as *N. watersi*.

Their new species name was declared as "probably a *nomen nudem*", by Shea (1987) and again by Shea and Sadlier (1999), although significantly, the latter authors also wrote: "*we recognise the taxonomic distinction of this species*".

Notwithstanding the preceding, this obvious morphologically distinct species has been ignored by Australian herpetologists in the 23 years since 1999.

Storr 1979 described the divergent species *N. butleri* from the south Pilbara in Western Australia.

Following examination of specimens from across the range of all putative taxa and reviewing the primary literature, the following new taxonomy is proposed according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999):

All of *N. ornatus*, *N. wotjulum*, *N. watersi* and *N. butleri* are valid species.

The name *N. watersi* is not *nomen nudem* as alleged by Shea (1979), or Shea and Sadlier (1999) and their claim to that effect is wholly dishonest, lacking any factual basis.

Glenn Shea in particular has a long history of taxonomic vandalism and improperly synonymising species formally named by people he sees as "rivals" (e.g. Shea *et al*. 2011; Shea *et al*. 2020; Rowley *et al*. 2021; Shea 2021).

*N. ornatus sensu lato* is split further with three morphologically distinct species formally named for the first time, these being populations from the Pilbara, which includes a newly named subspecies, one from the top end of the Northern Territory and another from Groote Eylandt, Northern Territory.

*N. butleri* is also transferred to a newly named genus *Lineascincus gen. nov*. based on clear divergence from the others in the genus *Notoscincus.*

**Keywords:** Australia; taxonomy; nomenclature; skink; lizard; Northern Territory, Queensland, Western Australia; *Notoscincus*; *ornatus; wotjulum*; *watersi*; *butleri*; New Genus; *Lineascincus*; New Species; *flecka*; *monodorsa*; *whoa*; New Subspecies; *fereflecka.*

## INTRODUCTION

The diminutive Australian skink originally described as *Ablepharus ornatus* Broom, 1896, type locality Muldiva, north Queensland, was placed in a monotypic genus *Notoscincus*, proposed by Fuhn in 1969 and has been placed there ever since.

The species *Ablepharus wotjulum* Glauert, 1959, from the West Kimberley division of Western Australia has been synonymised with *Notoscincus ornatus* by most authors since, although also generally treated as a subspecies.

Exceptional to this has been Greer, 1974 as well as Wells and Wellington (1985), who also described a centralian population as *N. watersi*.

Their new species name was declared *nomen nudem*, by

Shea (1987) and again by Shea and Sadlier (1999), although significantly, the latter authors also wrote: "*we recognise the taxonomic distinction of this species*".

Notwithstanding the preceding statement of the obvious, this obvious morphologically distinct species has been ignored by Australian herpetologists since 1999.

Storr 1979 described the divergent species *N. butleri* from the south Pilbara in Western Australia.

In line with edicts of a cohort including Rick Shine, Glenn Shea and Welsh criminal Wolfgang Wuster there has been a well-enforced ban on other herpetologists using the taxonomy and nomenclature of Wells and Wellington (1985), even when it is obviously the only sensible one that exists.

While this ban commenced in 1987, with the publication of Shine (1987), and should have ended with the ICZN ruling against Shine and the cohort in 1991 (ICZN 1991) as well as later rulings (ICZN 2001, 2021), this ban on all things Wells and Wellington still carries traction in 2022.

This manifests in texts such Cogger (2000 or 2014), which maintains the falsehood that *N. ornatus* is just one species, with *N. wotjulum* synonymised and treated as a subspecies, while *N. watersi* is treated as if it does not exist.

When *N. watersi* is depicted online in photo sharing sites such as "flickr.com" it is invariably misidentified, usually as mutant looking *N. ornatus*.

Pyron *et al.* (2013) showed *Notoscincus ornatus* as being most closely related to *Ctenotus* Storr, 1964 *sensu lato* and *Lerista* Bell, 1833 *sensu lato* but separate on a long stem on its own, indicating an extremely ancient divergence from the other genera.

This immediately flagged the putative species *Notoscincus ornatus* as being potentially composite, especially when reconciled with a distribution encompassing most of the northern half of the Australian mainland.

While there were at least two synonym names potentially available for given populations in three widely scattered parts of Australia, based on the comments of Shea (1987) and Shea and Sadlier (1999), the availability of at least one of the names was placed in doubt.

On the basis of the facts that the putative species *N. ornatus* was widespread and potentially composite, it was decided to audit this taxon and the closely related *N. butleri* to ascertain relationships within and between the taxa to confirm current taxonomy and to see if any new species remained undetected.

**MATERIALS AND METHODS**

A review of the relevant literature encompassing the three putative species within *Notoscincus* Fuhn, 1869, as generally defined by herpetologists in Australia, including as recently defined by Cogger (2014) was conducted.

This included revisiting the molecular studies available on Australian skinks as a means to estimate likely divergences across known biogeographical barriers and breaks.

Specimens of each putative species from across their known ranges were inspected, including both live and dead animals as well as photos of specimens with known provenance.

The regional populations conforming to putative species but identified as potentially unnamed species were inspected as were all other major populations.

Biogeographical gaps were identified which conformed with absence of specimens being seen, collected or held in Australian public museums, these usually being outlier populations, including some known to separated by previously determined biogeographical barriers.

The papers naming putative taxa within *Notoscincus* were reviewed, not just for the purposes of revisiting original descriptions, which were checked against actual specimens, but also cross referenced with the second, third and fourth editions of the *International Code of Zoological Nomenclature* as published by the International Commission of Zoological Nomenclature (ICZN) to ensure that all post 1950 names were valid according to the rules of the ICZN at all materially relevant times, including 2022.

The lizards were inspected with a view to confirming if there were consistent identifiable differences between putative species enabling formal descriptions to be made as required.

Literature relevant to the taxonomic conclusions herein, including other recent splits of putative species from the northern half of Australia include the following:

Broom (1896), Butler (1970), Cogger (2000, 2014), Cogger *et al*. (1983), Copland (1952), Couper *et al*. (2006), Fuhn (1969), Glauert (1959), Greer (1974), Hutchinson *et al*. (2021), Pyron *et al.* (2013), Reeder (2003), Ride *et al*. (1999), Shea and Sadlier (1999), Singhal *et al*. (2018), Skinner *et al.* (2013), Storr (1974, 1979), Storr, Smith and Johnstone (1981, 1999), Wells and Wellington (1984, 1985), Wilson (2015), Wilson and Swan (2010) and sources cited therein.

**RESULTS**

Following examination of specimens from across the range of all putative taxa and reviewing the primary literature, the following new taxonomy is proposed according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999):

All of putative *N. ornatus*, *N. wotjulum*, *N. watersi* and *N. butleri* are valid species.

For the record, the name *N. watersi* was scrutinized and it was not a *nomen nudem* as alleged by Shea (1987) or Shea and Sadlier (1989) (see below).

*N. ornatus sensu lato* is split further with three morphologically distinct species formally named for the first time, these being populations from the Pilbara, which includes a newly named subspecies, one species from the top end of the Northern Territory, with a distribution centred on the Arnhem Land escarpment and nearby areas to the south and south-west and another substantially different species from Groote Eylandt, Northern Territory.

*N. butleri* is also transferred to a newly named genus *Lineascincus gen. nov*. based on clear morphological divergence from the others in the genus *Notoscincus.*

***NOTOSCINCUS WATERSI* WELLS AND WELLINGTON, 1985 IS A VALIDLY NAMED TAXON.**

With it being asserted as a "fact" in the literature that *Notoscincus watersi* Wells and Wellington, 1985 is probably a *nomen nudem* (Shea 1987, Shea and Sadlier, 1999) along with the other obvious fact confirmed by the same authors and again herein, being that the Centralian form of putative *N. ornatus* was a different species, it is self-evident that the species needed to be called something.

If *N. watersi* was in fact *nomen nudem* I could simply assign a name to the taxon and describe it as that herein.

However before making this leap of faith, it was important that I consult the original literature to confirm (or refute) the claim that *N. watersi* is in fact a *nomen nudem*, because if the claim that *N. watersi* is *nomen nudem* was an error, my renaming that taxon would then be an act of poor scientific method, taxonomic vandalism, or both!

In other words, "probably" was not a scientific way to deal with the "problem" of *N. watersi.*

I had to confirm with certainty, whether or not *N. watersi* was a *nomen nudem* in order to properly resolve the taxonomy and nomenclature of the relevant species complex.

To decide whether or not *N. watersi* is or is not a *numen nudem* did not require me to consult with Glen Shea or Wells and Wellington, although I did consult all the parties and not surprisingly, Shea continued to assert *nomen nudum* for the name and the other two the reverse.

All that mattered in the first instance was for me to consult the original publication (the description) and also the relevant in force *International Code of Zoological Nomenclature*.

To put the Wells and Wellington description of *N. watersi* to the

full test, it was lined up with the relevant sections of Code, 2, 3, and 4, noting that their description was published while Code 2 was in force and that each edition of the code supersedes the previous one.

To arrive at the conclusion that *N. watersi* was not a *nomen nudum*, I inspected the original publication of Wells and Wellington (1985) and cross-referenced the exact words of this with the in force, second edition of the *International Code of Zoological Nomenclature*, that being the applicable code in 1985.

The third edition was only published in 1988, although it carried an earlier publication date inside its cover.

In any event, the result of cross-matching Wells and Wellington's 1985 description of *N. watersi* to the rules of the *International Code of Nomenclature*, did not change, regardless of whether or not Code 2, 3, or 4 were used.

So that the false claim of *nomen nudem* against the Wells and Wellington name *N. watersi* Wells and Wellington, 1985 is put to rest, I hereby produce the relevant description in full below as well as the relevant definitions of *nomen nudum* in Code editions 2, 3 and 4, with the relevant parts relating to availability of names.

The Wells and Wellington description of 1985 read exactly as follows:

**"Notoscincus watersi sp. nov.**

***Holotype: An adult specimen in the Australian Museum R84555. Collected at 50 km south of Alice Springs, Northern Territory (24 05'S X 135 35'E) by Richard Wells and Dave Moralka, on 22 April, 1979.***

***Diagnosis: Storr, (1971:112) gives a description of this species (as* Notoscincus ornatus ornatus*'). We regard Storr's description as adequate for diagnosing this species from* N. ornatus *of Broom, 1896 (Type Locality, Muldiva north Queensland) and* N. watjulum *of Glauert, 1959. Storr, Smith and Johnstone, (1981: Plate 17.8) figure a specimen of* Notoscincus watersi *(cited as* Notoscincus ornatus ornatus*). Schwaner and Miller (1984b) reported the occurrence of what we herein regard as* Notoscincus watersi *in northern South Australia. The holotype of* N. watersi *was taken in a habitat of Triodia on red sand dunes following rainy weather. Etymology: Named for Peter Waters, previously of Pendle Hill, N. S. W., in recognition of his donation of reptile specimens (now in the Australian Museum)."***

The definitions of *nomen nudem* in each of Codes 2, 3, and 4 are given below:

Code 2:

**"nomen nudum.** ***A name that, if published before 1931, fails to satisfy the conditions of Articles 12 and 16, or, if published after 1930, fails to satisfy the conditions of Article 13a.*****"**

Code 3:

**"nomen nudum (pl. nomina nuda).** ***A name that, if published before 1931, fails to conform to Article 12; or, if published after 1930, fails to conform to Article 13. A* nomen nudum *is not an available name and therefore the same name may be made available later for the same or a different concept; in such a case it would take authorship and date [Arts 50, 21] from that act of establishment, not from any earlier publication as a* nomen nudum.**"**

Code 4:

**"nomen nudum** ***(pl.* nomina nuda*), n. A Latin term referring to a name that, if published before 1931, fails to conform to Article 12; or, if published after 1930, fails to conform to Article 13. A* nomen nudum *is not an available name, and therefore the same name may be made available later for the same or a different concept; in such a case it would take authorship and date [Arts. 50, 21] from that act of establishment, not from any earlier publication as a* nomen nudum.*"***

The relevant parts the Same Codes with respect to availability of names read as follows:

Code 2, states that for a name to be valid and available it must be:

***"(i) accompanied by a statement that purports to give characters differentiating the taxon; or***

***(ii) accompanied by a definite bibliographic reference to such a statement; or***

***(iii) proposed expressly as a replacement for a pre-existing available name."***

Code 3 states that for a name to be valid and available it must be:

***"(i) accompanied by a description or definition that states in words characters that are purported to differentiate the taxon, or***

***(ii) accompanied by a bibliographic reference to such a published statement even if contained in a work published before 1758 or that is not consistently binominal (for information excluded for reasons of anonymity after 1950 see Article 14), or***

***iii) proposed expressly as a new replacement name (nomen novum) for an available name."***

Code 4, states that for a name to be valid and available it must be:

***"13.1.1. be accompanied by a description or definition that states in words characters that are purported to differentiate the taxon, or***

***13.1.2. be accompanied by a bibliographic reference to such a published statement, even if the statement is contained in a work published before 1758, or in one that is not consistently binominal, or in one that has been suppressed by the Commission (unless the Commission has ruled that the work is to be treated as not having been published [Art. 8.7]), or***

***13.1.3. be proposed expressly as a new replacement name (nomen novum) for an available name, whether required by any provision of the Code or not."***

Put simply, because the Wells and Wellington description cites a type specimen in a museum and in this case the description furthermore is "*"(i) accompanied by a statement that purports to give characters differentiating the taxon ; or (ii) accompanied by a definite bibliographic reference to such a statement*" their name must be treated as valid and available and most certainly not a *nomen nudum*.

Other Wells and Wellington names and descriptions from their 1985 publication were tested against the three Codes and none were found to be *nomen nudem*.

This test included names cited by Shea and Sadlier (1999) for which they commented "*This name is probably a* nomen nudum", that being an idiot statement in the first instance.

It is not a difficult exercise to match the Wells and Wellington descriptions with the Code and to decide one way or other whether or not the names comply with the Code or do not!

There was no ambiguity in the code, nor for that matter the Wells and Wellington (1985) descriptions and so there was no need for me to defer to anyone else for advice or clarification on these important matters.

In summary the claims by Shea (1987) and later Shea and Sadlier (1999) that each of the various names proposed by Wells and Wellington (1985) were "*probably a* nomen nudum" was wholly dishonest and a claim lacking any factual basis.

Glenn Shea in particular has a long history of taxonomic vandalism and/or improperly synonymising species formally named by people he sees as "rivals" (e.g. Shea *et al*. 2011; Shea et al. 2020, Rowley et al. 2021 and Shea 2022).

He has also been campaigning against Wells and Wellington in particular since 1987 (see Shea 1987 and ICZN 1991, 2001, 2021), or Hoser (2007) for a summary to that date.

In 2011, Shea (2011) illegally and in breach of the *International*

*Code of Zoological Nomenclature* (Ride *et al*. 1999) created a neotype for *Cyrtodactylus abrae* Wells, 2002 from north Queensland, the neotype being of a totally different species from Singapore, then going on to rename the species (*Cyrtodactylus abrae*) in the same paper as *Cyrtodactylus hoskini* Shea, Couper, Wilmer and Amey, 2011.

In 2020 Shea was lead author in a paper that unlawfully renamed *Supremechelys* Hoser, 2014 as *Chelydera* Shea, Thomson and Georges 2020.

In 2021, along with Jodi Rowley and a cohort of thieves, Shea illegally renamed the taxon *Colleeneremia dentata toowoombaensis* Hoser, 2020 as "*Litoria balatus*" in the PRINO (peer reviewed in name only) online journal *Zootaxa*, (commonly known as *Zootoxic*).

In 2022, he ostensibly peer reviewed a paper published in same the PRINO (peer reviewed in name only) online journal *Zootaxa*, that unlawfully renamed the west Australian frog genus *Wellingtondella* Hoser, 2020 as *Anstisia* Webster and Bool, 2022.

The latter paper was merely a rehash of the relevant parts of the much larger Hoser paper from 2020, and in the most important parts of the formal description was little more than a direct cut and paste from the Hoser (2020) paper, meaning it violated the Australian Copyright Act (1968).

The relevant parts are Sections 36, 115, 189, 190, 193, 194 and 195.

All the above referred to papers that Shea either wrote or edited, were egregious acts of taxonomic vandalism and serious breaches the most important parts of the *International Code of Zoological Nomenclature.*

In Shea (2021), he lied and misquoted the *International Code of Zoological Nomenclature* to falsely allege that tribe descriptions in Hoser (2015) did not comply with the code, when they did. He also improperly synonymised various lizard taxa in a series of actions that also had potentially grave wildlife conservation implications.

Shea's acts of taxonomic vandalism are more culpable in that they defy formal rulings against this by the ICZN in 1991, 2001 and 2021 (ICZN 1991, 2001, 2021).

The first of these rulings was in direct response to Shine (1987) and Shea (1987), which were a formal petition to the ICZN to formally erase the works of Wells and Wellington from the scientific record to enable them the right to formally rename the same species and genera and claim discovery of them.

Quite properly, the ICZN in a near unanimous vote, went against the request of Shine and Shea.

Finally with respect to *N. watersi*, if the name were not compliant with the *International Code of Zoological Nomenclature* and it was in fact a *nomen nudum*, I would not have hesitated to assign a new name to that entity.

**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).

This includes if gender assignment of suffixes seems incorrect, Latinisation is wrong, apparent spelling mistakes and so on.

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 19 July 2022 (including if also viewed prior), unless otherwise stated and was accurate in terms of the content cited herein as of that date.

Any online citations within this paper, including copied emails and the like, are not as a rule cited in the references part of this paper and have the same most recent viewing date as just given.

Unless otherwise stated explicitly, colour and other descriptions apply to living adult specimens of generally good health, as seen by day, 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.

SVL or SV means snout-vent length, TL means tail length, preanal pores = precloacal pores, preanal = precloacal, tail measurements refer to original tails, max. size refers to maximum known, sometimes approximated up to the nearest 10 mm if number of measured specimens is below 10.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant genera, subgenera, 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 STATUS OF THE RELEVANT TAXA**

Using accepted criteria of assessment, none of the relevant species are of immediate conservation concern. However on a larger time frame (hundreds of years), the comments in Hoser (1989, 1991, 1993 and 1996) apply, as do the comments in Hoser (2019a, 2019b).

***LINEASCINCUS GEN. NOV.***

**LSIDurn:lsid:zoobank.org:act:1D8C4B6D-3D07-4632-9F1D-3A78B538FA41**

**Type species:** *Notoscincus butleri* Storr, 1979.

**Diagnosis:** *Lineascincus gen. nov*. monotypic for the species *Notoscincus butleri* Storr, 1979, is readily separated from the genus *Notoscincus* Fuhn, 1969 by the following suite of characters:

1/ A dorsal pattern consisting of bold alternating dark and light stripes on the dorsum (versus not so in *Notoscincus*);

2/ Three (versus 4) supraoculars;

3/ Small ear opening with 2-4 small ear lobules (versus no ear lobules);

4/ 40 mm snout-vent (adults), versus 30 mm snout-vent in adult *Notoscincus.*

Both *Lineascioncus gen. nov*. and *Notoscincus* are separated from all other Australian skinks by the following suite of characters: Moderate-sized pentadactyle limbs, meeting or overlapping when adpressed; small ear-opening; no supranasals; nasals undivided; large prefrontals in contact or narrowly separated; parietal shields in contact behind the interparietal; lower eyelid totally fused to the upper eyelid to form a permanent spectacle; subdigital lamellae divided (modified from Cogger 2014).

The type species for *Lineascioncus gen. nov*. is depicted in life in Cogger (2014) on page 665 and Wilson and Swan (2017) on page 381 at second from bottom on left.

**Distribution:** Restricted to the Pilbara region of Western Australia, south of the Fortescue River.

**Etymology:** *Lineascioncus gen. nov*. is named in reflection of the fact it is a lined skink.

**Content:** *Lineacincus butleri* (Storr, 1979) (monotypic).

***NOTOSCINCUS FLECKA SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:212B2E88-FDD9-472E-986B-0F3B07CA3F22**

**Holotype:** A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R39052 collected from Cockeraga River, Chichester Range, Western Australia, Australia, Latitude -21.717 S., Longitude 118.633 E.

This government-owned facility allows access to its holdings.

**Paratype:** A male specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R104027 collected from Woodstock station, Western Australia, Australia, Latitude -21.609444., Longitude 119.021389 E.

**Diagnosis:** Until now, most herpetologists in Australia have treated *Notoscincus ornatus* (Broom, 1896) as a single wide-ranging species, found from north-east Queensland, across the northern half of Australia to the western Australian coast.

The most notable exception to the preceding was Wells and Wellington (1985), who treated the putative species as three.

This paper herein recognises six species, being as follows:

*Notoscincus ornatus* (Broom, 1896), type locality Muldiva, north-east Queensland, and a species confined to north-east Queensland, extending west to the Mount Isa region;

*N. watjulum* (Glauert, 1959), type locality Wotjulum Mission, West Kimberley, Western Australia and apparently restricted to the west Kimberley of Western Australia;

*N. watersi* Wells and Wellington, 1985, type locality 50 km south of Alice Springs, Northern Territory being a species occurring in the red centre of Australia and nearby arid areas to the north, including the Tanami Desert;

*N. flecka sp. nov*. from the Pilbara region, Western, Australia, including the subspecies *N. flecka fereflecka subsp. nov*. from the Cape Range area in Western Australia;

*N. monodorsa sp. nov*. from the top end of the Northern Territory, including a distribution from the western Gulf of Carpentaria across to the East Kimberley in Western Australia;

*N. whoa sp. nov*. from Groote Eylandt, eastern Northern Territory.

The six species are readily separated from one another by the following suites of characters:

*Notoscincus ornatus* is separated from the other five species the presence of a silver-grey brownish dorsum of the body, either without spotting or 10-15 well-defined black spots along the mid-dorsal line of the body and others continuing along the dorsal midline of the tail; the flanks are black or mainly black on the top half or slightly more, these being distinctively broken by elongate, thin, light brown blotches, cutting off the black or nearly so, top and bottom, giving a barred appearance along each side, which continues at a lesser intensity beyond the hind limb and onto the tail. Lower flanks are mainly white with darker greyish marbling or mottling. Upper labials are mainly white with dark etching and a slightly brownish tinge.

*N. watjulum* is separated from the other five species the presence of a silver-grey brownish dorsum of the body, with 8-12 well-defined black spots on the body and others continuing along the dorsal midline of the tail; slightly more than half of the flank, being the upper part has a thick well-defined black stripe, with a well defined top and bottom border and no cross bars of any form (as seen in *N. ornatus*), although in some specimens the upper line is wavy as there are infusions from the dorsum, these rarely forming triangles on the upper surface of the border. This black stripe on either side of the body starts at the snout, runs though they eye, above the axila of the fore-limbs, along the flanks, through the axila of the hind limbs and onto the tail, where it both diffuses and some barring forms across the black stripe.

Beneath this dark stripe on either side is a well defined white border, below which is only limited greyish flecks or mottling. The anterior upper labials are greyish or brown.

*N. watersi* is separated from the two preceding species by having upper flanks that are mainly brownish in colour, being a medium chocolate brown, with evenly spaced, vertically elongate, dark brown spots. The whitish lower flanks are similarly infused meaning the distinction between the two zones in terms of colour contrast is less. Between the upper and lower parts of the flanks as just described is a bold but broken thin white line that commences below the eye, extends over the forelimb, onto the flank and through the hind-limb onto the anterior tail.

The dorsum of this species is brown on top with three rows of medium to large, dark brown spots running longitudinally down the body, with the middle of these (on the dorsal midline) extending onto the tail and about half its length. The chocolate-brown upper surface of the head is heavily peppered or flecked with dark grey. Anterior upper labials are brown.

*N. flecka sp. nov*. is similar in many respects to *N. watersi* as described above, but differs from that species and the other four species by having limited speckling, peppering or spots on the brown upper surface of the head or anterior snout (versus heavily peppered in *N. watersi*); small rather than medium-sized dorsal spots and dorsal spots that blackish, rather than dark brown; upper flanks that are mainly dark brown to black, but broken by elongate-light brown spots to give a barred appearance; brown anterior upper labials. Upper surfaces of the limbs and the tail are greyish in colour.

*N. flecka fereflecka subsp. nov*. is separated from nominate *N. flecka sp. nov*. by having upper surfaces of the limbs and the tail that are brownish, rather than greyish and the white line on either side of the lower flank of the tail is prominent, rather than indistinct in *N. flecka sp. nov*..

*N. monodorsa sp. nov.* is similar in most respects to *N. watjulum* as defined above, but is separated from that taxon by the general absence of a series of spots running down the midline of the dorsum on the body. These spots do commence either near the pelvic girdle and/or from the anterior part of the tail. On some aberrant specimens there are spots on the dorsum, but these are invariably not in a linear form as seen in typical *N. watjulum.* The black line on the upper flank of *N. monodorsa sp. nov.* is reduced in the thickness, meaning it only occupies half, or slightly less of the flank, with the immaculate white line below being more prominent, although there is commonly grey marbling beyond the first part of the white line as one moves towards the venter.

*N. whoa sp. nov.* is a very different looking lizard to the other five species.

It is a light sandy grey colour on the dorsum with 9-14 medium sized spots running down the midline of the body, which become obscure beyond the pelvic girdle as one moves down the tail towards the distal end.

The dark stripe on the side of the upper flank occupies the top 2/3 and is heavily infused from the top with triangular-shaped cuttings, giving the flanks are barred appearance, the colour of the infusions being the same light grey colour of the dorsum, this same pattering continuing onto the tail, but losing intensity as one moves distally. The dark grey between the light grey infusions is also faded, meaning the lizard as a whole has a faded appearance, which is a contrast to the other species, which do not have the same faded look.

The upper surfaces of the limbs are light grey to whitish, with well defined dark grey markings occupying about 20% of the surface.

The six preceding species, being the entirety of the genus *Notoscincus* Fuhn, 1969 as defined herein, are readily separated from the species *Lineacincus butleri* (Storr, 1979), previously also placed in *Notoscincus*, by having:

1/ A dorsal pattern not consisting of bold alternating dark and light stripes on the dorsum (versus does in *Notoscincus*);

2/ Four (versus 3) supraoculars;

3/ Small ear opening with no ear lobules (versus2-4 small ear lobules);

4/ 30 mm snout-vent (adults), versus 40 mm snout-vent in adult *Lineascioncus gen. nov*..

Both *Lineascioncus gen. nov*. and *Notoscincus* are separated

from all other Australian skinks by the following suite of characters: Moderate-sized pentadactyle limbs, meeting or overlapping when adpressed; small ear-opening; no supranasals; nasals undivided; large prefrontals in contact or narrowly separated; parietal shields in contact behind the interparietal; lower eyelid totally fused to the upper eyelid to form a permanent spectacle; subdigital lamellae divided (modified from Cogger 2014).

*Notoscincus ornatus* in life is depicted in Wilson (2015) on page 175, second from bottom and online at:
https://www.flickr.com/photos/127392361@N04/52197340091/
and
https://www.flickr.com/photos/jackgamblewildlife/18640165530/

*N. watjulum* in life is depicted online at:
https://www.flickr.com/photos/chrisjolly1989/38426733851/
and
https://www.flickr.com/photos/reptileshots/51284555563/
and
https://www.flickr.com/photos/euprepiosaur/21785415053/

*N. watersi* in life is depicted in Storr, Smith and Johnstone, (1981: Plate 17.8), being at the bottom right and online at:
https://www.flickr.com/photos/euprepiosaur/7238436268
and
https://www.flickr.com/photos/smacdonald/5718360226/
and
https://www.flickr.com/photos/whawha88/9432285267/
and
https://www.flickr.com/photos/whawha88/11972139905/

*N. flecka sp. nov*. is depicted in life online at:
https://www.flickr.com/photos/124699310@N06/42012583624/player/394bba68a1
and
https://reptile-database.reptarium.cz/species?genus=Notoscincus&species=ornatus
and
https://biocache.ala.org.au/occurrences/6a3063d5-694e-4817-a5a6-4a06f42e1d85

*N. flecka fereflecka subsp. nov*. in life is depicted online at:
https://biocache.ala.org.au/occurrences/d0ebd331-8a3c-4a89-8879-b95931c2724c

*N. monodorsa sp. nov.* is depicted in life in Cogger (2014) on page 666 at top and online at:
https://www.inaturalist.org/observations/104023848
and
https://www.flickr.com/photos/121210153@N05/13955812648/
and
https://www.flickr.com/photos/smacdonald/4508551017/
and
https://www.flickr.com/photos/euprepiosaur/7531671490/

*N. whoa sp. nov.* is depicted in life online at:
https://australian.museum/blog/amri-news/much-to-discover-collaborative-biodiversity-surveys-in-northern-australia/

The type species for *Lineascioncus gen. nov*. is depicted in life in Cogger (2014) on page 665 and Wilson and Swan (2017) on page 381 at second from bottom on left.

**Distribution:** *N. flecka sp. nov*. occurs within the main Pilbara region, Western, Australia.

The subspecies *N. flecka fereflecka subsp. nov*. is found in the Cape Range area in Western Australia and immediately adjacent parts of the Pilbara coast.

**Etymology:** The name *N. flecka sp. nov*. derives from the dorsal flecks or spots that characterise this species as described by the local Yindjibarndi native Aboriginal people, the majority of whom were systematically exterminated by the British when they invaded the area in the 1800's.

***NOTOSCINCUS FLECKA FEREFLECKA SUBSP. NOV.***

**LSIDurn:lsid:zoobank.org:act:B299DDF8-A7EE-49A1-832B-EE5623536049**

**Holotype:** A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R88636 collected from 3 km north west of Bullara Homestead, Exmouth Gulf, WA, 6707, Australia, Latitude -22.65 S., Longitude 114.033333 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 R132449 collected from 2 km west of Bullara Homestead, Exmouth Gulf, WA, 6707, Australia, Latitude -22.68 S., Longitude 114.016667 E.

**Diagnosis:** Until now, most herpetologists in Australia have treated *Notoscincus ornatus* (Broom, 1896) as a single wide-ranging species, found from north-east Queensland, across the northern half of Australia to the western Australian coast.

The most notable exception to the preceding was Wells and Wellington (1985), who treated the putative species as three.

This paper herein recognises six species, being as follows:

*Notoscincus ornatus* (Broom, 1896), type locality Muldiva, north-east Queensland, and a species confined to north-east Queensland, extending west to the Mount Isa region;

*N. watjulum* (Glauert, 1959), type locality Wotjulum Mission, West Kimberley, Western Australia and apparently restricted to the west Kimberley of Western Australia;

*N. watersi* Wells and Wellington, 1985, type locality 50 km south of Alice Springs, Northern Territory being a species occurring in the red centre of Australia and nearby arid areas to the north, including the Tanami Desert;

*N. flecka sp. nov*. from the Pilbara region, Western, Australia, including the subspecies *N. flecka fereflecka subsp. nov*. from the Cape Range area in Western Australia;

*N. monodorsa sp. nov*. from the top end of the Northern Territory, including a distribution from the western Gulf of Carpentaria across to the East Kimberley in Western Australia;

*N. whoa sp. nov*. from Groote Eylandt, eastern Northern Territory.

The six species are readily separated from one another by the following suites of characters:

*Notoscincus ornatus* is separated from the other five species the presence of a silver-grey brownish dorsum of the body, either without spotting or 10-15 well-defined black spots along the mid-dorsal line of the body and others continuing along the dorsal midline of the tail; the flanks are black or mainly black on the top half or slightly more, these being distinctively broken by elongate, thin, light brown blotches, cutting off the black or nearly so, top and bottom, giving a barred appearance along each side, which continues at a lesser intensity beyond the hind limb and onto the tail. Lower flanks are mainly white with darker greyish marbling or mottling. Upper labials are mainly white with dark etching and a slightly brownish tinge.

*N. watjulum* is separated from the other five species the presence of a silver-grey brownish dorsum of the body, with 8-12 well-defined black spots on the body and others continuing along the dorsal midline of the tail; slightly more than half of the flank, being the upper part has a thick well-defined black stripe, with a well defined top and bottom border and no cross bars of any form (as seen in *N. ornatus*), although in some specimens the upper line is wavy as there are infusions from the dorsum, these rarely forming triangles on the upper surface of the border. This black stripe on either side of the body starts at the snout, runs though they eye, above the axila of the fore-limbs, along the flanks, through the axila of the hind limbs and onto the tail, where it both diffuses and some barring forms across the black stripe.

Beneath this dark stripe on either side is a well defined white border, below which is only limited greyish flecks or mottling. The anterior upper labials are greyish or brown.

*N. watersi* is separated from the two preceding species by having

upper flanks that are mainly brownish in colour, being a medium chocolate brown, with evenly spaced, vertically elongate, dark brown spots. The whitish lower flanks are similarly infused meaning the distinction between the two zones in terms of colour contrast is less. Between the upper and lower parts of the flanks as just described is a bold but broken thin white line that commences below the eye, extends over the forelimb, onto the flank and through the hind-limb onto the anterior tail.

The dorsum of this species is brown on top with three rows of medium to large, dark brown spots running longitudinally down the body, with the middle of these (on the dorsal midline) extending onto the tail and about half its length. The chocolate-brown upper surface of the head is heavily peppered or flecked with dark grey. Anterior upper labials are brown.

*N. flecka sp. nov*. is similar in many respects to *N. watersi* as described above, but differs from that species and the other four species by having limited speckling, peppering or spots on the brown upper surface of the head or anterior snout (versus heavily peppered in *N. watersi*); small rather than medium-sized dorsal spots and dorsal spots that blackish, rather than dark brown; upper flanks that are mainly dark brown to black, but broken by elongate-light brown spots to give a barred appearance; brown anterior upper labials. Upper surfaces of the limbs and the tail are greyish in colour.

*N. flecka fereflecka subsp. nov*. is separated from nominate *N. flecka sp. nov*. by having upper surfaces of the limbs and the tail that are brownish, rather than greyish and the white line on either side of the lower flank of the tail is prominent, rather than indistinct in *N. flecka sp. nov*..

*N. monodorsa sp. nov.* is similar in most respects to *N. watjulum* as defined above, but is separated from that taxon by the general absence of a series of spots running down the midline of the dorsum on the body. These spots do commence either near the pelvic girdle and/or from the anterior part of the tail. On some aberrant specimens there are spots on the dorsum, but these are invariably not in a linear form as seen in typical *N. watjulum.* The black line on the upper flank of *N. monodorsa sp. nov.* is reduced in the thickness, meaning it only occupies half, or slightly less of the flank, with the immaculate white line below being more prominent, although there is commonly grey marbling beyond the first part of the white line as one moves towards the venter.

*N. whoa sp. nov.* is a very different looking lizard to the other five species.

It is a light sandy grey colour on the dorsum with 9-14 medium sized spots running down the midline of the body, which become obscure beyond the pelvic girdle as one moves down the tail towards the distal end.

The dark stripe on the side of the upper flank occupies the top 2/3 and is heavily infused from the top with triangular-shaped cuttings, giving the flanks are barred appearance, the colour of the infusions being the same light grey colour of the dorsum, this same pattering continuing onto the tail, but losing intensity as one moves distally. The dark grey between the light grey infusions is also faded, meaning the lizard as a whole has a faded appearance, which is a contrast to the other species, which do not have the same faded look.

The upper surfaces of the limbs are light grey to whitish, with well defined dark grey markings occupying about 20% of the surface.

The six preceding species, being the entirety of the genus *Notoscincus* Fuhn, 1969 as defined herein, are readily separated from the species *Lineacincus butleri* (Storr, 1979), previously also placed in *Notoscincus*, by having:

1/ A dorsal pattern not consisting of bold alternating dark and light stripes on the dorsum (versus does in *Notoscincus*);

2/ Four (versus 3) supraoculars;

3/ Small ear opening with no ear lobules (versus2-4 small ear lobules);

4/ 30 mm snout-vent (adults), versus 40 mm snout-vent in adult *Lineascioncus gen. nov*..

Both *Lineascioncus gen. nov*. and *Notoscincus* are separated from all other Australian skinks by the following suite of characters: Moderate-sized pentadactyle limbs, meeting or overlapping when adpressed; small ear-opening; no supranasals; nasals undivided; large prefrontals in contact or narrowly separated; parietal shields in contact behind the interparietal; lower eyelid totally fused to the upper eyelid to form a permanent spectacle; subdigital lamellae divided (modified from Cogger 2014).

*Notoscincus ornatus* in life is depicted in Wilson (2015) on page 175, second from bottom and online at:
https://www.flickr.com/photos/127392361@N04/52197340091/
and
https://www.flickr.com/photos/jackgamblewildlife/18640165530/

*N. watjulum* in life is depicted online at:
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and
https://www.flickr.com/photos/reptileshots/51284555563/
and
https://www.flickr.com/photos/euprepiosaur/21785415053/

*N. watersi* in life is depicted in Storr, Smith and Johnstone, (1981: Plate 17.8), being at the bottom right and online at:
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and
https://www.flickr.com/photos/smacdonald/5718360226/
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and
https://www.flickr.com/photos/whawha88/11972139905/

*N. flecka sp. nov*. is depicted in life online at:
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and
https://reptile-database.reptarium.cz/species?genus=Notoscincus&species=ornatus
and
https://biocache.ala.org.au/occurrences/6a3063d5-694e-4817-a5a6-4a06f42e1d85

*N. flecka fereflecka subsp. nov*. in life is depicted online at:
https://biocache.ala.org.au/occurrences/d0ebd331-8a3c-4a89-8879-b95931c2724c

*N. monodorsa sp. nov.* is depicted in life in Cogger (2014) on page 666 at top and online at:
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https://www.flickr.com/photos/smacdonald/4508551017/
and
https://www.flickr.com/photos/euprepiosaur/7531671490/

*N. whoa sp. nov.* is depicted in life online at:
https://australian.museum/blog/amri-news/much-to-discover-collaborative-biodiversity-surveys-in-northern-australia/

The type species for *Lineascioncus gen. nov*. is depicted in life in Cogger (2014) on page 665 and Wilson and Swan (2017) on page 381 at second from bottom on left.

**Distribution:** The subspecies *N. flecka fereflecka subsp. nov*. occurs in the Cape Range area in Western Australia as well as the immediately adjacent Pilbara coast.

The nominate form of the species *N. flecka sp. nov*. occurs in the main Pilbara region, Western, Australia.

**Etymology:** The scientific name *N. flecka fereflecka subsp. nov*. derives from the species name with the added suffix, “Fere”, which in Latin means “not quite”.

***NOTOSCINCUS MONODORSA SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:B4A92BE9-AD30-4E6D-B810-9A792BDBABE6**

**Holotype:** A preserved female specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J83977 collected from Kolorbidahdah, West Arnhem Land, Northern Territory, Australia, Latitude -12.650556 S., Longitude 134.298056 E.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ A preserved specimen at the Northern Territory Museum, Darwin, Northern Territory, Australia, specimen number R18780 collected from Cadell River, Arnhem Land, Northern Territory, Australia, Latitude -12.625 S., Longitude 134.328 E. and 2/ A preserved specimen at the Northern Territory Museum, Darwin, Northern Territory, Australia, specimen number R25603 collected from Annie Creek, Emu Springs, Northern Territory, Australia, Latitude -13.14 S., Longitude 134.844 E.

**Diagnosis:** Until now, most herpetologists in Australia have treated *Notoscincus ornatus* (Broom, 1896) as a single wide-ranging species, found from north-east Queensland, across the northern half of Australia to the western Australian coast.

The most notable exception to the preceding was Wells and Wellington (1985), who treated the putative species as three.

This paper herein recognises six species, being as follows:

*Notoscincus ornatus* (Broom, 1896), type locality Muldiva, north-east Queensland, and a species confined to north-east Queensland, extending west to the Mount Isa region;

*N. watjulum* (Glauert, 1959), type locality Wotjulum Mission, West Kimberley, Western Australia and apparently restricted to the west Kimberley of Western Australia;

*N. watersi* Wells and Wellington, 1985, type locality 50 km south of Alice Springs, Northern Territory being a species occurring in the red centre of Australia and nearby arid areas to the north, including the Tanami Desert;

*N. flecka sp. nov*. from the Pilbara region, Western, Australia, including the subspecies *N. flecka fereflecka subsp. nov*. from the Cape Range area in Western Australia;

*N. monodorsa sp. nov*. from the top end of the Northern Territory, including a distribution from the western Gulf of Carpentaria across to the East Kimberley in Western Australia;

*N. whoa sp. nov*. from Groote Eylandt, eastern Northern Territory.

The six species are readily separated from one another by the following suites of characters:

*Notoscincus ornatus* is separated from the other five species the presence of a silver-grey brownish dorsum of the body, either without spotting or 10-15 well-defined black spots along the mid-dorsal line of the body and others continuing along the dorsal midline of the tail; the flanks are black or mainly black on the top half or slightly more, these being distinctively broken by elongate, thin, light brown blotches, cutting off the black or nearly so, top and bottom, giving a barred appearance along each side, which continues at a lesser intensity beyond the hind limb and onto the tail. Lower flanks are mainly white with darker greyish marbling or mottling. Upper labials are mainly white with dark etching and a slightly brownish tinge.

*N. watjulum* is separated from the other five species the presence of a silver-grey brownish dorsum of the body, with 8-12 well-defined black spots on the body and others continuing along the dorsal midline of the tail; slightly more than half of the flank, being the upper part has a thick well-defined black stripe, with a well defined top and bottom border and no cross bars of any form (as seen in *N. ornatus*), although in some specimens the upper line is wavy as there are infusions from the dorsum, these rarely forming triangles on the upper surface of the border. This black stripe on either side of the body starts at the snout, runs though they eye, above the axila of the fore-limbs, along the flanks, through the axila of the hind limbs and onto the tail, where it both diffuses and some barring forms across the black stripe.

Beneath this dark stripe on either side is a well defined white border, below which is only limited greyish flecks or mottling. The anterior upper labials are greyish or brown.

*N. watersi* is separated from the two preceding species by having upper flanks that are mainly brownish in colour, being a medium chocolate brown, with evenly spaced, vertically elongate, dark brown spots. The whitish lower flanks are similarly infused meaning the distinction between the two zones in terms of colour contrast is less. Between the upper and lower parts of the flanks as just described is a bold but broken thin white line that commences below the eye, extends over the forelimb, onto the flank and through the hind-limb onto the anterior tail.

The dorsum of this species is brown on top with three rows of medium to large, dark brown spots running longitudinally down the body, with the middle of these (on the dorsal midline) extending onto the tail and about half its length. The chocolate-brown upper surface of the head is heavily peppered or flecked with dark grey. Anterior upper labials are brown.

*N. flecka sp. nov*. is similar in many respects to *N. watersi* as described above, but differs from that species and the other four species by having limited speckling, peppering or spots on the brown upper surface of the head or anterior snout (versus heavily peppered in *N. watersi*); small rather than medium-sized dorsal spots and dorsal spots that blackish, rather than dark brown; upper flanks that are mainly dark brown to black, but broken by elongate-light brown spots to give a barred appearance; brown anterior upper labials. Upper surfaces of the limbs and the tail are greyish in colour.

*N. flecka fereflecka subsp. nov*. is separated from nominate *N. flecka sp. nov*. by having upper surfaces of the limbs and the tail that are brownish, rather than greyish and the white line on either side of the lower flank of the tail is prominent, rather than indistinct in *N. flecka sp. nov*..

*N. monodorsa sp. nov.* is similar in most respects to *N. watjulum* as defined above, but is separated from that taxon by the general absence of a series of spots running down the midline of the dorsum on the body. These spots do commence either near the pelvic girdle and/or from the anterior part of the tail. On some aberrant specimens there are spots on the dorsum, but these are invariably not in a linear form as seen in typical *N. watjulum.* The black line on the upper flank of *N. monodorsa sp. nov.* is reduced in the thickness, meaning it only occupies half, or slightly less of the flank, with the immaculate white line below being more prominent, although there is commonly grey marbling beyond the first part of the white line as one moves towards the venter.

*N. whoa sp. nov.* is a very different looking lizard to the other five species.

It is a light sandy grey colour on the dorsum with 9-14 medium sized spots running down the midline of the body, which become obscure beyond the pelvic girdle as one moves down the tail towards the distal end.

The dark stripe on the side of the upper flank occupies the top 2/3 and is heavily infused from the top with triangular-shaped cuttings, giving the flanks are barred appearance, the colour of the infusions being the same light grey colour of the dorsum, this same pattering continuing onto the tail, but losing intensity as one moves distally. The dark grey between the light grey infusions is also faded, meaning the lizard as a whole has a faded appearance, which is a contrast to the other species, which do not have the same faded look.

The upper surfaces of the limbs are light grey to whitish, with well defined dark grey markings occupying about 20% of the surface.

The six preceding species, being the entirety of the genus *Notoscincus* Fuhn, 1969 as defined herein, are readily separated from the species *Lineacincus butleri* (Storr, 1979), previously also placed in *Notoscincus*, by having:

1/ A dorsal pattern not consisting of bold alternating dark and light stripes on the dorsum (versus does in *Notoscincus*);

2/ Four (versus 3) supraoculars;

3/ Small ear opening with no ear lobules (vs 2-4 small lobules);

4/ 30 mm snout-vent (adults), versus 40 mm snout-vent in adult *Lineascioncus gen. nov*..

Both *Lineascioncus gen. nov*. and *Notoscincus* are separated from all other Australian skinks by the following suite of characters: Moderate-sized pentadactyle limbs, meeting or overlapping when adpressed; small ear-opening; no supranasals; nasals undivided; large prefrontals in contact or narrowly separated; parietal shields in contact behind the interparietal; lower eyelid totally fused to the upper eyelid to form a permanent spectacle; subdigital lamellae divided (modified from Cogger 2014).

*Notoscincus ornatus* in life is depicted in Wilson (2015) on page 175, second from bottom and online at:

https://www.flickr.com/photos/127392361@N04/52197340091/

and

https://www.flickr.com/photos/jackgamblewildlife/18640165530/

*N. watjulum* in life is depicted online at:

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and

https://www.flickr.com/photos/reptileshots/51284555563/

and

https://www.flickr.com/photos/euprepiosaur/21785415053/

*N. watersi* in life is depicted in Storr, Smith and Johnstone, (1981: Plate 17.8), being at the bottom right and online at:

https://www.flickr.com/photos/euprepiosaur/7238436268

and

https://www.flickr.com/photos/smacdonald/5718360226/

and

https://www.flickr.com/photos/whawha88/9432285267/

and

https://www.flickr.com/photos/whawha88/11972139905/

*N. flecka sp. nov*. is depicted in life online at:

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and

https://reptile-database.reptarium.cz/species?genus=Notoscincus&species=ornatus

and

https://biocache.ala.org.au/occurrences/6a3063d5-694e-4817-a5a6-4a06f42e1d85

*N. flecka fereflecka subsp. nov*. in life is depicted online at:

https://biocache.ala.org.au/occurrences/d0ebd331-8a3c-4a89-8879-b95931c2724c

*N. monodorsa sp. nov.* is depicted in life in Cogger (2014) on page 666 at top and online at:

https://www.inaturalist.org/observations/104023848

and

https://www.flickr.com/photos/121210153@N05/13955812648/

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and

https://www.flickr.com/photos/euprepiosaur/7531671490/

*N. whoa sp. nov.* is depicted in life online at:

https://australian.museum/blog/amri-news/much-to-discover-collaborative-biodiversity-surveys-in-northern-australia/

The type species for *Lineascioncus gen. nov*. is depicted in life in Cogger (2014) on page 665 and Wilson and Swan (2017) on page 381 at second from bottom on left.

**Distribution:** The species *N. monodorsa sp. nov.* is found at the tropical top end of the Northern Territory, including a distribution from the western Gulf of Carpentaria in the east, across to the East Kimberley in Western Australia in the west.

**Etymology:** The scientific name *N. monodorsa sp. nov.* derives from Latin roots and that the dorsum of the body is as a rule just “mono”, or one colour only, with the absence of spots of similar markings in the majority of adult specimens.

***NOTOSCINCUS WHOA SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:D45B5D8C-8A2F-4C4D-B3A7-B3EBAC47085E**

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.135941 collected from the Gemco Mining Lease Area, Groote Eylandt, Northern Territory, Australia, Latitude -13.9 S., Longitude 136.433 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.135287, R.135942 and R.138715 all collected from the Gemco Mining Lease Area, Groote Eylandt, Northern Territory, Australia, Latitude -13.9 S., Longitude 136.433 E.

**Diagnosis:** Until now, most herpetologists in Australia have treated *Notoscincus ornatus* (Broom, 1896) as a single wide-ranging species, found from north-east Queensland, across the northern half of Australia to the western Australian coast.

The most notable exception to the preceding was Wells and Wellington (1985), who treated the putative species as three.

This paper herein recognises six species, being as follows:

*Notoscincus ornatus* (Broom, 1896), type locality Muldiva, north-east Queensland, and a species confined to north-east Queensland, extending west to the Mount Isa region;

*N. watjulum* (Glauert, 1959), type locality Wotjulum Mission, West Kimberley, Western Australia and apparently restricted to the west Kimberley of Western Australia;

*N. watersi* Wells and Wellington, 1985, type locality 50 km south of Alice Springs, Northern Territory being a species occurring in the red centre of Australia and nearby arid areas to the north, including the Tanami Desert;

*N. flecka sp. nov*. from the Pilbara region, Western, Australia, including the subspecies *N. flecka fereflecka subsp. nov*. from the Cape Range area in Western Australia;

*N. monodorsa sp. nov*. from the top end of the Northern Territory, including a distribution from the western Gulf of Carpentaria across to the East Kimberley in Western Australia;

*N. whoa sp. nov*. from Groote Eylandt, eastern Northern Territory.

The six species are readily separated from one another by the following suites of characters:

*Notoscincus ornatus* is separated from the other five species the presence of a silver-grey brownish dorsum of the body, either without spotting or 10-15 well-defined black spots along the mid-dorsal line of the body and others continuing along the dorsal midline of the tail; the flanks are black or mainly black on the top half or slightly more, these being distinctively broken by elongate, thin, light brown blotches, cutting off the black or nearly so, top and bottom, giving a barred appearance along each side, which continues at a lesser intensity beyond the hind limb and onto the tail. Lower flanks are mainly white with darker greyish marbling or mottling. Upper labials are mainly white with dark etching and a slightly brownish tinge.

*N. watjulum* is separated from the other five species the presence of a silver-grey brownish dorsum of the body, with 8-12 well-defined black spots on the body and others continuing along the dorsal midline of the tail; slightly more than half of the flank, being the upper part has a thick well-defined black stripe, with a well defined top and bottom border and no cross bars of any form (as seen in *N. ornatus*), although in some specimens the upper line is wavy as there are infusions from the dorsum, these rarely forming triangles on the upper surface of the border. This black stripe on either side of the body starts at the snout, runs though they eye, above the axila of the fore-limbs, along the flanks, through the axila of the hind limbs and onto the tail, where it both diffuses and some barring forms across the black stripe.

Beneath this dark stripe on either side is a well defined white border, below which is only limited greyish flecks or mottling. The anterior upper labials are greyish or brown.

*N. watersi* is separated from the two preceding species by having

upper flanks that are mainly brownish in colour, being a medium chocolate brown, with evenly spaced, vertically elongate, dark brown spots. The whitish lower flanks are similarly infused meaning the distinction between the two zones in terms of colour contrast is less. Between the upper and lower parts of the flanks as just described is a bold but broken thin white line that commences below the eye, extends over the forelimb, onto the flank and through the hind-limb onto the anterior tail.

The dorsum of this species is brown on top with three rows of medium to large, dark brown spots running longitudinally down the body, with the middle of these (on the dorsal midline) extending onto the tail and about half its length. The chocolate-brown upper surface of the head is heavily peppered or flecked with dark grey. Anterior upper labials are brown.

*N. flecka sp. nov*. is similar in many respects to *N. watersi* as described above, but differs from that species and the other four species by having limited speckling, peppering or spots on the brown upper surface of the head or anterior snout (versus heavily peppered in *N. watersi*); small rather than medium-sized dorsal spots and dorsal spots that blackish, rather than dark brown; upper flanks that are mainly dark brown to black, but broken by elongate-light brown spots to give a barred appearance; brown anterior upper labials. Upper surfaces of the limbs and the tail are greyish in colour.

*N. flecka fereflecka subsp. nov*. is separated from nominate *N. flecka sp. nov*. by having upper surfaces of the limbs and the tail that are brownish, rather than greyish and the white line on either side of the lower flank of the tail is prominent, rather than indistinct in *N. flecka sp. nov*..

*N. monodorsa sp. nov.* is similar in most respects to *N. watjulum* as defined above, but is separated from that taxon by the general absence of a series of spots running down the midline of the dorsum on the body. These spots do commence either near the pelvic girdle and/or from the anterior part of the tail. On some aberrant specimens there are spots on the dorsum, but these are invariably not in a linear form as seen in typical *N. watjulum.* The black line on the upper flank of *N. monodorsa sp. nov.* is reduced in the thickness, meaning it only occupies half, or slightly less of the flank, with the immaculate white line below being more prominent, although there is commonly grey marbling beyond the first part of the white line as one moves towards the venter.

*N. whoa sp. nov.* is a very different looking lizard to the other five species.

It is a light sandy grey colour on the dorsum with 9-14 medium sized spots running down the midline of the body, which become obscure beyond the pelvic girdle as one moves down the tail towards the distal end.

The dark stripe on the side of the upper flank occupies the top 2/3 and is heavily infused from the top with triangular-shaped cuttings, giving the flanks are barred appearance, the colour of the infusions being the same light grey colour of the dorsum, this same pattering continuing onto the tail, but losing intensity as one moves distally. The dark grey between the light grey infusions is also faded, meaning the lizard as a whole has a faded appearance, which is a contrast to the other species, which do not have the same faded look.

The upper surfaces of the limbs are light grey to whitish, with well defined dark grey markings occupying about 20% of the surface.

The six preceding species, being the entirety of the genus *Notoscincus* Fuhn, 1969 as defined herein, are readily separated from the species *Lineacincus butleri* (Storr, 1979), previously also placed in *Notoscincus*, by having:

1/ A dorsal pattern not consisting of bold alternating dark and light stripes on the dorsum (versus does in *Notoscincus*);

2/ Four (versus 3) supraoculars;

3/ Small ear opening with no ear lobules (versus2-4 small ear lobules);

4/ 30 mm snout-vent (adults), versus 40 mm snout-vent in adult *Lineascioncus gen. nov*..

Both *Lineascioncus gen. nov*. and *Notoscincus* are separated from all other Australian skinks by the following suite of characters: Moderate-sized pentadactyle limbs, meeting or overlapping when adpressed; small ear-opening; no supranasals; nasals undivided; large prefrontals in contact or narrowly separated; parietal shields in contact behind the interparietal; lower eyelid totally fused to the upper eyelid to form a permanent spectacle; subdigital lamellae divided (modified from Cogger 2014).

*Notoscincus ornatus* in life is depicted in Wilson (2015) on page 175, second from bottom and online at:
https://www.flickr.com/photos/127392361@N04/52197340091/
and
https://www.flickr.com/photos/jackgamblewildlife/18640165530/

*N. watjulum* in life is depicted online at:
https://www.flickr.com/photos/chrisjolly1989/38426733851/
and
https://www.flickr.com/photos/reptileshots/51284555563/
and
https://www.flickr.com/photos/euprepiosaur/21785415053/

*N. watersi* in life is depicted in Storr, Smith and Johnstone, (1981: Plate 17.8), being at the bottom right and online at:
https://www.flickr.com/photos/euprepiosaur/7238436268
and
https://www.flickr.com/photos/smacdonald/5718360226/
and
https://www.flickr.com/photos/whawha88/9432285267/
and
https://www.flickr.com/photos/whawha88/11972139905/

*N. flecka sp. nov*. is depicted in life online at:
https://www.flickr.com/photos/124699310@N06/42012583624/player/394bba68a1
and
https://reptile-database.reptarium.cz/species?genus=Notoscincus&species=ornatus
and
https://biocache.ala.org.au/occurrences/6a3063d5-694e-4817-a5a6-4a06f42e1d85

*N. flecka fereflecka subsp. nov*. in life is depicted online at:
https://biocache.ala.org.au/occurrences/d0ebd331-8a3c-4a89-8879-b95931c2724c

*N. monodorsa sp. nov.* is depicted in life in Cogger (2014) on page 666 at top and online at:
https://www.inaturalist.org/observations/104023848
and
https://www.flickr.com/photos/121210153@N05/13955812648/
and
https://www.flickr.com/photos/smacdonald/4508551017/
and
https://www.flickr.com/photos/euprepiosaur/7531671490/

*N. whoa sp. nov.* is depicted in life online at:
https://australian.museum/blog/amri-news/much-to-discover-collaborative-biodiversity-surveys-in-northern-australia/

The type species for *Lineascioncus gen. nov*. is depicted in life in Cogger (2014) on page 665 and Wilson and Swan (2017) on page 381 at second from bottom on left.

**Distribution:** The species *N. whoa sp. nov.* is apparently confined to Groote Eylandt, in the north-east of the Northern Territory, Australia.

**Etymology:** The scientific name *N. whoa sp. nov.* derives from custom of local Aboriginal children of the Anindilyakwa tribe who yell out "*whoa*" as they grab these lizards scuttling across the ground.

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**CONFLICT OF INTEREST**

None.

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# Overlooked genera and species of Australian burrowing skink (Squamata:Scincidae).

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**ABSTRACT**

An ongoing audit of Australia's herpetofauna has yielded hitherto unrecognized genera and species of burrowing skink in Australia.

They are formally identified and named in accordance with *the International Code of Zoological Nomenclature* (Ride *et al*. 1999) for the first time.

Included are the following:

1/ A divergent species of *Anomalopus* Duméril and Bibron, 1851, namely *Anomalopus swansoni* Greer and Cogger, 1985 is placed in a newly named genus *Nocivi gen. nov*..

2/ Northernmost populations of putative *Anomalopus mackayi* Greer and Cogger, 1985 and *A. verreauxii* (Duméril and Bibron, 1851) are formally named as new species, *A. woolfi sp. nov*. and *A. engellaensis sp. nov*..

3/ The species originally described as *Chelomeles reticulatus* Günther,1873 is referred to the genus *Ipsofactoscincus* Wells and Wellington, 1988, for which it is the type species. A population from near Gympie, Queensland is formally described and named as a new species *I. davemerceicai sp. nov..*

3/ The species originally described as *Ophioscincus frontalis* De Vis, 1888 now the type species for the genus *Coeranoscincus* Wells and Wellington, 1984 is split into three species, the new ones formally named as *C. whybrowi sp. nov*. and *C. pailsei sp. nov..*

4/ The genus *Glaphyromorphus* Wells and Wellington, 1984 *sensu-lato*, *sensu* Wells (2009) is agreed save for the further division of a new genus beyond the well supported, *Glaphyromorphus*, *Opacitascincus* Wells and Wellington, 1984 and *Rhiannodon* Wells, 2009, with divergent species being placed in the new genera *Caudatenebrosus gen. nov*. and *Innocuascincus gen. nov.* based on the phylogenetic results of Skinner *et al*. (2013). New subspecies are formally named in each of the newly named genera.

5/ Putative *Glaphyromorphus nigricaudis* (Macleay, 1877), from the Northern Territory, herein placed in the new genus *Caudatenebrosus gen. nov*. is formally named as a new species C*. rosswellingtoni sp. nov*..

7/ Putative *Opacitascincus darwiniensis* (Storr, 1967) from the North Kimberley in Western Australia is formally named as a new species, *O. ugh sp. nov*..

8/ *Glaphyromorphus punctulatus* (Peters, 1871) is split three ways with two new subspecies formally named as *G. punctulatus nigreopunctata sp. nov*. and *G. punctulatus latusumbra sp. nov*..

All the newly described species and subspecies are both morphologically divergent and allopatric across biogeographical barriers of known antiquity, with the exception of two morphologically divergent subspecies.

**Keywords:** Taxonomy; nomenclature; skinks; Australia; Queensland; Northern Territory, New South Wales; Western Australia; *Anomalopus*; *swansoni*; *Coeranoscincus*; *Ophioscincus*; *Glaphyromorphus*; *frontalis*; *punctulatus*; *Opacitascincus*; *Ipsofactoscincus*; *darwiniensis*; new genus; *Nocivi*; *Caudatenebrosus*; *Innocuascincus*; new species; *woolfi*; *eungellaensis*; *davemerceicai*; *whybrowi*; *pailsei*; *rosswellingtoni*; *ugh*; new subspecies; *divergans*; *dorsalux*; *piperlateralis*; *latusumbra*; *nigreopunctata*.

**INTRODUCTION**

An ongoing audit has been systematically assessing all of Australia's herpetofauna to see if there are any obviously unnamed genera or species within putative groups.

This audit, led by myself (Raymond Hoser) has, as of mid 2022 gone through most of Australia's known reptiles and frogs (but not all) and identified numerous genera as well as more than 200 species and subspecies of reptiles and over 80 species of frogs, the majority of which have been formally described and named in accordance with the *International Code of Zoological Nomenclature* (Ride *et al*. 1999) in *Australian Journal of Herpetology* issues 1-58.

This quantity, the majority of which have been named in the period 2009-2022 exceeded all expectation when the audit was commenced and underscores the underestimated biodiversity in Australia.

Some groups of reptile and frog in Australia remain to be audited and even on completion of this audit, there will remain numerous undescribed species within Australia's herpetofauna.

Although there have been exceptions, the majority of species formally named via this audit, have been easily identifiable and flagged, either by virtue of the obvious morphological differences of the taxa, or alternatively via published studies, including many molecular studies over the past 20 years.

The taxa formally named in this paper conform to the preceding.

In terms of the genus-level splits indicated in the abstract, the relevant taxa are morphologically divergent and have been shown in molecular studies to be sufficiently ancient in divergence to warrant genus level recognition.

All the newly identified and named species and subspecies are both morphologically divergent and allopatric across previously identified barriers of known antiquity.

**MATERIALS AND METHODS**

This audit included all species within the putative genera *Anomalopus* Duméril and Bibron, 1851,

*Coeranoscincus* Wells and Wellington, 1984 and *Glaphyromorphus* Wells and Wellington, 1984 as defined by Cogger (2014).

I note that some of the preceding genera have already been split beyond the position taken by Cogger (2014).

The audit included a review of the relevant literature encompassing the putative species as generally defined by herpetologists in Australia, including as recently defined by Cogger (2014).

This included revisiting the molecular studies available on Australian skinks as a means to estimate likely divergences across known biogeographical barriers and breaks as identified with respect of the taxa in this audit.

Specimens of each putative species from across their known ranges were inspected, including both live and dead animals as well as photos of specimens with known provenance.

The regional populations conforming to putative species but identified as potentially unnamed species were inspected as were all other major populations.

Biogeographical gaps were identified which conformed with absence of specimens being seen, collected or held in Australian public museums. These were usually associated with outlier populations, including some known to separated by previously determined biogeographical barriers.

Earlier papers naming putative taxa within each genus were reviewed, not just for the purposes of revisiting original descriptions, which were checked against actual specimens, but also cross referenced with the second, third and fourth editions of the *International Code of Zoological Nomenclature* to ensure that all post 1950 names were valid according to the rules of the ICZN at all materially relevant times, including 2022.

The lizards were inspected with a view to confirm that if there were consistent identifiable differences between putative species, one could identify these to enable formal descriptions to be made as required.

At the genus level, two divergent species identified early on as divergent, via molecular studies, including Pyron *et al*. (2013), were scrutinized to see if they were sufficiently divergent morphologically to warrant being placed in new genera.

Those two (putative) species were *Anomalopus swansoni* Greer and Cogger, 1985 and *Chelomeles reticulatus* Günther,1873.

Most species within the putative genera audited were effectively eliminated from this audit on the basis that they appeared to be validly named entities in accordance with the relevant rules and that there were no obviously hidden taxa within the populations of each species.

However those that were flagged as including populations that included potentially more than one species or subspecies that did not have available ICZN compliant names were as follows:

*Anomalopus mackayi* Greer and Cogger, 1985

*Anomalopus verreauxii* (Duméril and Bibron, 1851)

*Coeranoscincus reticulatus* (Günther, 1873) (currently as of 2022 placed by most herpetologists in the genus *Coeranoscincus* Wells and Wellington, 1984, *sensu* Cogger, 2014), but better placed in *Ipsofactoscincus* Wells and Wellington, 1988.

*Ophioscincus frontalis* De Vis, 1888 (currently as of 2022 placed by most herpetologists in the genus *Coeranoscincus* Wells and Wellington, 1984, *sensu* Cogger, 2014, for which it is the type species)

*Rhiannadon nigricaudis* (Macleay, 1877), better known as *Glaphyromorphus nigricaudis.*

*Rhiannadon fuscicaudis* (Greer, 1979), better known as *Glaphyromorphus fuscicaudis.*

*Glaphyromorphus cracens* (Greer, 1985)

*Glaphyromorphus pumilus* (Boulenger, 1887)

*Glaphyromorphus punctulatus* (Peters, 1871)

*Opacitascincus darwiniensis* (Storr, 1967)

Literature relevant to the taxonomic conclusions herein, in terms of each of the relevant taxa audited is as follows:

In terms of *Anomalopus swansoni* Greer and Cogger, 1985, *A. mackayi* Greer and Cogger, 1985, *A. verreauxii* (Duméril and Bibron, 1851) and the closely related *A. leuckartii* (Weinland, 1862) the relevant publications were Annable (1995), Beolens *et al*. (2011), Cogger (2000, 2014), Cogger *et al*. (1983), Cope (1864), Couper *et al*. (2006), Covacevich (1971), Covacevich *et al*. (1998), Daan and Hillenius (1966), Dale (1973), De Vis (1888), Duméril and Duméril (1851), Escoriza (2005), Greer and Cogger (1985), Günther (1873), Hutchinson *et al*. (2021), Kay *et al*. (2013), Longman (1916), Mecke *et al*. (2016), Oudemans (1894), Peters (1867), Rabosky *et al.* (2014), Reeder (2003), Ride *et al.* (1999), Shea *et al*. (1987), Shea and Sadlier (1999), Singhal *et al.* (2018), Skinner *et al*. (2013), Smith (1937), Swan *et al*. (2017), Weinland (1863), Wells (2009), Wells and Wellington (1984, 1985), Wilson (2015), Wilson and Swan (2010, 2017), Zietz (1920) and sources cited therein.

In terms of *Ophioscincus frontalis* De Vis, 1888 and *Chelomeles reticulatus* Günther,1873, both as of 2022 placed by most Australian herpetologists in the genus *Coeranoscincus* Wells and Wellington, 1984 (type species *Ophioscincus frontalis* De Vis, 1888), *sensu* Cogger (2014), the relevant publications were Cogger (2000, 2014), Cogger *et al.* (1983), Couper (1992), Couper *et al*. (2006), De Vis (1888), Greer and Cogger (1985), Günther (1873), Hutchinson *et al*. (2021), Pyron *et al*. (2013), Reeder (2003), Ride *et al.* (1999), Singhal *et al.* (2018), Skinner *et al.* (2013), Smith (1937), Wells (2009), Wells and Wellington (1984, 1985, 1988), Wilson (2015, 2022), Wilson and Swan (2010, 2017) and sources cited therein.

In terms of putative *Rhiannadon nigricaudis* (Macleay, 1877), better known as *Glaphyromorphus nigricaudis* and putative *Rhiannadon fuscicaudis* (Greer, 1979), better known as *Glaphyromorphus fuscicaudis* the relevant publications were Blackburn (1999), Boulenger (1985), Capocaccia (1961), Cogger (2000, 2014), Cogger *et al*. (1983), Copland (1946, 1950),

Couper *et al*. (2006), De Rooij (1915), Greer (1979), Hoskin and Couper (2014), Iskandar and Erdelen (2016), Kramer (1979), Macleay (1877), Peters and Doria (1878), Roux (1919), Shea and Greer (1999), Singhal *et al*. (2018), Skinner *et al*. (2013), Torr (1991), Wells (2009), Wells and Wellington (1984, 1985), Wilson (2015), Wilson and Swan (2010, 2017) and sources cited therein.

In terms of *Glaphyromorphus punctulatus* (Peters, 1871) originally described as *Lygosoma* (*Lygosoma*) *punctulatum* Peters, 1871, the relevant publications were Bauer *et al*. (1995), Cogger (2000, 2014), Cogger *et al.* (1983), Couper *et al.* (2006), Greer (1985), Hutchinson *et al*. (2021), Peters (1871), Ride *et al*. (1999), Singhal *et al*. (2018), Wells (2009), Wells and Wellington (1984, 1985), Wilson (2015), Wilson and Swan (2010, 2017) and sources cited therein.

In terms of *Opacitascincus darwiniensis* (Storr, 1967) originally described as *Sphenomorphus crassicaudus darwinensis* Storr, 1967, the relevant publications were Beolens *et al*. (2011), Cogger (2000, 2014), Cogger *et al*. (1983), Couper *et al.* (2006), Greer (1985, 1990), Reeder (2003), Ride *et al.* (1999), Singhal *et al*. (2018), Skinner (2013), Storr (1967), Wells (2009), Wells and Wellington (1984, 1985), Wilson (2015), Wilson and Swan (2010, 2017) and sources cited therein.

In terms of *Innocuascincus cracens* (Greer, 1985) and *I. pumilus* (Boulenger, 1877), both previously treated as within *Glaphyromorphus* (*sensu* Cgger, 2014) the relevant publications were Cogger (2000, 2014), Cogger *et al*. (1983), Couper *et al.* (2006), Greer (1985), Ride *et al.* (1999), Singhal *et al*. (2018), Skinner *et al*. (2013), Wells (2009), Wells and Wellington (1984, 1985, 1988), Wilson (2015), Wilson and Swan (2010, 2017) and sources cited therein.

**RESULTS**

Based on molecular and morphological divergence, the following putative species were found to be sufficiently divergent to be placed in their own genera.

1/ A divergent species of *Anomalopus* Duméril and Bibron, 1851, namely *Anomalopus swansoni* Greer and Cogger, 1985 is herein placed in a newly named genus *Nocivi gen. nov*..

2/ The species originally described as *Chelomeles reticulatus* Günther,1873 is herein referred to the genus *Ipsofactoscincus* Wells and Wellington, 1988. The 1988 name proposed by Wells and Wellington was overlooked until the final proofing stages of this paper and so in most early drafts of this paper a new genus name had been proposed (and been passed through robust peer review, indicating fallibility in the process, even when done to the highest standards).

As the new "Hoser name" would have been an objective junior synonym and not available under the ICZN rules, the correct ICZN name *Ipsofactoscincus* was placed in this paper and the earlier (in this paper) name erased.

3/ The genus *Glaphyromorphus* Wells and Wellington, 1984 *sensu-lato*, *sensu* Wells (2009) is agreed save for the further division of a new genus beyond the well supported, *Glaphyromorphus*, *Opacitascincus* Wells and Wellington, 1984 and *Rhiannodon* Wells, 2009, with divergent species being placed in the new genera *Caudatenebrosus gen. nov*. and *Innocuascincus gen. nov.* based on the phylogenetic results of Skinner *et al*. (2013).

Based on morphological divergence and distributional breaks over known biogeograpical barriers (e.g. the Ord, Black Mountain, Burdekin, St. Lawrence and Border Ranges Gaps), putative species were split as follows:

A/ Northernmost populations of putative *Anomalopus mackayi* Greer and Cogger, 1985 (from Queensland, as opposed to NSW) and *A. verreauxii* (Duméril and Bibron, 1851) (being from Eungella, near Mackay in Queensland) are formally named as new species, *A. woolfi sp. nov*. and *A. engellaensis sp. nov*. respectively.

B/ A population of putative *Chelomeles reticulatus* Günther,1873 (type locality of New South Wales) from near Gympie, Queensland is formally described and named as a new species *Ipsofactoscincus davemerceicai sp. nov.*.

C/ *Ophioscincus frontalis* De Vis, 1888, now in the genus *Coeranoscincus* Wells and Wellington, 1984 is split into three species, the new ones formally named as *C. whybrowi sp. nov*. and *C. pailsei sp. nov.*.

D/ Putative *Glaphyromorphus nigricaudis* (Macleay, 1877), originally described as *Hinulia atrocostata* Macleay, 1877, (non *Scincus atrocostata* Lesson, 1830), renamed as *Mocoa nigricaudis* Macleay, 1877 (with a type locality of Darnley Island, Torres Strait), in this case being specimens from the Northern Territory, herein placed in the new genus *Caudatenebrosus gen. nov*. is formally named as a new species *C. rosswellingtoni sp. nov*..

E/ *Caudatenebrosus fuscicaudis* (Greer, 1979), better known as *Glaphyromorphus fuscicaudis* (Greer, 1979) is herein divided into two subspecies across the Black Mountain gap, north of Kuranda, Queensland.

F/ *Innocuascincus cracens* (Greer, 1985) and *I. pumilus* (Boulenger, 1887), both previously treated as within *Glaphyromorphus* (*sensu* Cogger, 2014) are each divided into pairs of subspecies. In both cases the newly named subspecies are divergent southern populations, not separated by well known biogeographical barriers. They are *Innocuascincus cracens dorsalux subsp. nov.* and *I. pumilus piperlateralis subsp. nov.*.

G/ Putative *Opacitascincus darwiniensis* (Storr, 1967) from the North Kimberley in Western Australia is formally named as a new species, *O. ugh sp. nov*..

H/ *Glaphyromorphus punctulatus* (Peters, 1871) is split three ways with two new subspecies formally named as *G. punctulatus nigreopunctata sp. nov*. and *G. punctulatus latusumbra sp. nov*..

**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).

This includes if gender assignment of suffixes seems incorrect, Latinisation is wrong, apparent spelling mistakes and so on.

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 21 July 2022 (including if also viewed prior), unless otherwise stated and was accurate in terms of the content cited herein as of that date.

Any online citations within this paper, including copied emails and the like, are not as a rule cited in the references part of this paper and have the same most recent viewing date as just given.

Unless otherwise stated explicitly, colour and other descriptions apply to living adult specimens of generally good health, as seen by day, 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.

SVL or SV means snout-vent length, TL means tail length, preanal pores = precloacal pores, preanal = precloacal,

tail measurements refer to original tails, max. size refers to maximum known, sometimes approximated up to the nearest 10 mm if number of measured specimens is below 10.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant genera, subgenera, 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 STATUS OF THE RELEVANT TAXA**

Using accepted criteria of assessment, none of the relevant species are of immediate conservation concern. However on a larger time frame (hundreds of years), the comments in Hoser (1989, 1991, 1993 and 1996) apply, as do the comments in Hoser (2007, 2009, 2012a, 2012b, 2013, 2015a-f, 2019a, 2019b and 2020a).

***NOCIVI GEN. NOV.***

**LSIDurn:lsid:zoobank.org:act:78E0335F-89D1-47CF-A1DA-AD20E3EF9B29**

**Type species:** *Anomalopus swansoni* Greer and Cogger, 1985.

**Diagnosis:** The genus *Nocivi gen. nov*. is separated from all other Australian genera of skinks (including *Anomalopus* Duméril and Bibron, 1851), by the following unique suite of characters:

A smooth-scaled burrowing skink with no limbs, parietal shields are in contact behind the interparietal; scaly, movable lower eyelid; nasals separated and not extending to the lip; prefrontals present; ectopterygoid process present; whitened snout tip (modified from Cogger 2014).

*Nocivi gen. nov*. is separated from the morphologically similar genera *Anomalopus* Duméril and Bibron, 1851 and the morphologically similar genus *Praeteropus* Hutchinson, Couper, Amey and Wilmer, 2021 (the species of which were formerly included in *Anomalopus*) by not having limbs.

*Nocivi gen. nov*. is separated from the morphologically similar genus *Suppressascincus* Wells and Wellington, 1988, (occasionally known by the objective synonym *Sepsiscus* Hutchinson, Couper, Amey and Wilmer, 2021) by having the nasal separated from the lip by a supralabial, versus a nasal fused to the first surpalabial, therefore extending to the lip in *Suppressascincus*.

Skinner *et al.* (2013) found a divergence of more than 15 MYA separating "*Anomalopus swansoni* Greer and Cogger, 1985" from all other members of the genus *Anomalopus*, supporting the act of erecting a new genus for this divergent taxon.

**Distribution:** Central coast and nearby ranges of NSW, from the Hawkesbury River in the south to the Hunter Valley in the north.

**Etymology: "***Nocivi*" in Latin means burrowing, giving this genus its name *Nocivi gen. nov*. being burrowing skinks.

**Content:** *Nocivi swansoni* (Greer and Cogger, 1985) (monotypic).

***ANOMALOPUS WOOLFI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:B1D7BC32-9066-4977-A3CA-8FDC92E38EB4**

**Holotype:** A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J8516 collected from Allora (25 km north of Warwick), Queensland, Australia, Latitude -28.008681 S., Longitude 151.989375 E.

This government-owned facility allows access to its holdings.

**Paratypes:** Three preserved specimens in the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J87168 collected from Hodgson Creek, Felton East, Queensland, Australia, Latitude -27.794444 S., Longitude 151.743889 E., J76802 collected from the Bowenville Stock Route, Bowenville, Queensland, Australia, Latitude -27.316111 S., Longitude 151.476389 E. and J46260 collected from the Dalby area, Queensland, Australia, Latitude -27.183333 S., Longitude 151.25 S.

**Diagnosis:** Until now, *Anomalopus woolfi sp. nov.* has been treated as a northern (Queensland) population of *A. mackayi* Greer and Cogger, 1985, with a type locality of Euroka, Walgett, New South Wales, Australia.

The known range of *A. mackayi* in northern New South Wales is bound by Wallangra in the north-east, Culgoora in the south-east and potentially Goodooga in the north-west.

The known range of *Anomalopus woolfi sp. nov.* in south-east Queensland is more-or-less in a line from Warwick in the south to Jimbour in the north, with a deviation of no more than about 50 km to either side.

*Anomalopus woolfi sp. nov.* is readily separated from the similar and closely related species *A. mackayi* by having a dorsum that is light yellowish grey, each scale with an expanded and contrasting dark centre, giving the general appearance of a series of fairly distinct lines running down the body, versus a dull greyish-brown dorsum in *A. mackayi* with small spots in each scale that are also of reduced intensity, meaning the dorsum has a dull greyish-brown appearance.

A. *woolfi sp. nov*. also has white lower labials with distinctive dark blotches, markings or barring, versus white labials without such markings, the only non-white on the lower labials potentially being tiny and indistinct dark flecks. The tail of *A. woolfi sp. nov*. heavily contrasts the light and dark parts of the scales on the dorsum and sides, giving it a striped appearance, versus not so in *A. mackayi.*

The two species are separated from all other species in the genus *Anomalopus* Duméril and Duméril, 1851 (and the morphologically similar genera *Suppressascincus* Wells and Wellington, 1988, (occasionally known by the objective synonym *Sepsiscus* Hutchinson, Couper, Amey and Wilmer, 2021) and *Praeteropus* Hutchinson, Couper, Amey and Wilmer, 2021) by having hind limbs with two toes and forelimbs with three toes.

The species in the three preceding genera are separated from all other Australian skinks by being small to medium-sized smooth-scaled skinks with elongate bodies and thick tails. The parietal shields are in contact behind the interparietal; then lower eyelid is movable and scaly; nasals undivided; no supranasals; ectopterygoid process is present. Often (but not always) there is whitening at the tip of the snout on the dorsal surface.

While Greer and Cogger (1985) defined *A. mackayi* on the basis of specimens of both *A. mackayi* and *A. woolfi sp. nov*., it is evident from their paper that their description was based on dead specimens in which colouration was faded and the obvious differences between the two forms overlooked.

They explicitly stated their colour description was based on preserved animals.

Notwithstanding the preceding diagnosis separating *A. mackayi* and *A. woolfi sp. nov*., the rest of their diagnosis for *A. mackayi* applies also to *A. woolfi sp. nov*. and is more-or-less copied below to give further detail of this new species.

The species are moderately long, attenuate skinks with small front and rear limbs and a brownish colour pattern, which in *A. woolfi sp. nov*. gives the appearance of having lines, this caused by light background colour and expanded dark centres in each scale, this not being the case in *A. mackayi*, where dark scale centres are both reduced in size and intensity and contrast to the darker background colour.

Snout bluntly rounded; rostral with broad, moderately deep median lobe projecting between nasals to make narrow contact with frontonasals; frontonasal wider than long (1.4-1.8 x); prefrontals well developed but widely separated; frontal slightly longer than wide (1.2-1.4 x) and slightly shorter than midline length of frontoparietals and interparietal; supraoculars 4, first 2 in contact with frontal; frontoparietals paired, in contact, each shorter and broader than interparietal; interparietal distinct, with distinct parietal eye spot; parietals meet behind interparietal; each parietal bordered posterolaterally by large upper secondary temporal and 2 to 3 more-or-less equally sized body scales; transversely enlarged nuchals 0-1.

Nasals large and separated, nostril situated slightly forward and

below centre point; loreals 2, approximately equal in size and proportions; preoculars 2, lower much the larger; supraciliaries 6 to 7, first separated from frontal, penultimate occasionally projects slightly medially between third and fourth supraoculars, and ultimate projects medially between last supraocular and pretemporals; suboculars large and forming a continuous row comprised of 1 presubocular, 2 suboculars and 1 postocular; lower eyelid scaly; pretemporals 2; primary temporal single; secondary temporals 2, upper very long and overlapping lower which is about equal in size to primary temporal; tertiary temporal single; external ear opening absent, represented by an anteriorly dipping, shallow auricular crease; supralabials 6 or 7, fourth smallest and situated directly below centre of eye; postsupralabials 2; infralabials 6 or 5; mental large, wider than long (1.7-2.3 x); postmental much wider than long, in contact with first two infralabials on each side; enlarged pairs of chin scales 3, first in contact, second separated by 1 scale row and third separated by 3.

Body scales smooth, in 18-20 longitudinal rows at midbody; paravertebral scales only slightly wider than those in more lateral rows, 97-116 in a single row; inner preanals overlap outer, medial pair enlarged; median row or subcaudals equal in size to immediately adjacent rows.

Snout-vent length 63-123 mm; front leg with 3 very short, clawed toes of which middle is longest, 0.05-0.07 x SVL; rear leg with 2 very short clawed toes of which second is longer, 0.04-0.08 x SVL; tail pointed, 1.03-1.21 x SVL.

Presacral vertebrae 51-58; complete inscriptional chevrons 11-13; sternalimesosternal ribs 212.

Manus comprises radiale, ulnare and pisiform (intermedium was not assessed); centrale; distal carpals 2-4; metacarpals 2-5, and phalanges 0.2.3.2.0.

Pes comprises fused astragalus and calcaneum; distal tarsals 3-4; metatarsals 2-5; phalanges 0.2.2.0.0 (derived from Greer and Cogger 1985 at page 14).

*Anomalopus woolfi sp. nov*. in life is depicted in Wilson (2015) on page 94 at left middle (from Bowenville, Queensland) and online at:

https://www.flickr.com/photos/zimny_anders/30543350722/
and
https://www.flickr.com/photos/ryanfrancis/20732080478/
and
https://www.flickr.com/photos/ryanfrancis/20920067075/
and
https://www.flickr.com/photos/zimny_anders/30026595683/
and
https://www.inaturalist.org/observations/116028225
and
https://www.inaturalist.org/observations/103739248

*Anomalopus mackayi* is depicted in life in Cogger (2014) on page 417 top left and online at:

https://www.flickr.com/photos/127392361@N04/49993681052/
and
https://www.flickr.com/photos/126237772@N07/49983103888/

**Distribution:** The known range of *Anomalopus woolfi sp. nov.* in south-east Queensland is more-or-less in a line from Warwick in the south to Jimbour in the north, with a deviation of no more than about 50 km to either side.

**Etymology:** *A. woolfi sp. nov.* is named in honour of Paul Woolf of Walloon, (near Brisbane), Queensland, Australia, the foundation president of the Herpetological Society of Queensland Incorporated in recognition of his many contributions to herpetology in Australia spanning some decades.

***ANOMALOPUS EUNGELLAENSIS SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:9F386D74-29E9-4048-ADF4-DBC28F769404**

**Holotype**: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J33115, collected from Broken Rover, Eungella National Park, Queensland, Australia, Latitude -21.166667 S., Longitude 148.5 E.

This government-owned facility allows access to its holdings.

**Paratype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J33120, collected from Broken Rover, Eungella National Park, Queensland, Australia, Latitude -21.166667 S., Longitude 148.5 E.

**Diagnosis:** Until now, *Anomalopus eungellaensis sp. nov*. has been treated as a northern outlier population of *Anomalopus verreauxii* Duméril and Bibron, 1851.

*A. eungellaensis sp. nov*. is readily separated from *A. verreauxii* by having a yellow dorsum in adults, versus brownish to black in *A. verreauxii* as well as a major reduction in the size of the bar running across the back of the head. This bar running up the neck, across the back of the head and down the other side of the neck, is typically yellow and 2 or more scales wide in *A. verreauxii*, being of similar width both on the sides of the back of the head and the dorsal surface, versus narrow or absent on the top of the head in *A. eungellaensis sp. nov*. and invariably one scale width or less at the centre of the back of the head (at the medial line).

Both *A. eungellaensis sp. nov*. and *A. verreauxii* are separated from all other members of the genus *Anomalopus* Duméril and Duméril, 1851 (and the morphologically similar genera *Suppressascincus* Wells and Wellington, 1988, (occasionally known by the objective synonym *Sepsiscus* Hutchinson, Couper, Amey and Wilmer, 2021) and *Praeteropus* Hutchinson, Couper, Amey and Wilmer, 2021) by having styliform hindlimbs, each with a single toe, and forelimbs each with three toes.

The species in the three preceding genera are separated from all other Australian skinks by being small to medium-sized smooth-scaled skinks with elongate bodies and thick tails. The parietal shields are in contact behind the interparietal; then lower eyelid is movable and scaly; nasals undivided; no supranasals; ectopterygoid process is present. Often (but not always) there is whitening at the tip of the snout on the dorsal surface.

Both *A. eungellaensis sp. nov*. and *A. verreauxii* are further characterised as follows: snout is moderate being more-or-less rounded. Nasals separated. Prefrontals are small and widely separated. Two loreals on either side. Three or four supraoculars. Postmental in contact with two lower labials on each side. Ear hidden, but is indicated by a depression. 20-22 mid-body rows. Moderately enlarged pre-anals and maximum adult size is about 170 mm snout-vent.

*A. eungellaensis sp. nov*. in life is depicted online at:

https://www.flickr.com/photos/zimny_anders/32832720396/
and
https://www.flickr.com/photos/jaricornelis/41758211852/
and
https://www.flickr.com/photos/euprepiosaur/5501559635/

*A. verreauxii* in life is depicted in Cogger (2014) on page 418 at top right as well as in Wilson (2015) on page 94 at bottom right and online at:

https://www.flickr.com/photos/feathertailpics/27224989302/
and
https://www.flickr.com/photos/96574168@N02/15860861799/
and
https://www.flickr.com/photos/129822827@N07/37483026576/
and
https://www.flickr.com/photos/ryanfrancis/18554461161/

**Distribution:** *A. eungellaensis sp. nov*. appears to be confined to the Eungella / Mackay region of mid north Queensland, Australia.

**Etymology:** *A. eungellaensis sp. nov*. is named in reflection of the type locality for the species.

***IPSOFACTOSCINCUS* WELLS AND WELLINGTON, 1988.**

**Type species:** *Chelomeles reticulatus* Günther,1873 (currently most widely known as *Coeranoscincus reticulatus* (Günther,1873)).

**Diagnosis:** The putative species originally described as *Chelomeles reticulatus* Günther,1873 was subsequently placed in the genus *Lygosoma* Hardwicke and Gray, 1827 (Type species *Anguis quadrupes* Linnaeus, 1766) by Smith in 1937, then *Anomalopus* Duméril and Bibron, 1851 (type species *Anomalopus verreauxii* Duméril and Bibron, 1851) by Cogger *et al*. (1983) and then transferred to the genus *Coeranoscincus* Wells and Wellington, 1984 (type species *Ophioscincus frontalis* (De Vis, 1888) by Greer and Cogger (1985), but recent molecular phylogenies has shown it not to be closely related to either, or for that matter any other Australian genus of skink and so the genus *Ipsofactoscincus* Wells and Wellington, 1988 is herein regarded as the appropriate placement. The type species is *Chelomeles reticulatus* Günther,1873

According to the molecular phylogeny of Pyron *et al.* (2013) the type species "*Chelomeles reticulatus* Günther,1873 " is most closely related to *Coloscincus truncatus* Peters, 1876, but still sufficiently divergent from that taxon as to warrant being placed in a separate genus.

Wells and Wellington (1984, 1985) were aware of the divergence of the relevant taxon, but deferred assigning it to a new genus in favour of Greer and Cogger doing so. They explicitly stated this fact in Wells and Wellington (1985). However in their paper, Greer and Cogger (1985) failed to do so, meaning that the relevant species was incorrectly placed, leading to Wells and Wellington (1988) correcting the mess and erecting the genus *Ipsofactoscincus* Wells and Wellington, 1988.
More recently, Wells and Wellington have been lampooned for failing to erect a genus for the relevant taxon (*Chelomeles reticulatus* Günther,1873) in their 1985 paper, but the criticism is not appropriate as they had simply done the ethical thing and allowed Greer and Cogger the right to name the said genus, which for their own reasons, they ultimately did not.

The same situation applied for the taxon *Anomalopus* (*Vermiseps*) *pluto* Ingram, 1977, which was ultimately placed into the genus *Suppressascincus* Wells and Wellington, 1988, again after Greer and Cogger (1985) failed to erect a new genus for this species.

Again I emphasize that Wells and Wellington (1985) explicitly identified *Anomalopus* (*Vermiseps*) *pluto* Ingram, 1977 as warranting a new genus assignment and deferring this in favour of Greer and Cogger, who's paper had yet to be published.

The putative species now known as *Ipsofactoscincus reticulatus* (Günther,1873) from south-east Queensland and north-east New South Wales is also herein treated as a composite of closely related and allopatric species. These consist the entirety of the genus *Ipsofactoscincus*.

*Ipsofactoscincus* are separated from all other Australian skinks by the following suite of characters: No ectopterygoid process, short tridactyle limbs and prefrontals that are in contact or only narrowly separated.

The genus most likely to be confused with *Ipsofactoscincus* is *Coeranoscincus* Wells and Wellington, 1984, but that genus is separated from *Ipsofactoscincus* by not having limbs present.

The other morphologically similar genus *Anomalopus* Duméril and Bibron, 1851 is separated from *Ipsofactoscincus* by having an ectopterygoid process and small to moderate prefrontals that are widely separated).

**Distribution:** Confined to the wetter and adjacent parts of north-east New South Wales and south-east Queensland, generally near the coast.

**Content:** *Ipsofactoscincus reticulatus* (Günther,1873) (type species); *I. davemerceica sp. nov*..

***IPSOFACTOSCINCUS DAVEMERCEICAI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:C093F9C8-E5D0-40F7-80D7-19DBB34FEC1F**

**Holotype:** A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J24407 collected from the Cooloola State Forest, Queensland, Australia, Latitude -25.975 S., Longitude 153.125 E.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J83597 collected from Leisha Track, Double Island Point, Great Sandy National Park, Queensland, Australia, Latitude -25.916667 S., Longitude 153.183333 E., 2/ A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J79851 collected from the Poyungan-Garawongera Road, 1.6 km from Bogimbah Road, Fraser Island, Queensland, Australia, Latitude -25.333333 S., Longitude 153.083333 E., 3/ Two specimens in the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J64567 and J64568 both collected from Fraser Island, Queensland, Australia, Latitude -25.203889 S., Longitude 153.211667 E.

**Diagnosis:** *Ipsofactoscincus davemerceicai sp. nov*. has until now been treated as a northern population of *Ipsofactoscincus reticulatus* (Günther,1873), type locality of Clarence River, New South Wales, a species herein restricted to the south of the Brisbane River Valley, that species being better known as *Chelomeles reticulatus* Günther,1873, *Lygosoma reticulatum sensu* Smith, 1937, *Anomalopus reticulatus sensu* Cogger, 1983, or *Coeranoscincus reticulatus sensu* Greer and Cogger, 1985.

Notwithstanding the significant changes in colouration from juvenile form to adult in both *I. davemerceicai sp. nov*. and *I. reticulatus* the two species can be readily separated as mature adults by the fact that *I. davemerceicai sp. nov*. is a bluish-grey colouration, while *I. reticulatus* is invariably brownish. In immature specimens, young *T. davemerceicai sp. nov*. have more dark scales on the sides of the anterior snout, versus more light in *I. reticulatus.*

Both *I. davemerceicai sp. nov*. and *I. reticulatus,* the entirety of the genus *Ipsofactoscincus* are separated from all other Australian skinks by the following suite of characters: No ectopterygoid process, short tridactyle limbs and prefrontals that are in contact or only narrowly separated.

The genus most likely to be confused with *Ipsofactoscincus* is *Coeranoscincus* Wells and Wellington, 1984, but that genus is separated from *Ipsofactoscincus* by not having limbs present.

The other morphologically similar genus *Anomalopus* Duméril and Bibron, 1851 is separated from *Ipsofactoscincus* by having an ectopterygoid process and small to moderate prefrontals that are widely separated).

Greer and Cogger (1985), provide a detailed description of the genus of *Ipsofactoscincus* as "*Coeranoscincus reticulatus*" as does Wells and Wellington (1988) and this is not repeated here.

*Ipsofactoscincus davemerceicai sp. nov*. in life is depicted online at:

https://inaturalist.ala.org.au/observations/115340376

from Maleny, Qld, being the southern distributional limit for this species. The northern limit of the range is Fraser Island.

*Ipsofactoscincus reticulatus* in life is depicted in Cogger (2014) on page 448 at bottom right, Wilson (2015), page 108 at middle and online at:
https://inaturalist.ala.org.au/observations/91835186
and
https://inaturalist.ala.org.au/observations/107351897
and
https://inaturalist.ala.org.au/observations/104490878

It's distribution is the coast and ranges south of the Brisbane River to about Grafton, with an isolated record from between Coffs Harbour and Port Macquarie (New South Wales).

**Distribution:** *Ipsofactoscincus davemerceicai sp. nov*. is known only from the coast and immediate hinterland in an area from Maleny in the south to Fraser Island in the north, south-east Queensland, Australia.

It appears to be relatively uncommon throughout its known range and/or only common in small pockets and therefore should be treated as a vulnerable species. The apparent absence of the species from areas of suitable habitat near where they occur (e.g. the D'Aquilar Range to the immediate south), indicates a likely historical decline in the recent geological past.

**Etymology:** *Ipsofactoscincus davemerceicai sp. nov*. is named in honour of a hero local to the area it occurs, being in the form of David Merceica, current owner of the Snakes Downunder Reptile Park and Zoo, 51 Lucketts Rd, Childers, Queensland, 4660, Australia for services to herpetology in Australia.

***COERANOSCINCUS WHYBROWI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:BD584287-FA53-499B-B04F-CA56E1B16C07**

**Holotype:** A preserved specimen at the Australian National Wildlife Collection (ANWC), Canberra, ACT, Australia, specimen number R05100 collected from the Bargoo Creek area on the Windsor Tableland, Queensland, Australia, Latitude -16.2167 S., Longitude 145.0667 E.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ Two preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J58100, J58107 collected from the summit of Mount Halycon, Queensland, Australia, Latitude -16.05 S., Longitude 145.416667 E., 2/ A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J58118 collected from Mount Pieter Botte, Queensland, Australia, Latitude -16.066667 S., Longitude 145.416667 E., 3/ A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J76309 collected from Tea Tree Road, Cow Bay, Queensland, Australia, Latitude -16.216667, Longitude 145.433333 E., 4/ A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.55074 collected from Thornton Peak at about 1,000 metres elevation, Queensland, Australia, Latitude -16.166 S., Longitude 145.383 E.

**Diagnosis:** The putative species originally described as *Ophioscincus frontalis* De Vis, 1888 restricted to the wet tropics area of far north Queensland, now the type species for the genus *Coeranoscincus* Wells and Wellington, 1984 is herein split into three full species, the new ones formally named herein as *Coeranoscincus whybrowi sp. nov*. and *C. pailsei sp. nov.*.

*Coeranoscincus whybrowi sp. nov*. with a known distribution encompassing the coast and nearby ranges from Mount Sorrow in the north to Cow Bay in the south and the Bargoo Creek area on the Windsor Tableland in the west (all in north Queensland) is distinguished from the other two species (*C. frontalis* (De Vis, 1888), type locality of Innisfail, Queensland and *C. pailsei sp. nov.* found in the Paluma Range, south to Mount Elliott, just south of Townsville, far north Queensland) by adults being a light brown colour on the dorsum and that on the posterior part of the tail, it retains the light coloured vertical intrusions from the venter into the darker brown tail colour of the dorsum and flanks, as seen more prominently in juvenile specimens (of all three species), this retention of this colouration not being the case in *C. frontalis* and *C. pailsei sp. nov.*. In juvenile *C. whybrowi sp. nov*., the venter is a dark orange colour, versus yellow or orangeish-yellow in both *C. frontalis* and *C. pailsei sp. nov.*.

Adult *C. pailsei sp. nov.* has a greyish tinge to the dorsum, versus brown to black in *C. frontalis* and brown in *C. whybrowi sp. nov*.. Juvenile *C. pailsei sp. nov.* has a well-defined broken black line between the eye and the neck, versus spots on a white background anteriorly and then a line commencing half-way from the white of the head and neck, to the darker coloured dorsum and sides of the body in the other two species.

*Coeranoscincus frontalis*, *C. whybrowi sp. nov*. and *C. pailsei sp. nov.* constituting the entirety of the genus *Coeranoscincus* Wells and Wellington, 1984 and as already mentioned, being wholly confined to the wet tropics region of far north Queensland are separated from all other Australian skinks by the following suite of characters: No ectopterygoid process, no limbs and prefrontals that are in contact or only narrowly separated.

The genus most likely to be confused with *Coeranoscincus* Wells and Wellington, 1984 is *Ipsofactoscincus*, but that genus is separated from *Coeranoscincus* Wells and Wellington, 1984 by having short tridactyle limbs.

The other morphologically similar genus *Anomalopus* Duméril and Bibron, 1851 is separated from *Ipsofactoscincus* and *Coeranoscincus* by having an ectopterygoid process and small to moderate prefrontals that are widely separated).

*Coeranoscincus frontalis* has a distribution encompassing the coast and nearby ranges from Kuranda (just north of Cairns) in the north to Kirrama in the south, in far north Queensland, Australia.

*C. whybrowi sp. nov*. has a known distribution encompassing the coast and nearby ranges from Mount Sorrow in the north to Cow Bay in the south and the Bargoo Creek area on the Windsor Tableland in the west, being separated from the more southern species *C. frontalis* by a well-known biogeographical barrier being the Black Mountain Corridor, which is located immediately north of Kuranda.

*C. pailsei sp. nov.* is found in the Paluma Range, south to Mount Elliott, just south of Townsville, far north Queensland, with *C. frontalis* occurring in upland regions to the immediate north.

Images of *C. whybrowi sp. nov*. in life from the Paluma Range are depicted online at:

https://www.flickr.com/photos/zimny_anders/13908224980/

and

https://www.flickr.com/photos/euprepiosaur/8615879784/

Images of *C. frontalis* in life are depicted in Cogger (2014) on page 448, bottom left, Wilson (2015) page 107 (bottom), page 108 (top) and also online at:

https://www.flickr.com/photos/akashsherping/48827259668/

and

https://www.flickr.com/photos/159249812@N05/32542689718/

and

https://www.flickr.com/photos/reptileshots/27696189920/

and

https://www.flickr.com/photos/128497936@N03/38971980455/

and

https://www.flickr.com/photos/128497936@N03/25997930498/

**Distribution:** *C. whybrowi sp. nov*. has a known distribution encompassing the coast and nearby ranges from Mount Sorrow in the north to Cow Bay in the south and the Bargoo Creek area on the Windsor Tableland in the west, being separated from the more southern species *C. frontalis* by a well-known biogeographical barrier being the Black Mountain Corridor, which is located immediately north of Kuranda.

**Etymology:** The new species *C. whybrowi sp. nov*. is named in honour of Peter Whybrow of Taggerty, Victoria, Australia in recognition of his many contributions to herpetology spanning many decades. Quite appropriately, I note his love of alcohol and his regular habit of drinking himself "legless", including at my wedding in year 1999, which is appropriate and relevant when naming a legless skink in his honour.

***COERANOSCINCUS PAILSEI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:61CD5F5F-AF90-4E81-AF8A-3A0313CF6BA5**

**Holotype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J33077 collected from the Mount Elliott National Park, Queensland, Australia, Latitude -19.5 S., Longitude 146.983333 S.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ Two preserved specimens at the Queensland

Museum, Brisbane, Queensland, Australia, specimen numbers J45355 and J45356 both collected from Twin Falls, East of Paluma, Queensland, Australia, Latitude 19.0 S., Longitude 146.25 S., 2/ Seven preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J42232, J42233, J42234, J45354, J74666, J74924 and J74925 all collected from Paluma, Queensland, Australia., 3/ A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.49086 collected from Paluma, Queensland, Australia.

**Diagnosis:** The putative species originally described as *Ophioscincus frontalis* De Vis, 1888 restricted to the wet tropics area of far north Queensland, now the type species for the genus *Coeranoscincus* Wells and Wellington, 1984 is herein split into three full species, the new ones formally named herein as *Coeranoscincus pailsei sp. nov*. and *C. whybrowi sp. nov.*.

*Coeranoscincus whybrowi sp. nov*. with a known distribution encompassing the coast and nearby ranges from Mount Sorrow in the north to Cow Bay in the south and the Bargoo Creek area on the Windsor Tableland in the west is distinguished from the other two species (*C. frontalis* (De Vis, 1888), type locality of Innisfail, Queensland and *C. pailsei sp. nov.* found in the Paluma Range, south to Mount Elliott, just south of Townsville, far north Queensland) by adults being a light brown colour on the dorsum and that on the posterior part of the tail, it retains the light coloured vertical intrusions from the venter into the darker brown tail colour of the dorsum and flanks, as seen more prominently in juvenile specimens (of all three species), this retention of this colouration not being the case in *C. frontalis* and *C. pailsei sp. nov.*. In juvenile *C. whybrowi sp. nov*., the venter is a dark orange colour, versus yellow or orangeish-yellow in both *C. frontalis* and *C. pailsei sp. nov.*.

Adult *C. pailsei sp. nov.* has a greyish tinge to the dorsum, versus brown to black in *C. frontalis* and brown in *C. whybrowi sp. nov*.. Juvenile *C. pailsei sp. nov.* has a well-defined broken black line between the eye and the neck, versus spots on a white background anteriorly and then a line commencing half-way from the white of the head and neck, to the darker coloured dorsum and sides of the body in the other two species.

*Coeranoscincus frontalis*, *C. pailsei sp. nov.* and *C. whybrowi sp. nov*. constituting the entirety of the genus *Coeranoscincus* Wells and Wellington, 1984 and as already mentioned, being wholly confined to the wet tropics region of far north Queensland are separated from all other Australian skinks by the following suite of characters: No ectopterygoid process, no limbs and prefrontals that are in contact or only narrowly separated.

The genus most likely to be confused with *Coeranoscincus* Wells and Wellington, 1984 is *Ipsofactoscincus*, but that genus is separated from *Coeranoscincus* Wells and Wellington, 1984 by having short tridactyle limbs.

The other morphologically similar genus *Anomalopus* Duméril and Bibron, 1851 is separated from *Ipsofactoscincus* and *Coeranoscincus* by having an ectopterygoid process and small to moderate prefrontals that are widely separated).

*Coeranoscincus frontalis* has a distribution encompassing the coast and nearby ranges from Kuranda (just north of Cairns) in the north to Kirrama in the south, in far north Queensland, Australia.

*C. whybrowi sp. nov*. has a known distribution encompassing the coast and nearby ranges from Mount Sorrow in the north to Cow Bay in the south and the Bargoo Creek area on the Windsor Tableland in the west, being separated from the more southern species *C. frontalis* by a well-known biogeographical barrier being the Black Mountain Corridor, which is located immediately north of Kuranda.

*C. pailsei sp. nov.* is found in the Paluma Range, south to Mount Elliott, just south of Townsville, far north Queensland, with *C. frontalis* occurring in upland regions to the immediate north.

Images of *C. whybrowi sp. nov*. in life from the Paluma Range are depicted online at:

https://www.flickr.com/photos/zimny_anders/13908224980/

and

https://www.flickr.com/photos/euprepiosaur/8615879784/

Images of *C. frontalis* in life are depicted in Cogger (2014) on page 448, bottom left, Wilson (2015) page 107 (bottom), page 108 (top) and also online at:

https://www.flickr.com/photos/akashsherping/48827259668/

and

https://www.flickr.com/photos/159249812@N05/32542689718/

and

https://www.flickr.com/photos/reptileshots/27696189920/

and

https://www.flickr.com/photos/128497936@N03/38971980455/

and

https://www.flickr.com/photos/128497936@N03/25997930498/

**Distribution:** *C. pailsei sp. nov.* is found in the Paluma Range, south to Mount Elliott, just south of Townsville, far north Queensland, with *C. frontalis* occurring in upland regions to the immediate north.

**Etymology:** The new species *C. pailsei sp. nov*. is named in honour of Roy Pails of Ballarat, Victoria, Australia in recognition of his many contributions to herpetology spanning many decades. Quite appropriately, I note his love of alcohol and his regular habit of drinking himself “legless” with Peter Whybrow (see above) and others, including at my wedding in year 1999, which is appropriate and relevant when naming a legless skink in his honour.

***CAUDATENEBROSUS GEN. NOV.***

**LSIDurn:lsid:zoobank.org:act:43300072-738D-4C1C-91FD-50885451A7B6**

**Type species:** *Caudatenebrosus rosswellingtoni sp. nov.*

**Diagnosis:** Until now (2022) the species within *Caudatenebrosus sp. nov.* have been treated by most herpetologists in recent years as within *Glaphyromorphus* Wells and Wellington, 1984, but the relevant species were shown by Skinner *et al.* (2013) to be more than 15 MYA divergent from *Lygosoma mjobergi* Lönnberg and Andersson, 1915, the type species for the genus *Rhiannadon* Wells, 2019, being the closest related species, which combined with morphological divergence warranted placement in a new and separate genus.

*Caudatenebrosus sp. nov.* are separated from all other species within *Glaphyromorphus* Wells and Wellington, 1984 *sensu* Cogger (2014), thereby including the genera *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009 and *Innocuascincus gen. nov*. by the following suite of characters:

Adpressed limbs overlapping or separated at most by the length of the forelimb; 26-28 mid-body rows; prefrontal not contacting the first preocular; 18-24 smooth or bluntly keeled lamellae under the fourth toe; adult size about 75 mm snout-vent.

The genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov., Innocuascincus gen. nov*., all being *Glaphyromorphus sensu* Cogger (2014) are separated from all other Australian skinks by the following suite of characters:

Pentadactyle limbs; smooth scales; no anterior ear lobules; no supranasals; movable lower eyelid; scaly parietal scales in contact behind the interparietal; fourth toe noticeably longer than the third; lower surfaces of the rump or tail not flushed with red or pink; moderate hindlimb usually being not less than forty percent of the snout-vent length; oviparous (modified from Cogger 2014).

**Distribution:** Far North Queensland, Australia, nearby southern New Guinea (including Irian Jaya), generally near the coast and also the western side of the Gulf of Carpentaria in the Northern Territory, Australia.

**Etymology:** The new genus *Caudatenebrosus gen. nov.* is named from the Latin words “cauda” for tail and “tenebrosus”, meaning dark as in the shade or colour, in reflection of this trait in

the tails of these lizards.

**Content:** *Caudatenebrosus rosswellingtoni sp. nov.* (type species); *C. fuscicaudus* (Greer, 1979) (including one subspecies); *G. nigricaudis* (Macleay, 1877).

***CAUDATENEBROSUS ROSSWELLINGTONI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:40D03D6D-3088-4FB3-95C9-34A2D02D9DF7**

**Holotype:** A preserved specimen at the Museum and Art Gallery of the Northern Territory, Darwin, Northern Territory, Australia, specimen number R34759 collected from Groote Eylandt, Northern Territory, Australia, Latitude -14.136 S., Longitude 136.521 E.

This government-owned facility allows access to its holdings.

**Paratypes:** Four preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.135987, R.135988, R.135989 and R.138656 all collected from the Gemco Mining Lease Area, Groote Eylandt, Northern Territory, Australia, Latitude -14.050 S., Longitude 136.521 E.

**Diagnosis:** Until now *Caudatenebrosus rosswellingtoni sp. nov*. has been treated as a western population of *Caudatenebrosus nigricaudis* (Macleay, 1877), better known as *Glaphyromorphus nigricaudis*, originally described as *Hinulia atrocostata* Macleay, 1877, (non *Scincus atrocostata* Lesson, 1830), renamed as *Mocoa nigricaudis* Macleay, 1877 (with a type locality of Darnley Island, Torres Strait).The type form of *Caudatenebrosus nigricaudis* occurs in north-east Queensland, Torres Strait and nearby parts of southern New Guinea and is a very different animal to the new species *Caudatenebrosus rosswellingtoni sp. nov*..

While the two species are similar in general size, shape, form and colour, they are readily separated from one another as follows:

*C. rosswellingtoni sp. nov.* lacks the bold and distinctive dark and light barring of the upper labials always seen in *C. nigricaudis.* In *C. rosswellingtoni sp. nov.* these are either faded or absent.

Furthermore the flanks, or at least the anterior flanks of *C. nigricaudis* have dark (usually blackish) flecks or blotches, versus light (creamy white) flecks or blotches in *C. rosswellingtoni sp. nov*.. When blackish flecks or blotches are present in *C. rosswellingtoni sp. nov*. they are so faded as to be nearly white and indistinct.

Black flecks or spots on the dorsum of *C. rosswellingtoni sp. nov*. are small, numerous and close, versus large and quite scattered in *C. nigricaudis*, this also being a useful diagnostic difference when identifying well-marked subadult specimens.

The upper flank of *C. rosswellingtoni sp. nov*. is of a different colour than the mid dorsum, versus not so in *C. nigricaudis.*

*C. nigricaudis* has heavy black spotting on the (original) tail, versus faded spotting or marks in *C. rosswellingtoni sp. nov*..

Black spots between the eye and the ear are distinct in *C. nigricaudis* versus not so in *C. rosswellingtoni sp. nov.*.

Both *C. rosswellingtoni sp. nov.* and *C. nigricaudis* are separated from all other species of *Glaphyromorphus* including the morphologically similar genera *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov.* and *Innocuascincus gen. nov*., all being *Glaphyromorphus sensu* Cogger (2014) by the following unique suite of characters:

Adpressed limbs overlapping or separated at most by the length of the forelimb; 26-28 mid-body rows; prefrontal not contacting the first preocular; fewer than 60 scales along the vertebral line between the parietal scales and the posterior edge of the thighs; sides of neck and anterior flanks are brown to creamish brown, with irregular flecks, mottling or vertical bars; 18-24 smooth or bluntly keeled lamellae under the fourth toe; adult size about 75 mm snout-vent.

The closely related genus *Opacitascincus* Wells and Wellington, 1985, was confirmed as distinct from *Glaphyromorphus* Wells and Wellington, 1984 by the molecular results of Pyron *et al.* (2013) and Skinner *et al.* (2013), but have been ignored by Cogger (2014) and other publishing herpetologists since 2013, largely due to pressure and threats applied by the Wolfgang Wüster gang of thieves *sensu* Hoser (2007).

*Opacitascincus* Wells and Wellington, 1985 are separated from *Glaphyromorphus* Wells and Wellington, 1984, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov.* and *Innocuascincus gen. nov*., by having adpressed limbs separated by noticeably more than the length of the forelimb; prefrontal contacting the first preocular; postmental usually contacting two infralabials or alternatively only one; ear opening small, but noticeably larger than the nostril; fewer than 65 scales along the vertebral line between the parietal scales and the posterior edge of the thigh; 20-22 mid-body rows; lamellae under fourth toes is rarely as low as 15; axilla/groin hindlimb ratio is usually less than three; usually some indication of a mid-vertebral line, even if by way of spotting or flecks and a darkening in the upper lateral zone in some way, which may either be bordered or not (*O. crassicaudus* (Duméril and Bibron, 1851) (type for genus), *O. arnhemicus* (Storr, 1967), *O. darwinensis* (Storr, 1967), *O. ugh sp. nov.* (this paper)).

The genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov., Innocuascincus gen. nov*., all being *Glaphyromorphus sensu* Cogger (2014) are separated from all other Australian skinks by the following suite of characters:

Pentadactyle limbs; smooth scales; no anterior ear lobules; no supranasals; movable lower eyelid; scaly parietal scales in contact behind the interparietal; fourth toe noticeably longer than the third; lower surfaces of the rump or tail not flushed with red or pink; moderate hindlimb usually being not less than forty percent of the snout-vent length; oviparous (modified from Cogger 2014).

*C. rosswellingtoni sp. nov.* in life is depicted online at:
https://www.flickr.com/photos/zimny_anders/30572038701/
and
https://www.inaturalist.org/observations/106739894

*C. nigricaudis* in life is depicted in Cogger (2015) on page 569 at bottom, Wilson (2015) on page 148 at top right and online at:
https://www.inaturalist.org/observations/110728229
and
https://www.inaturalist.org/observations/85814940
and
https://www.flickr.com/photos/zimny_anders/33258012491/
and
https://www.flickr.com/photos/moloch05/44381355040/

**Distribution:** *C. rosswellingtoni sp. nov.* is found in the region of the western shore of the Gulf of Carpentaria in the Northern Territory, including off-shore islands, from Maria Island, Gulf of Carpentaria in the south and Nhulunbuy in the north.

*C. nigricaudis* occurs on Cape York, Queensland, Torres Strait islands and nearby parts of southern New Guinea (Western Province) and immediately adjacent Irian Jaya.

**Etymology:** *C. rosswellingtoni sp. nov.* is named in honour of Cliff Ross Wellington of Ramornie, northern New South Wales, Australia in recognition of a lifetime's services to herpetology and wildlife conservation both in Australia and globally.

***CAUDATENEBROSUS FUSCICAUDIS DIVERGANS SUBSP. NOV.***

**LSIDurn:lsid:zoobank.org:act:82A05EAA-9F74-4218-9FB5-323DC8F0C1A8**

**Holotype:** A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J46773 collected from the Bluewater Range, north of Townsville, Queensland, Australia, Latitude -19.183333 S., Longitude 146.166667 E.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ A preserved specimen in the Queensland

Museum, Brisbane, Queensland, Australia, specimen number J76051 collected from Hitchinbrook Island, Queensland, Australia, Latitude -18.411389 S., Longitude 146.282222 E., 2/ A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J62207 collected from the Seaview Range, Queensland, Australia, Latitude -18.626389 S., Longitude 145.847222 E.

**Diagnosis:** The species originally described as *Sphenomorphus fuscicaudis* Greer, 1979, better known as *Glaphyromorphus fuscicaudis* has been herein transferred to the newly erected genus *Caudatenebrosus gen. nov.* on the basis of a divergence in excess of more than 15 MYA from both the genera *Glaphyromorphus* Wells and Wellington, 2014 and *Rhiannodon* Wells, 2009 (Skinner *et al.* 2013).

The taxon originally described as *Sphenomorphus fuscicaudis* Greer, 1979, has a type locality of Mount Finnigan (3,700 ft), Mount Finnigan National Park, North East Queensland, Australia, which is the northern wet tropics of far north Queensland, Australia.

There is a minor break in the distribution of this species between the northern and southern wet tropics across the Black Mountain barrier, just north of Kuranda, but due to the relative lack of morphological divergence between the two populations and the fact that this species does inhabit warm moist regions in the lowlands, I have opted to define the divergent southern population as a subspecies in the absence of genetic data.

*Caudatenebrosus fuscicaudis divergans subsp. nov.* is readily separated from *C. fuscicaudis fuscicaudis* by having a lack of obvious white flecks on the mid and upper flanks, these being either absent or very indistinct and dull (versus presence in *C. fuscicaudis fuscicaudis*); an absence of distinct white spots on the upper surfaces of all four limbs (versus presence in *C. fuscicaudis fuscicaudis*) and the white on the upper labials is not in the form of bold and well-defined markings bordered by purple or brown as is the case in *C. fuscicaudis fuscicaudis*.

Both subspecies of *Caudatenebrosus fuscicaudis* are separated from all other species of *Glaphyromorphus* including the morphologically similar genera *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov.* and *Innocuascincus gen. nov*., all being *Glaphyromorphus sensu* Cogger (2014) by the following unique suite of characters:

Adpressed limbs overlapping or separated at most by the length of the forelimb; 26-28 mid-body rows; prefrontal not contacting the first preocular; more than 60 scales along the vertebral line between the parietal scales and the posterior edge of the thighs; sides of neck and anterior flanks are blackish, enclosing a series of irregular pale cream or yellow spots and blotches; 18-24 smooth or bluntly keeled lamellae under the fourth toe; adult size about 75 mm snout-vent.

The genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov., Innocuascincus gen. nov*., all being *Glaphyromorphus sensu* Cogger (2014) are separated from all other Australian skinks by the following suite of characters:

Pentadactyle limbs; smooth scales; no anterior ear lobules; no supranasals; movable lower eyelid; scaly parietal scales in contact behind the interparietal; fourth toe noticeably longer than the third; lower surfaces of the rump or tail not flushed with red or pink; moderate hindlimb usually being not less than forty percent of the snout-vent length; oviparous (modified from Cogger 2014).

The closely related genus *Opacitascincus* Wells and Wellington, 1985, was confirmed as distinct from *Glaphyromorphus* Wells and Wellington, 1984 by the molecular results of Pyron *et al.* (2013) and Skinner *et al.* (2013), but this has been ignored by Cogger (2014) and other publishing herpetologists since 2013, largely due to pressure and threats applied by the Wolfgang Wüster gang of thieves *sensu* Hoser (2007).

*Opacitascincus* Wells and Wellington, 1985 are separated from *Glaphyromorphus* Wells and Wellington, 1984, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov.* and *Innocuascincus gen. nov*., by having adpressed limbs separated by noticeably more than the length of the forelimb; prefrontal contacting the first preocular; postmental usually contacting two infralabials or alternatively only one; ear opening small, but noticeably larger than the nostril; fewer than 65 scales along the vertebral line between the parietal scales and the posterior edge of the thigh; 20-22 mid-body rows; lamellae under fourth toes is rarely as low as 15; axilla/groin hindlimb ratio is usually less than three; usually some indication of a mid-vertebral line, even if by way of spotting or flecks and a darkening in the upper lateral zone in some way, which may either be bordered or not (*O. crassicaudus* (Duméril and Bibron, 1851) (type for genus), *O. arnhemicus* (Storr, 1967), *O. darwinensis* (Storr, 1967), *O. ugh sp. nov.* (this paper)).

*Caudatenebrosus fuscicaudis divergans subsp. nov.* is depicted in life in Cogger (2014) on page 567, Wilson (2015) on page 147 at bottom right and online at:
https://www.flickr.com/photos/euprepiosaur/6090665691/

*Caudatenebrosus fuscicaudis fuscicaudis* is depicted in life online at:

https://www.flickr.com/photos/euprepiosaur/6484516485/

**Distribution:** *C. fuscicaudis divergans subsp. nov.* is found in the coast and ranges south of Kuranda, to the Paluma Range, Queensland, Australia.

**Etymology:** *C. fuscicaudis divergans subsp. nov.* is named in reflection of the fact it is divergent from the nominate form. The spelling "*divergans*" is intentional and should not be altered.

***INNOCUASCINCUS GEN. NOV.***

**LSIDurn:lsid:zoobank.org:act:D4D70E05-1C2B-4032-B5D9-FBAD231474E9**

**Type species:** *Lygosoma pumilum* Boulenger, 1887.

**Diagosis:** The two species within the genus *Innocuascincus gen. nov*. are separated from all other species within the genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009 and *Caudatenebrosus gen. nov.* all being within *Glaphyromorphus sensu* Cogger (2014) by the following unique suite of characters:

Adpressed limbs are separated by noticeably more than the length of the forelimb; 24 or less midbody rows; prefrontal contacts the first preocular; more than 65 scales along the vertebral line between the parietal scales and the posterior edge of the thigh; a broad dark upper lateral stripe along the body, its lower edge sharply differentiated from the paler lower flanks; ear opening is minute and not or scarcely larger than the nostril.

The genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov., Innocuascincus gen. nov*., all being *Glaphyromorphus sensu* Cogger (2014) are separated from all other Australian skinks by the following suite of characters:

Pentadactyle limbs; smooth scales; no anterior ear lobules; no supranasals; movable lower eyelid; scaly parietal scales in contact behind the interparietal; fourth toe noticeably longer than the third; lower surfaces of the rump or tail not flushed with red or pink; moderate hindlimb usually being not less than forty percent of the snout-vent length; oviparous (modified from Cogger 2014).

*Lygosoma pumilum* Boulenger, 1887, has been shunted between the genera *Rhodona* Gray, 1839 by Smith (1937), then to *Sphenomorphus* Fitzinger, 1843 by Cogger *et al*. (1983), then to *Glaphyromorphus* Wells and Wellington, 1984 by Wells and Wellington (1984), where it has been generally placed by Australian herpetologists ever since.

Its closest living relative, and only congener, originally described as *Sphenomorphus cracens* Greer, 1985, has been placed in *Glaphyromorphus* by most authors since the date of description. Skinner *et al.* (2013) found these two species to have diverged from each other more than 10 MYA and in turn from their

nearest relatives nearly 20 MYA, which is a similar result to that published by Pyron *et al*. (2013).

The nearest related species fit within the genera *Rhiannodon* Wells, 2009 and *Caudatenobrosus gen. nov*. (nearly 20 MYA divergence). On the basis of the molecular and morphological divergence, genus level assignment of the relevant species is clearly appropriate.

**Distribution:** Eastern Cape York, generally north of the Burdekin Gap (Townsville), Queensland, Australia.

**Etymology:** *Innocuascincus gen. nov*. reflects the fact they are small innocuous skinks.

**Content:** *Innocuascincus pumilum* (Boulenger, 1887) (type species) (including subspecies); *I. cracens* (Greer, 1985) (including subspecies).

***INNOCUASCINCUS CRACENS DORSALUX SUBSP. NOV.***

**LSIDurn:lsid:zoobank.org:act:D4BB55A6-988B-4C5D-A742-37477452007D**

**Holotype:** A preserved specimen in the Australian Museum, Sydney, New South Wales, Australia, specimen number R.113757 collected from about 19.8km south of the turnoff to 'Meadowbank' (Via Gregory Developmental Road.), Queensland, Australia, Latitude -18.433 S., Longitude 144.733 E.

This government-owned facility allows access to its holdings.

**Paratypes: 1/** A preserved specimen in the Australian Museum, Sydney, New South Wales, Australia, specimen number R.63198 collected from 19.7 km west of the junctions of the Kennedy and Gulf Highways, via the Gulf Highway, Queensland, Australia, Latitude -18.133 S., Longitude 144.666 S., 2/ A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J61732 collected in the Forty Mile Scrub National Park, Queensland, Australia, Latitude -18.083333 S., Longitude 144.816667 E., 3/ A preserved male specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J91874 collected from Undara National Park, Queensland, Australia, Latitude -18.213889 S., Longitude 144.692222 E.

**Diagnosis:** Specimens of *Innocuascincus cracens* (Greer, 1985), better known as *Glaphyromorphus cracens* (Greer, 1985), with a type locality of 7.5 km east of Mt. Garnet via Kennedy Hwy (or 7.7 km west of Nettle Creek at Innot Hot Springs via Kennedy Highway), North-eastern Queensland., Australia appear to be found in two general areas, separated by an apparent zone of absence of some 50 km straight line between Fourty Mile Scrub and Mount Garnet, which while generally of lower and somewhat flatter relief than where specimens have been caught (Fourty Mile Scrub and Mount Garnet), is not a known biogeograpical barrier.

The species may in fact occur in the intervening area, especially near Mount Bear, about midway between the two above-named locations.

*Innocuascincus cracens dorsalux subsp. nov.* is separated from *I. cracens cracens* of more coastal areas by having a light yellow-brown dorsum, versus medium to dark brown in *I. cracens cracens*, as well as have a relatively thick black side bar, being well defined at the edges, top and bottom, on the upper flank, this side-bar occupying about half the flank, versus a thinner black bar, occupying only about the top third of the flank and with a relatively poorly defined lower boundary, below which the white is commonly heavily peppered grey.

*Innocuascincus cracens dorsalux subsp. nov.* is depicted in life in Greer (1985) from Fourty Mile Scrub, Queensland. *I. cracens cracens* is depicted in life in Wilson (2015) on page 147 bottom left from Millstream Falls, Queensland or Cogger (2014) on page 566 top from Mareeba, Queensland.

Both subspecies of *I. cracens* are separated from the morphologically similar species *I. pumulis* (Boulenger, 1877), the only other species in this genus, by having two infralabials contacted by the postmental, versus one in *I. pumulis*, the dorsal and lateral parietal peritoneum is dark instead of light, four phalanges in the fifth toe of the pes instead of three, a mode of 7 versus 6 supraciliaries and slightly longer legs (Greer 1985).

The two species within the genus *Innocuascincus gen. nov*. are separated from all other species within the genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009 and *Caudatenebrosus gen. nov.* all being within *Glaphyromorphus sensu* Cogger (2014) by the following unique suite of characters:

Adpressed limbs are separated by noticeably more than the length of the forelimb; 24 or less midbody rows; prefrontal contacts the first preocular; more than 65 scales along the vertebral line between the parietal scales and the posterior edge of the thigh; a broad dark upper lateral stripe along the body, its lower edge sharply differentiated from the paler lower flanks; ear opening is minute and not or scarcely larger than the nostril.

The genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov., Innocuascincus gen. nov*., all being *Glaphyromorphus sensu* Cogger (2014) are separated from all other Australian skinks by the following suite of characters:

Pentadactyle limbs; smooth scales; no anterior ear lobules; no supranasals; movable lower eyelid; scaly parietal scales in contact behind the interparietal; fourth toe noticeably longer than the third; lower surfaces of the rump or tail not flushed with red or pink; moderate hindlimb usually being not less than forty percent of the snout-vent length; oviparous (modified from Cogger 2014).

*Lygosoma pumilum* Boulenger, 1887, has been shunted between the genera *Rhodona* Gray, 1839 by Smith (1937), then to *Sphenomorphus* Fitzinger, 1843 by Cogger *et al*. (1983), then to *Glaphyromorphus* Wells and Wellington, 1984 by Wells and Wellington (1984), where it has been generally placed by Australian herpetologists ever since.

Its closest living relative, and only congener, originally described as *Sphenomorphus cracens* Greer, 1985, has been placed in *Glaphyromorphus* by most authors since the date of description. Skinner *et al.* (2013) found these two species to have diverged from each other more than 10 MYA and in turn from their nearest relatives nearly 20 MYA, which is a similar result to that published by Pyron *et al*. (2013).

The nearest related species fit within the genera *Rhiannodon* Wells, 2009 and *Caudatenobrosus gen. nov*. (nearly 20 MYA divergence). On the basis of the molecular and morphological divergence, genus level assignment of the relevant species is clearly appropriate.

**Distribution:** *Innocuascincus cracens dorsalux subsp. nov.* is known from a region bound by Fourty Mile Scrub in the north-east, Undara in the west and Clarke Hills in the south.

*Innocuascincus cracens cracens* is found in the near coastal ranges from the Windsor Tableland in the north to the Paluma Range in the south.

**Etymology:** The subspecies *Innocuascincus cracens dorsalux subsp. nov.* is named in reflection of the lighter dorsum as compared to the nominate form, coming from the Latin words "dorsa" (= dorsum) and "lux" (=light or lighter).

***INNOCUASCINCUS PUMILIS PIPERLATERALIS SUBSP. NOV.***

**LSIDurn:lsid:zoobank.org:act:FABEA8EB-3427-46B0-AF75-02D188EDAB6D**

**Holotype:** A preserved specimen in the Australian Museum, Sydney, New South Wales, Australia, specimen number R.95000 collected from about 12 km north of the Palmer River Crossing Via the Mount Molloy Cooktown Road, Queensland, Australia, Latitude -16.0 S., Longitude 144.816 E.

This government-owned facility allows access to its holdings.

**Paratype:** A preserved specimen in the Australian Museum, Sydney, New South Wales, Australia, specimen number R.56834 collected from Black Mountain near Cooktown, Queensland, Australia, Latitude -15.666 S., Longitude 145.233 E.

**Diagnosis:** *Innocuascincus pumilis piperlateralis subsp. nov.* is found from Isabella Falls, 32 km north-west of Cooktown, Queensland generally near the coast and south to Chillagoe, Queensland, while the nominate subspecies *I. pumilis pumilis* (Boulenger, 1877), better known as *Glaphyromorphus pumilis*, with a type locality of "Cape York, Queensland", which based on Boulenger's published description in Boulenger (1877) is of the form found north of Princes Charlotte Bay to the tip of Cape York.

There is a straight line gap between collection localities for each population of nearly 200 km, but this may reflect a lack of collecting, rather than an absence of the species.

*I. pumilis piperlateralis subsp. nov.* is separated from *I. pumilis pumilis* by having upper flanks of the body that are dark and peppered white as opposed to having black with numerous well defined white or whitish-brown spots. The black dots on the brown dorsum are well defined in *I. pumilis pumilis*, and the two rows running down the midline are quite large, versus small and sometimes faded in *I. pumilis piperlateralis subsp. nov.*.

Both subspecies of *Innocuascincus cracens* are separated from the morphologically similar species *I. pumulis* (Boulenger, 1877), the only other species in this genus, by having two infralabials contacted by the postmental, versus one in *I. pumulis*, the dorsal and lateral parietal peritoneum is dark instead of light, four phalanges in the fifth toe of the pes instead of three, a mode of 7 versus 6 supraciliaries and slightly longer legs (Greer 1985).

The two species within the genus *Innocuascincus gen. nov*. are separated from all other species within the genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009 and *Caudatenebrosus gen. nov.* all being within *Glaphyromorphus sensu* Cogger (2014) by the following unique suite of characters:

Adpressed limbs are separated by noticeably more than the length of the forelimb; 24 or less midbody rows; prefrontal contacts the first preocular; more than 65 scales along the vertebral line between the parietal scales and the posterior edge of the thigh; a broad dark upper lateral stripe along the body, its lower edge sharply differentiated from the paler lower flanks; ear opening is minute and not or scarcely larger than the nostril.

The genera *Glaphyromorphus* Wells and Wellington, 1984, including the closely related *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov., Innocuascincus gen. nov*., all being *Glaphyromorphus sensu* Cogger (2014) are separated from all other Australian skinks by the following suite of characters:

Pentadactyle limbs; smooth scales; no anterior ear lobules; no supranasals; movable lower eyelid; scaly parietal scales in contact behind the interparietal; fourth toe noticeably longer than the third; lower surfaces of the rump or tail not flushed with red or pink; moderate hindlimb usually being not less than forty percent of the snout-vent length; oviparous (modified from Cogger 2014).

*Lygosoma pumilum* Boulenger, 1887, has been shunted between the genera *Rhodona* Gray, 1839 by Smith (1937), then to *Sphenomorphus* Fitzinger, 1843 by Cogger *et al*. (1983), then to *Glaphyromorphus* Wells and Wellington, 1984 by Wells and Wellington (1984), where it has been generally placed by Australian herpetologists ever since.

Its closest living relative, and only congener, originally described as *Sphenomorphus cracens* Greer, 1985, has been placed in *Glaphyromorphus* by most authors since the date of description. Skinner *et al.* (2013) found these two species to have diverged from each other more than 10 MYA and in turn from their nearest relatives nearly 20 MYA, which is a similar result to that published by Pyron *et al*. (2013).

The nearest related species fit within the genera *Rhiannodon* Wells, 2009 and *Caudatenobrosus gen. nov*. (nearly 20 MYA divergence). On the basis of the molecular and morphological divergence, the genus level assignment of the relevant species is clearly appropriate.

**Distribution:** *Innocuascincus pumilis piperlateralis subsp. nov.* is found from Isabella Falls, 32 km north-west of Cooktown, Queensland generally near the coast and south to Chillagoe, Queensland, while the nominate subspecies *I. pumilis pumilis* (Boulenger, 1877), better known as *Glaphyromorphus pumilis*, with a type locality of "Cape York, Queensland", which based on Boulenger's published description in Boulenger (1877) is of the form found north of Princes Charlotte Bay to the tip of Cape York.

There is a straight line gap between collection localities of nearly 200 km for each population, but this may reflect a lack of collecting, rather than an absence of the species.

**Etymology:** *Innocuascincus pumilis piperlateralis subsp. nov.* has its name derived from the Latin words "*piper*" meaning peppered and "*lateralis*" meaning sides, in reflection to the peppering on the upper flanks.

***OPACITASCINCUS UGH SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:264294B5-CF0B-4C20-964C-B26B21D6F17B**

**Holotype:** A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R129940 collected from 10 km north of Kalumburu, Western Australia, Australia, Latitude -14.2 S., Longitude 126.633333 E., being found in soil beneath a log.

This government-owned facility allows access to its holdings.

**Diagnosis:** Until now *Opacitascincus ugh sp. nov*. has been treated as an isolated western population of *Opacitascincus darwiniensis* (Storr, 1967).

*Opacitascincus ugh sp. nov*. is separated from *O. darwiniensis* by its yellowish-red dorsum, versus greyish-brown in *O. darwiniensis* and an upper boundary of the flank, comprised more of merged peppering rather than as a distinctive line.

Both *Opacitascincus ugh sp. nov*. and *O. darwiniensis* are separated from all other species in the genus *Opacitascincus* Wells and Wellington, 1985 (*sensu* Wells and Wellington, 1985) by an absence of distinctive white spots on a black background on the flanks of the original tail (as seen in *O. crassicaudatus* (Duméril and Bibron, 1851)); more than 18 lamellae under the fourth toe and frontoparietals never shorter than the interparietal; and an absence of two semi-distinct rows of reddish-brown lines down the middle of the back, these being formed by dark centred scales (that being a trait seen in *O. arnhemicus* (Storr, 1967)).

The genus *Opacitascincus* Wells and Wellington, 1985, was confirmed as distinct from *Glaphyromorphus* Wells and Wellington, 1984 by the molecular results of Pyron *et al.* (2013), but have been ignored by Cogger (2014) and other publishing herpetologists since 2013, largely due to pressure and threats applied by the Wolfgang Wüster gang of thieves *sensu* Hoser (2007).

The morphologically convergent genus *Glaphyromorphus* Wells and Wellington, 1984 is separated from *Opacitascincus* Wells and Wellington, 1985 by having adpressed limbs separated by noticeably more than the length of the forelimb; prefrontal contacting the first preocular; postmental usually contacting two infralabials or alternatively only one; ear opening small, but noticeably larger than the nostril; fewer than 65 scales along the vertebral line between the parietal scales and the posterior edge of the thigh; 20-22 mid-body rows; lamellae under fourth toes is rarely as low as 15; axilla/groin hindlimb ratio is usually less than three; usually some indication of a mid-vertebral line, even if by way of spotting or flecks and a darkening in the upper lateral zone in some way, which may either be bordered or not (*O. crassicaudus* (Duméril and Bibron, 1851) (type for genus), *O. arnhemicus* (Storr, 1967), *O. darwinensis* (Storr, 1967), *O. ugh sp. nov.* (this paper)).

The genera *Opacitascincus* Wells and Wellington, 1985 and the closely related *Glaphyromorphus* Wells and Wellington, 1984 are separated from all other Australian skinks by the following suite of characters:

Pentadactyle limbs; smooth scales; no anterior ear lobules; no supranasals; movable lower eyelid; scaly parietal scales in

contact behind the interparietal; fourth toe noticeably longer than the third; lower surfaces of the rump or tail not flushed with red or pink; moderate hindlimb usually being not less than forty percent of the snout-vent length; oviparous (modified from Cogger 2014).

*O. darwinensis* in life is depicted online at:

https://www.flickr.com/photos/154630905@N06/41416219852/

*O. arnhemensis* in life is depicted online at:

https://www.flickr.com/photos/136643623@N03/27029744126/

**Distribution:** *Opacitascincus ugh sp. nov*. is known only from near the type locality in the northern Kimberley district of Western Australia, Australia.

**Etymology:** The species name *Opacitascincus ugh sp. nov*. comes from the Kwini Aboriginals of the north Kimberley district of Western Australia, who gave this name to the relevant and similar species. The name is thought to derive from the exclamation "*ugh*" made when specimens crawl from logs placed in the campfire and at first glance being mistaken for a potentially venomous snake as they wriggle out to escape the flames.

***GLAPHYROMORPHUS PUNCTULATUS LATUSUMBRA SUBSP. NOV.***

**LSIDurn:lsid:zoobank.org:act:42FB2FA0-675B-4E5D-856C-C313BA0CC7ED**

**Holotype:** A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J73758 collected from 3 km south south-east of Mount Gavial, Queensland, Australia, Latitude -23.616667 S., Longitude 150.483333 E.

This government-owned facility allows access to its holdings.

**Paratype:** Three preserved specimens in the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J78954, J78958 and J78964 all collected from Mount Morgan, Queensland, Australia, Latitude -23.635 S., Longitude 150.362222 E.

**Diagnosis:** Until now *Glaphyromorphus punctulatus* (Peters, 1871), type locality, Bowen in Queensland, being the type species of the genus *Glaphyromorphus* Wells and Wellington, 1984 has been treated as a single species with a known distribution from about Maryborough in the south, to about Hinchinbrook Island in the north, east of the Great Dividing Range, all in Queensland, Australia.

The putative species is now conservatively split into three subspecies based on significant morphological divergences across known biogeographical barriers.

It is only in the absence of molecular data that I have not opted to describe them in the first instance as full species, even though I expect this to ultimately be the most likely correct classification for these taxa.

I speculate that in the post-glacial period, coinciding with an increase in rainfall in east and north-east Queensland, the ranges of the various subspecies have expanded to partially obscure what may well have previously been three distinct and more widely separated populations.

*Glaphyromorphus punctulatus punctulatus* (Peters, 1871) is herein confined to the region between the Burdekin Gap in the north (being bound by the south branch of the Burdekin River) and the St. Lawrence Gap in the South, being located just north of Rockhampton.

*Glaphyromorphus punctulatus latusumbra subsp. nov.* is found south of the St. Lawrence Gap, near Rockhampton, south to about Maryborough.

*Glaphyromorphus punctulatus nigreopunctata subsp. nov.* is found north of the Burdekin Gap, including north and west of the south branch of the Burdekin River, north to about Hinchinbrook Island.

The three species are separated from one another as follows:

*G. punctulatus punctulatus* is an even brown to grey all over the dorsum, being neither particularly dark or light overall and with little if any change in colour from the dorsum to the upper flank and no obvious boundary either. The body and flanks do have a moderate density of tiny black dots, bordering on flecks or peppering, on the basis of their tiny size and because they are quite scattered.

*G. punctulatus latusumbra subsp. nov*. is a dark grey or dark brown with an obviously much darker brown to blackish flank, this being the case for most of the flank of the body, then reducing somewhat along the sides of the tail. Darker peppering on the body and sides of the tail is so fine as to be barely detectable.

*G. punctulatus nigreopunctata subsp. nov*. is a light yellowish-brown coloured animal with peppering or spots on the body (usually very dark or black in colour) being expanded in both number, density and size, giving the lizard a strongly peppered appearance, unlike the other two subspecies, this being due to the greater colour contrast between the light background and the dark peppering. The snout of *Glaphyromorphus punctulatus latusumbra subsp. nov*. and *Glaphyromorphus punctulatus nigreopunctata subsp. nov*. is as a rule, also slightly less elongate in adults as compared to *Glaphyromorphus punctulatus punctulatus*.

*G. punctulatus* (all subspecies) are separated from all other species within *Glaphyromorphus* (*sensu* Cogger 2014), this also including the genera *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov.* and *Innocuascincus gen. nov*. by the following suite of characters:

The adpressed limbs are separated by noticeably more than the length of the forelimb; prefrontal contacting the first preocular; postmental usually contacting two infralabials or alternatively only one; ear opening small, but noticeably larger than the nostril; fewer than 65 scales along the vertebral line between the parietal scales and the posterior edge of the thigh; lamellae under fourth toes is 15 or less; axilla/groin hindlimb ratio is usually more than three; there is no indication of a mid-vertebral line, even if by way of spotting or flecks; upper flanks finely dotted with dark brown or black, but in some specimens hard to see; there are no obvious dark blotches or mottling; small size, rarely exceeding 60 mm snout-vent; 18-22 midbody scale rows.

*G. punctulatus punctulatus* (Peters, 1871) is depicted in Wilson and Swan (2017) on page 311 at top and online at:

https://www.inaturalist.org/observations/107016802

and

https://www.inaturalist.org/observations/107969425

and

https://www.flickr.com/photos/jaricornelis/27931531268/

*Glaphyromorphus punctulatus latusumbra subsp. nov*. is depicted in Cogger (2014) on page 570 at top and online at:

https://www.inaturalist.org/observations/109735351

*G. punctulatus nigreopunctata subsp. nov*. is depicted in life in Wilson (2015) on page 149 at bottom right and online at:

https://www.flickr.com/photos/58828131@N07/7712905548/

and

https://www.inaturalist.org/observations/63142197

and

https://www.flickr.com/photos/hamidtun/50509109936/

and

https://www.flickr.com/photos/58828131@N07/7712904064/

**Distribution:** *G. punctulatus latusumbra subsp. nov.* is found south of the St. Lawrence Gap, near Rockhampton, south to about Maryborough.

**Etymology:** *G. punctulatus latusumbra subsp. nov.* is named using the Latin "latusumbra" which means dark sides, with reference to the darker flanks in this subspecies.

***GLAPHYROMORPHUS PUNCTULATUS NIGREOPUNCTATA SUBSP. NOV.***

**LSIDurn:lsid:zoobank.org:act:59F56A88-2683-44F6-B95B-A6F193CE711D**

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.9586

collected at Hinchinbrook Island, Queensland, Australia, Latitude -18.366 S., Longitude 146.25 E.

This government-owned facility allows access to its holdings.

**Paratype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J26119 collected at Hinchinbrook Island, Queensland, Australia, Latitude -18.366 S., Longitude 146.25 E.

**Diagnosis:** Until now *Glaphyromorphus punctulatus* (Peters, 1871), type locality, Bowen in Queensland, being the type species of the genus *Glaphyromorphus* Wells and Wellington, 1984 has been treated as a single species with a known distribution from about Maryborough in the south, to about Hinchinbrook Island in the north, east of the Great Dividing Range, all in Queensland, Australia.

The putative species is now conservatively split into three subspecies based on significant morphological divergences across known biogeographical barriers.

It is only in the absence of molecular data that I have not opted to describe them in the first instance as full species, even though I expect this to ultimately be the most likely correct classification for these taxa.

I speculate that in the post-glacial period, coinciding with an increase in rainfall in east and north-east Queensland, the ranges of the various subspecies have expanded to partially obscure what may well have previously been three distinct and more widely separated populations.

*Glaphyromorphus punctulatus punctulatus* (Peters, 1871) is herein confined to the region between the Burdekin Gap in the north (being bound by the south branch of the Burdekin River) and the St. Lawrence Gap in the South, being located just north of Rockhampton.

*Glaphyromorphus punctulatus latusumbra subsp. nov.* is found south of the St. Lawrence Gap, near Rockhampton, south to about Maryborough.

*Glaphyromorphus punctulatus nigreopunctata subsp. nov.* is found north of the Burdekin Gap, including north and west of the south branch of the Burdekin River, north to about Hinchinbrook Island.

The three species are separated from one another as follows:

*G. punctulatus punctulatus* is an even brown to grey all over the dorsum, being neither particularly dark or light overall and with little if any change in colour from the dorsum to the upper flank and no obvious boundary either. The body and flanks do have a moderate density of tiny black dots, bordering on flecks or peppering, on the basis of their tiny size and because they are quite scattered.

*G. punctulatus latusumbra subsp. nov*. is a dark grey or dark brown with an obviously much darker brown to blackish flank, this being the case for most of the flank of the body, then reducing somewhat along the sides of the tail. Darker peppering on the body and sides of the tail is so fine as to be barely detectable.

*G. punctulatus nigreopunctata subsp. nov*. is a light yellowish-brown coloured animal with peppering or spots on the body (usually very dark or black in colour) being expanded in both number, density and size, giving the lizard a strongly peppered appearance, unlike the other two subspecies, this being due to the greater colour contrast between the light background and the dark peppering. The snout of *Glaphyromorphus punctulatus latusumbra subsp. nov*. and *Glaphyromorphus punctulatus nigreopunctata subsp. nov*. is as a rule, also slightly less elongate in adults as compared to *Glaphyromorphus punctulatus punctulatus*.

*G. punctulatus* (all subspecies) are separated from all other species within *Glaphyromorphus* (*sensu* Cogger 2014), this also including the genera *Opacitascincus* Wells and Wellington, 1985, *Rhiannadon* Wells, 2009, *Caudatenebrosus gen. nov.* and *Innocuascincus gen. nov*. by the following suite of characters:

The adpressed limbs are separated by noticeably more than the length of the forelimb; prefrontal contacting the first preocular; postmental usually contacting two infralabials or alternatively only one; ear opening small, but noticeably larger than the nostril; fewer than 65 scales along the vertebral line between the parietal scales and the posterior edge of the thigh; lamellae under fourth toes is 15 or less; axilla/groin hindlimb ratio is usually more than three; there is no indication of a mid-vertebral line, even if by way of spotting or flecks; upper flanks finely dotted with dark brown or black, but in some specimens hard to see; there are no obvious dark blotches or mottling; small size, rarely exceeding 60 mm snout-vent; 18-22 midbody scale rows.

*G. punctulatus punctulatus* (Peters, 1871) is depicted in Wilson and Swan (2017) on page 311 at top and online at:
https://www.inaturalist.org/observations/107016802
and
https://www.inaturalist.org/observations/107969425
and
https://www.flickr.com/photos/jaricornelis/27931531268/
*Glaphyromorphus punctulatus latusumbra subsp. nov*. is depicted in Cogger (2014) on page 570 at top and online at:
https://www.inaturalist.org/observations/109735351
*G. punctulatus nigreopunctata subsp. nov*. is depicted in life in Wilson (2015) on page 149 at bottom right and online at:
https://www.flickr.com/photos/58828131@N07/7712905548/
and
https://www.inaturalist.org/observations/63142197
and
https://www.flickr.com/photos/hamidtun/50509109936/
and
https://www.flickr.com/photos/58828131@N07/7712904064/

**Distribution:** *G. punctulatus nigreopunctata subsp. nov.* is found north of the Burdekin Gap, including north and west of the south branch of the Burdekin River, north to about Hinchinbrook Island, Queensland, Australia.

**Etymology:** *G. punctulatus nigreopunctata subsp. nov.* is named using the Latin "*nigreopunctata*" which means black spots, with reference to the dark or black peppering on the scales of the dorsum and tail of many specimens.

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**CONFLICT OF INTEREST**

**None.**

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# Greater diversity of skink species in south-east Australia than previously realized: *Carinascincus* Wells and Wellington, 1985 *sensu lato* is further divided.

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## ABSTRACT

The ongoing audit of Australia's herpetofauna has yielded hitherto unrecognized diversity of genera and species in skink in South-east Australia as seen for example in the papers of Hoser (2022a-e).

This paper formally identifies and names in accordance with *the International Code of Zoological Nomenclature* (Ride *et al*. 1999) two new genera and ten new species of skink from south-east mainland Australia and Tasmania.

Included are the following:

1/ The species originally described as *Leiolopisma coventryi* Rawlinson, 1975 is placed in a new genus, *Abbasaurum gen. nov*. (type species *A. maxinehoserae sp. nov*.) and divided into four species, including *A. abba sp. nov*., three of the total, being formally named for the first time. The putative species originally described as *Litotescincus bartelli* Wells and Wellington, 1985 is clearly divergent and herein recognized as a subspecies of "*Leiolopisma coventryi* Rawlinson, 1975".

2/ The species originally described as *Mocoa metallica* O'Shaughnessy, 1874, currently type species for the valid genus *Litotescincus* Wells and Wellington, 1985 is divided into six species, with four formally named for the first time. The already named species *Litotescincus metallica* (O'Shaughnessy, 1874) and *L. wellsi* Hoser, 2016 are also part of this complex.

3/ *Mocoa ocellatum* Gray, 1845, is herein placed into a newly named genus *Ocellatalbum gen. nov.*. It is also formally divided into four species, three of which are formally named for the first time as *Ocellatalbum dannygoodwini sp. nov.*, *O. alexdudleyi sp. nov.* and *O. assangei sp. nov*..

All the newly described forms are both morphologically divergent and have origins that were allopatric across biogeographical barriers of known antiquity.

**Keywords:** Taxonomy; nomenclature; skinks; Australia; New South Wales; Tasmania; Victoria; *Mocoa*; *Leiolopisma*; *Lygosoma*; *Carinascincus*; *Niveoscincus*; *Pseudemoia*; *Litotescincus*; *coventryi*; *metallica*; *ocellatum*; new genus; *Abbasaurum*; *Ocellatalbum*; new species; *maxinehoserae*; *abba*; *bobbottomi*; *evanwhittoni*; *fiacummingae*; *martinekae*; *colinrayi*; *dannygoodwini*; *alexdudleyi*; *assangei.*

## INTRODUCTION

An ongoing audit has been systematically assessing all of Australia's herpetofauna to see if there are any obviously unnamed genera or species within putative groups.

This audit, led by myself (Raymond Hoser) has, as of mid 2022 gone through most of Australia's known reptiles and frogs (but not all) and identified numerous genera as well as more than 200 species and subspecies of reptiles and over 80 species of frogs, the majority of which have been formally described and named in accordance with the *International Code of Zoological Nomenclature* (Ride *et al*. 1999) in *Australian Journal of Herpetology* issues 1-58.

See at http://www.zoobank.org for a complete listing.

This quantity, the majority of which have been named in the period 2009-2022 exceeded all expectations when the audit was commenced and underscores the underestimated biodiversity in Australia.

Some groups of reptile and frog in Australia remain to be audited and even on completion of this audit, there will remain numerous undescribed species within Australia's herpetofauna.

Although there have been exceptions, the majority of species formally named via this audit, have been easily identifiable and flagged, either by virtue of the obvious morphological differences of the taxa, or alternatively via published studies, including many molecular studies over the past 20 years.

The taxa formally named in this paper conform to the preceding.

In terms of the genus-level splits indicated in the abstract, the relevant taxa are morphologically divergent and have been shown in molecular studies to be sufficiently ancient in divergence to warrant

genus level recognition.

All the newly identified and named species and subspecies are both morphologically divergent and allopatric across previously identified barriers of known antiquity. They are also genetically divergent from one another.

**MATERIALS AND METHODS**

This audit included all potential species within the putative species groups, as originally formally named, listed below as follows:

1/ *Leiolopisma coventryi* Rawlinson, 1975.

2/ *Mocoa metallica* O'Shaughnessy, 1874.

3/ *Mocoa ocellatum* Gray, 1845.

Based on previously published studies, including Hoser (2022a-e), Cliff *et al*. (2015) and Kreger *et al*. (2019) there was a reasonable basis to expect that each putative taxon was composite and so each was scrutinized on the basis and expectation further species beyond the nominate form of each would be identified.

Hoser (2020b-c) included studies of putative species of frogs from south-east Australia, some of which were ultimately divided across known biogeographical barriers in south-eat Australia, these same barriers influencing distributions of the three above-mentioned putative skink taxa. Hoser (2022a-e) included the result of studies involving other skink genera and species divided across the same biogeographical barriers in south-east Australia.

In each of the above cited studies, divisions were made on the basis of morphological, biogeographical and genetic evidence.

In this case of the three above putative species of skink, the first "*Leiolopisma coventryi* Rawlinson, 1975" has four allopatrically distributed populations across known biogeographical barriers, only one of which has been formally named.

With a reasonable expectation that there were four, not one species, this study sought to identify consistent differences between the populations to enable formal descriptions as new species.

In terms of the nominate population, a subpopulation from the Brindabella Ranges (NSW/ACT) has also been named by Wells and Wellington, 1985 as *Litotescincus bartelli.*.

Genetic studies of each of *Mocoa metallica* O'Shaughnessy, 1874 and *Mocoa ocellatum* Gray, 1845 have confirmed them to be species complexes (Kreger *et al.* 2019 and Cliff *et al.* 2015 respectively), so the main issue with each of these was identification of the type forms, any potential synonyms (there were none) and then whether it was possible to morphologically identify the other species, best described at the commencement stage as potentially cryptic species (although that idea was soon jettisoned, when it was realised that each potential putative species (candidate taxon) was in fact very different).

This audit included a review of the relevant literature encompassing the putative species as generally defined by herpetologists in Australia, including as recently defined by Cogger (2014) and Wells and Wellington (1985), being the most relevant works dealing with the taxonomy of the species at the genus level.

This included revisiting more recent molecular studies available on Australian skinks as a means to estimate likely divergences across known biogeographical barriers and breaks as identified with respect of the taxa in this audit.

In the case of putative *Mocoa metallica* O'Shaughnessy, 1874 Kreger *et al.* (2019) gave date divergence estimates for the main identified clades.

In the case of putative *Mocoa ocellatum* Gray, 1845 Cliff *et al*. (2015) also provided date divergence estimates for the main identified clades.

Specimens of each putative species from across their known ranges were inspected, including both live and dead animals as well as photos of specimens with known provenance.

The regional populations conforming to putative species but identified as potentially unnamed species were inspected as were all other major populations.

Biogeographical gaps were identified which conformed with absence of specimens being seen, collected or held in Australian public museums. These were sometimes outlier populations, including some known to separated by previously determined biogeographical barriers.

Earlier papers naming putative taxa within each genus were reviewed, not just for the purposes of revisiting original descriptions, which were checked against actual specimens, but also cross referenced with the second, third and fourth editions of the *International Code of Zoological Nomenclature* to ensure that all post 1950 names were valid according to the rules of the ICZN at all materially relevant times, including 2022.

The lizards were inspected with a view to confirming if there were consistent identifiable differences between putative species enabling formal descriptions to be made as required.

At the genus level, species identified early on as divergent, via molecular studies, including Cliff *et al*. (2015), Kreger *et al.* (2019) and Pyron *et al*. (2013), were scrutinized to see if they were sufficiently divergent morphologically to warrant being placed in new genera.

Literature relevant to the taxonomic conclusions herein, in terms of each of the relevant taxa audited is as follows:

In terms of putative *Leiolopisma coventryi* Rawlinson, 1975, *Mocoa metallica* O'Shaughnessy, 1874 and *Mocoa ocellatum* Gray, 1845 *sensu lato* and the resulting in the taxonomic and nomenclatural conclusions within this paper, the following literature was relevant: Baehr (1976), Brattstrom (1971), Brongersma (1942), Chapple and Swain (2004), Cliff *et al*. (2015), Cogger (2000, 2014), Cogger *et al*. (1983), Couper *et al*. (2006), Duméril and Duméril (1851), Glauert (1960), Gomard (2015), Gray (1845), Greer (1982), Hoser (2016), Hutchinson (1979), Hutchinson and Schwaner (1990), Hutchinson *et al.* (1990), Kreger *et al.* (2019), McCoy and Busack (1970), Melville and Swain (2000a, 2000b), O'Shaughnessy (1874), Pyron *et al*. (2013), Quay (1973), Rawlinson (1974. 1975), Ride *et al.* (1999), Smith (1937), Swan *et al*. (2017), Taylor *et al*. (1993), Wells and Wellington (1984, 1985), Wilson and Swan (2010, 2017), Wu *et al*. (2014) and sources cited therein.

**RESULTS**

Based on molecular and morphological divergences, the following taxonomic and nomenclatural conclusions were reached.

1/ *Leiolopisma coventryi* Rawlinson, 1975, placed by Wells and Wellington, 1985 in their newly erected genus *Litotescincus* Wells and Wellington, 1985, and Cogger (2014) in *Carinoscincus* Wells and Wellington, 1985 is herein transferred to a newly erected genus *Abbasaurum gen. nov*. (type species *A. abba sp. nov*.) based on an obvious divergence of over 10 MYA.

The putative species *Abbasaurum coventryi* (Rawlinson, 1975), is divided into four, with three new species formally named as *Abbasaurum abba sp. nov.*, *A. maxinehoserae sp. nov*. and *A. bobbottomi sp. nov*.. The putative species *A. bartelli* (Wells and Wellington, 1985), originally placed in *Litotescincus* by Wells and Wellington, is herein treated as a subspecies pending molecular analysis. The basis of the decision is the geographical proximity of this population to that of nominate *A. coventryi*.

The Brindabella Ranges has been problematic for taxonomists in that some putative taxa have diverged to species level differences from their congeners in the nearby Snowy Mountains to the south, while others have not.

2/ The species originally described as *Mocoa metallica* O'Shaughnessy, 1874 *sensu lato*, currently type species for the valid genus *Litotescincus* Wells and Wellington, 1985 is divided into five species, with four formally named for the first time. These are *L. evanwhittoni sp. nov.*; *L. fiacummingae sp. nov.*, *L. colinrayi sp*. nov. and *L. martinekae sp. nov.*.

The already named species *Litotescincus metallica* (O'Shaughnessy, 1874), *L. pretiosus* (O'Shaughnessy, 1874) and *L. wellsi* Hoser, 2016 are all valid species and also part of this complex.

In terms of the preceding, the following points should be noted.

*L. wellsi* Hoser, 2016 was not sampled by Kreger *et al.* (2019). This is self-evident from their paper and inspection of specimens from locations otherwise closest to far south-west Tasmania, which is where *L. wellsi* is confined to.

Their sampling of putative *L. metallica* from across most other parts of Tasmania, the Flinders Island group in Bass Strait and Southern Victoria revealed four main clades and one of these had two main subclades, giving a total of five species.

All diverged 2.8 or more million years from one another (Kreger *et al*. 2019) and so in total constituted five species.

Inspection of specimens from the relevant localities also confirmed obvious species-level differences between the identified clade

populations.

The original description of O'Shaughnessy (1874) for his species *L. metallica* was read and the most significant part of that was the description of the colour pattern of the type material.

It read as follows:

"*Colours: above bright bronzed green, with a median dark brown stripe and lateral variegations more or less irregular; sides dark brown, broken up into irregular variegations; beneath greenish, dotted on chin.*

*In the British Museum, from Van Diemen's Land. Collected by E. Gunn, Esq.*

*In several other specimens (Dr. Millingen's collection) the ground-colour is much darker, and may be described as greenish brown, the pattern, however, being the same*."

Fortuitously, the description was sufficient to identify the north-eastern Tasmanian clade as the relevant type form and to the exclusion of all others.

None of the other Tasmanian species in this complex have the unique combination of "*a median dark brown stripe and lateral variegations more or less irregular; sides dark brown, broken up into irregular variegations*".

This enabled me to formally name the other clades for the first time and without risk of inadvertently creating one or more junior synonyms by accidentally renaming the type population of *L. metallica*.

Kreger *et al*. (2019) identified the following relevant divergences: "*The southern clade diverged around 5.8 Ma (2.5-10.6 Ma), and the split between the northeast and southeast clades occurred around 4.4 Ma (1.9-8.1 Ma). Within the major clades, deep internal branches diverged approximately 2.8-1.5 Ma. Within the northeast clade, the divergence between Tasmania and the group comprising the Bass Strait islands and mainland Australia was dated to around 2.8 Ma (1.2-5.2 Ma), while mainland Australian populations diverged 1-2 Ma*."

Those dated divergences correspond to the relevant formally named species.

3/ *Mocoa ocellatum* Gray, 1845, is herein placed into a newly named genus *Ocellatalbum gen. nov.* based on morphological differences and a divergence believed to be in excess of 10 MYA from other similar species within *Litotescincus* and *Carinascincus* Wells and Wellington, 1985.

It is also formally divided into four species, three of which are formally named for the first time as *Ocellatalbum dannygoodwini sp. nov.*, *O. alexdudleyi sp. nov.* and *O. assangei sp. nov*..

From the original description, it is self evident that the type material is from near Hobart, Tasmania.

All the newly described forms are both morphologically divergent and have origins that were allopatric across biogeographical barriers of known antiquity.

**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).

This includes if gender assignment of suffixes seems incorrect, Latinisation is wrong, apparent spelling mistakes and so on.

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 14 July 2022 (including if also viewed prior), unless otherwise stated and was accurate in terms of the content cited herein as of that date.

Any online citations within this paper, including copied emails and the like, are not as a rule cited in the references part of this paper and have the same most recent viewing date as just given.

Unless otherwise stated explicitly, colour and other descriptions apply to living adult specimens of generally good health, as seen by day, 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.

SVL or SV means snout-vent length, TL means tail length, preanal pores = precloacal pores, preanal = precloacal, tail measurements refer to original tails, max. size refers to maximum known, sometimes approximated up to the nearest 10 mm if number of measured specimens is below 10.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant genera, subgenera, 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 STATUS OF THE RELEVANT TAXA**

Using accepted criteria of assessment (Hoser 1999), none of the relevant species are of immediate conservation concern. However on a larger time frame (hundreds of years), the comments in Hoser (1989, 1991, 1993 and 1996) apply, as do the comments in Hoser (2007, 2009, 2012a, 2012b, 2013, 2015a-f, 2019a, 2019b and 2020a).

***ABBASAURUM GEN. NOV.***

**LSIDurn:lsid:zoobank.org:act:03C32D44-0B0D-4A24-8BAC-87850CF15C20**

**Type species:** *Abbasaurum maxinehoserae sp. nov.*.

**Diagnosis:** *Abbasaurum gen. nov*. are separated from the species in the morphologically similar genera *Carinascincus* Wells and Wellington, 1985, with a type species of *Leiolopisma greeni* Rawlinson, 1975 and *Litotescincus* Wells and Wellington, 1985 with a type species of *Mocoa metallica* O'Shaughnessy, 1874 (including the newly named genus *Ocellatalbum gen. nov.*) by having no supranasals and that the frontoparietals are paired. All species within the genera *Carinascincus* and *Litotescincus* have frontoparietals fused to form a single shield.

The four genera *Abbasaurum gen. nov*., *Carinascincus*, *Litotescincus* and *Ocellatalbum gen. nov.* (formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

**Distribution:** Southern Victoria from the Grampians and Otway Ranges in the west, through eastern Victoria and southern highlands of New South Wales and the ACT to the elevated regions west of Sydney, New South Wales, Australia.

**Etymology:** Named in honour of Swedish Rock Band ABBA, who were popular in the Australian music scene in the 1970's for contributions to entertainment in Australia. The genus name is short and simple to remember.

**Content:** *Abbasaurum maxinehoserae sp. nov.* (type species); *A. abba sp. nov*.; *A. bobbottomi sp. nov*.; *A. coventryi* (Rawlinson, 1975).

***ABBASAURUM MAXINEHOSERAE SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:6D65F16D-5BE2-43FE-8C15-8D7D979F7491**

**Holotype:** A preserved female specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D32994 collected from Mount Sabine, Otway Ranges, Victoria, Australia, Latitude -38.63 S., Longitude 143.73 E.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ A preserved female specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D32962 collected from 5 km north of Cape Horn, Otway

Ranges, Victoria, Australia, Latitude -38.68 S., Longitude 143.62 E., 2/ Five preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D13631, D13632, D13633, D13634 and D13635 collected from Mount Sabine, Otway Ranges, Victoria, Australia, Latitude -38.63 S., Longitude 143.73 E., 3/ A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D48305 collected 1 km north of Cape Horn Junction, Latitude -38.72 S., Longitude 143.62 S., 4/ A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D48306 collected 2 km north of Cape Horn Junction, Latitude -38.75 S., Longitude 143.62 S.

**Diagnosis:** Until now, putative *Abbasaurum coventryi* (Rawlinson, 1975), originally described as *Leiolopisma coventryi* Rawlinson, 1975 better known as *Carinascincus coventryi* has until now been treated by all herpetologists as a single species ranging from Apollo Bay and the Grampians in the west of Victoria, through the type locality in the Yarra Ranges, east of Melbourne, Victoria, and north through high altitude areas to west of Sydney, New South Wales.

Exceptional to this has been Wells and Wellington (1985), who formally named the Brindabella Ranges population as *Litotescincus bartelli*, recognized herein as a subspecies of nominate *Abbasaurum coventryi.*

The putative species is now divided four ways with nominate *A. coventryi* being found from just north and east of Ballarat in the west, through the Great Dividing Range and eastern Victoria to the Australian Capital Territory in the north.

The population at the northern extremity of this range, being the Brindabella Ranges and immediately north-west of there is referred to the morphologically divergent subspecies *A. coventryi bartelli* (Wells and Wellington, 1985).

*Abbasaurum maxinehoserae sp. nov*. is strictly confined to the Otway Ranges area, being bound by Gherang in the north-east, Airey's Inlet in the east, Point Reginald in the south-west and not as far north as Colac in the north.

*Abbasaurum bobbottomi sp. nov.* is found in the Grampians, western Victoria, with specimens found in the hills between Ballarat and Ararat (Mount Buangor area) being tentatively referred to the same taxon.

*Abbasaurum abba sp. nov.* is the taxon found in the cold country west of the Blue Mountains in New South Wales from near Bathurst and Lithgow in the north, south through Oberon and the Jenolan Caves area, to the Wombeyan Caves area.

The four species are readily separated from one another as follows:

Nominate *A. coventryi* has a medium brown dorsum, bounded by a semi-distinct dark border at the top of the flank. The dorsum has semi-distinct dark and light flecks, always visible, except in some large and aged specimens. The anterior body, neck and upper surface of the head has scattered tiny black dots or flecks. The upper flank is a dark brownish-black. The lower to mid flank, also dark in colour is punctuated by scattered and distinct tiny white spots that are not arranged in lines of any form. Upper surfaces of limbs are mainly dark brown to black and sometimes obviously marked with both. The side of the head is mainly brown, but with some white flecks or markings, then becoming darker behind the ear as one moves along the flank to the body.

The subspecies *A. coventryi bartelli* is similar in most respects to nominate *A. coventryi coventryi* as described above, but is separated from that subspecies by not having scattered and distinct tiny white spots on the mid to lower flank that are not arranged in lines of any form. Instead there is a very noticeable lightening of the lower flank, which also has tiny semi-distinct spots closely placed and forming 3-5 semi-distinct lateral lines on each flank. Dorsally there is an absence of any black flecks or spots on the head, neck or body, except for the anterior half of tail, which has both dark and light flecks. The side of the head is a light greyish-brown, grading to near black on the neck.

*A. abba sp. nov*. has a light brown dorsum that is bounded on the edges of the top of the flank by a well-defined black border, the black extending down the upper flank, whereupon it grades to grey lower down, before turning white near the belly. The top of the head is also light brown, but the sides of the head are blackish from the tip of the snout back. The dorsum has obvious black peppering throughout, including on the head, but no lighter flecks. The upper surfaces of the limbs are mainly black, although some specimens have obvious dark brown scales as well on the limbs.

*A. maxinehoserae sp. nov*. and *A. bobbottomi sp. nov*. are very different to the other species in that they are both mainly greyish in dorsal body colour, rather than brown, or at least have a strong greyish hue.

*A. maxinehoserae sp. nov.* has a metallic grey dorsum of the body in turn with numerous black flecks, while the upper surface of the head is invariably brown, at least at the anterior part of the snout, in front of the eyes. In some specimens the change from grey to brown starts on the neck. There is less black flecking on the upper surface of the head than there is on the dorsum. The upper half of each flank is black, the upper and lower boundary lines being jagged edged, but well defined. Lower flanks are whitish grey with some scattered black flecks. In common with the other species, the dark of the flank extends onto the anterior half of the tail, where it persists, but in a somewhat reduced form. Upper labials have semi-distinct white markings.

*A. bobbottomi sp. nov.* is also a mainly metallic grey lizard and is separated from the other species and *A. maxinehoserae sp. nov.* in particular by having a head that is also grey, all the way to the snout; a weak contrast between the grey on the dorsum and the upper flank, which is also more dark grey, rather than a bold dark black, making the boundary ill defined. The lower boundary of the dark zone of the upper flank is not a defined line, but instead gradually fades lighter below. The dorsum has white or light, as well as black flecks.

*Abbasaurum gen. nov*. the total of which are the four preceding species and single subspecies, are separated from the species in the morphologically similar genera *Carinascincus* Wells and Wellington, 1985, with a type species of *Leiolopisma greeni* Rawlinson, 1975 and *Litotescincus* Wells and Wellington, 1985 with a type species of *Mocoa metallica* O'Shaughnessy, 1874 (until now including the newly named genus *Ocellatalbum gen. nov.*) by having no supranasals and frontoparietals that are paired. All species within the genera *Carinascincus* and *Litotescincus* (including *Ocellatalbum gen. nov.*) have frontoparietals fused to form a single shield.

The four genera *Abbasaurum gen. nov*., *Carinascincus*, *Litotescincus* and *Ocellatalbum gen. nov.* (formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

*A. maxinehoserae sp. nov.* in life is depicted in Wilson and Swan (2017) on page 193 at top left and online at:
https://www.inaturalist.org/observations/109033305
and
https://www.inaturalist.org/observations/105940535

*A. coventryi* is depicted in life online at:
https://www.inaturalist.org/observations/71855834
and
https://www.inaturalist.org/observations/17739150

*A. coventryi bartelli* is depicted in life in Hoser (1989) on page 101, bottom photo and online at:
https://www.flickr.com/photos/189037423@N06/51955947154/
and
https://canberra.naturemapr.org/sightings/4415757

*A. abba sp. nov.* is depicted in life in Swan, Shea and Sadlier (2004), page 175 and online at:
https://www.inaturalist.org/observations/65375794
and
https://www.inaturalist.org/observations/74818572
and
https://www.inaturalist.org/observations/65379281

**Distribution:** *Abbasaurum maxinehoserae sp. nov*. is strictly confined to the Otway Ranges area, being bound by Gherang in the north-east, Airey's Inlet in the east, Point Reginald in the south-west and not as far north as Colac in the north. The species is common around Forrest at the northern edge of the Otway Ranges.

**Etymology:** *A. maxinehoserae sp. nov*. is named in honour of Maxine Hoser of Margate, United Kingdom, in recognition of services to herpetology.

***ABBASAURUM ABBA SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:435468AC-AE4D-4D6F-92FF-07F9F7887ABA**

**Holotype:** A preserved specimen in the Australian Museum, Sydney, New South Wales, Australia, specimen number R.178699 collected from Kanangra Rd, 'The Valley', Kanangra-Boyd National Park, New South Wales, Australia, Latitude -33.85333 S., Longitude 150.03304 E.

This government-owned facility allows access to its holdings.

**Paratypes:** 19 preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.141346, R.141347, R.178700, R.178703, R.178704, R.178705, R.178706, R.178707, R.178708, R.178710, R.178711, R.178712, R.178714, R.178720, R.178721, R.178722, R.178723, R.178724 and R.178725 all collected from near Kanangra Rd, Kanangra-Boyd National Park, New South Wales, Australia.

**Diagnosis:** Until now, putative *Abbasaurum coventryi* (Rawlinson, 1975), originally described as *Leiolopisma coventryi* Rawlinson, 1975 better known as *Carinascincus coventryi* has until now been treated by all herpetologists as a single species ranging from Apollo Bay and the Grampians in the west of Victoria, through the type locality in the Yarra Ranges, east of Melbourne, Victoria, and north through high altitude areas to west of Sydney, New South Wales.

Exceptional to this has been Wells and Wellington (1985), who formally named the Brindabella Ranges population as *Litotescincus bartelli*, recognized herein as a subspecies of nominate *Abbasaurum coventryi.*

The putative species is now divided four ways with nominate *A. coventryi* being found from just north and east of Ballarat in the west, through the Great Dividing Range and eastern Victoria to the Australian Capital Territory in the north.

The population at the northern extremity of this range, being the Brindabella Ranges and immediately north-west of there is referred to the morphologically divergent subspecies *A. coventryi bartelli* (Wells and Wellington, 1985).

*Abbasaurum maxinehoserae sp. nov*. is strictly confined to the Otway Ranges area, being bound by Gherang in the north-east, Airey's Inlet in the east, Point Reginald in the south-west and not as far north as Colac in the north.

*Abbasaurum bobbottomi sp. nov.* is found in the Grampians, western Victoria, with specimens found in the hills between Ballarat and Ararat (Mount Buangor area) being tentatively referred to the same taxon.

*Abbasaurum abba sp. nov.* is the taxon found in the cold country west of the Blue Mountains in New South Wales from near Bathurst and Lithgow in the north, south through Oberon and the Jenolan Caves precinct, to the Wombeyan Caves area.

The four species are readily separated from one another as follows:

Nominate *A. coventryi* has a medium brown dorsum, bounded by a semi-distinct dark border at the top of the flank. The dorsum has semi-distinct dark and light flecks, always visible, except in some large and aged specimens. The anterior body, neck and upper surface of the head has scattered tiny black dots or flecks. The upper flank is a dark brownish-black. The lower to mid flank, also dark in colour is punctuated by scattered and distinct tiny white spots that are not arranged in lines of any form. Upper surfaces of limbs are mainly dark brown to black and sometimes obviously marked with both. The side of the head is mainly brown. but with some white flecks or markings, then becoming darker behind the ear as one moves along the flank to the body.

The subspecies *A. coventryi bartelli* is similar in most respects to nominate *A. coventryi coventryi* as described above, but is separated from that subspecies by not having scattered and distinct tiny white spots on the mid to lower flank that are not arranged in lines of any form. Instead there is a very noticeable lightening of the lower flank, which also has tiny semi-distinct spots closely placed and forming 3-5 semi-distinct lateral lines on each flank. Dorsally there is an absence of any black flecks or spots on the head, neck or body, except for the anterior half of tail, which has both dark and light flecks. The side of the head is a light greyish-brown, grading to near black on the neck.

*A. abba sp. nov*. has a light brown dorsum that is bounded on the edges of the top of the flank by a well-defined black border, the black extending down the upper flank, whereupon it grades to grey lower down, before turning white near the belly. The top of the head is also light brown, but the sides of the head are blackish from the tip of the snout back. The dorsum has obvious black peppering throughout, including on the head, but no lighter flecks. The upper surfaces of the limbs are mainly black, although some specimens have obvious dark brown scales as well on the limbs.

*A. maxinehoserae sp. nov*. and *A. bobbottomi sp. nov*. are very different to the other species in that they are both mainly greyish in dorsal body colour, rather than brown.

*A. maxinehoserae sp. nov.* has a metallic grey dorsum of the body in turn with numerous black flecks, while the upper surface of the head is invariably brown, at least at the anterior part of the snout, in front of the eyes. In some specimens the change from grey to brown starts on the neck. There is less black flecking on the upper surface of the head than there is on the dorsum. The upper half of each flank is black, the upper and lower boundary lines being jagged edged, but well defined. Lower flanks are whitish grey with some scattered black flecks. In common with the other species, the dark of the flank extends onto the anterior half of the tail, where it persists, but in a somewhat reduced form. Upper labials have semi-distinct white markings.

*A. bobbottomi sp. nov.* is also a mainly metallic grey lizard and is separated from the other species and *A. maxinehoserae sp. nov.* in particular by having a head that is also grey, all the way to the snout; a weak contrast between the grey on the dorsum and the upper flank, which is also more dark grey, rather than a bold dark black, making the boundary ill defined. The lower boundary of the dark zone of the upper flank is not a defined line, but instead gradually fades lighter below. The dorsum has white or light, as well as black flecks.

*Abbasaurum gen. nov*. the total of which are the four preceding species, and single subspecies, are separated from the species in the morphologically similar genera *Carinascincus* Wells and Wellington, 1985, with a type species of *Leiolopisma greeni* Rawlinson, 1975 and *Litotescincus* Wells and Wellington, 1985 with a type species of *Mocoa metallica* O'Shaughnessy, 1874 (until now including the newly named genus *Ocellatalbum gen. nov.*) by having no supranasals and frontoparietals that are paired. All species within the genera *Carinascincus*, the newly named genus *Ocellatalbum gen. nov.* and *Litotescincus* have frontoparietals fused to form a single shield.

The four genera *Abbasaurum gen. nov*., *Carinascincus*, *Litotescincus* and *Ocellatalbum gen. nov.* (formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

*A. maxinehoserae sp. nov.* in life is depicted in Wilson and Swan (2017) on page 193 at top left and online at:
https://www.inaturalist.org/observations/109033305
and
https://www.inaturalist.org/observations/105940535

*A. coventryi* is depicted in life online at:
https://www.inaturalist.org/observations/71855834
and
https://www.inaturalist.org/observations/17739150

*A. coventryi bartelli* is depicted in life in Hoser (1989) on page 101, bottom photo and online at:
https://www.flickr.com/photos/189037423@N06/51955947154/
and
https://canberra.naturemapr.org/sightings/4415757

*A. abba sp. nov.* is depicted in life in Swan, Shea and Sadlier (2004), page 175 and online at:
https://www.inaturalist.org/observations/65375794
and
https://www.inaturalist.org/observations/74818572

and

https://www.inaturalist.org/observations/65379281

**Distribution:** *Abbasaurum abba sp. nov.* is the taxon found in the cold country west of the Blue Mountains in New South Wales from near Bathurst and Lithgow in the north, south through Oberon and the Jenolan Caves precinct, to the Wombeyan Caves area.

**Etymology:** *A. abba sp. nov.* is named in honour of Swedish Rock Band ABBA, who were popular in the Australian music scene in the 1970's for contributions to entertainment in Australia. The genus name is short and simple to remember. They were particularly popular in the town of Oberon, the centre of distribution for this species, when in the late 1970's it was rare to see a child walking down the shopping strip not wearing a T-shirt with ABBA emblazoned on it.

***ABBASAURUM BOBBOTTOMI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:B7A6D0D9-76F6-4773-93E8-922B35ABC713**

**Holotype:** A preserved specimen in the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D32926, collected at Strahans Camp, The Grampians, Victoria, Australia, Latitude -37.38 S., Longitude 142.27 E.

This government-owned facility allows access to its holdings.

**Paratypes:**1/ Two preserved specimen in the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D38184 and D38185 collected from 3.2 km south-east of Mount Victory, The Grampians, Victoria, Australia, Latitude -37.17 S., Longitude 142.45 E., 2/ A preserved specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number R14746 collected from south-west of Halls Gap in The Grampians, Victoria, Australia, Latitude -37.3 S., Longitude 142.3 E., 3/ A preserved specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number R13671, collected from 9 km south-east of Glenisla, The Grampians, Victoria, Australia, Latitude -37.2833 S., Longitude 142.275 E.

**Diagnosis:** Until now, putative *Abbasaurum coventryi* (Rawlinson, 1975), originally described as *Leiolopisma coventryi* Rawlinson, 1975 better known as *Carinascincus coventryi* has until now been treated by all herpetologists as a single species ranging from Apollo Bay and the Grampians in the west of Victoria, through the type locality in the Yarra Ranges, east of Melbourne, Victoria, and north through high altitude areas to west of Sydney, New South Wales. Exceptional to this has been Wells and Wellington (1985), who formally named the Brindabella Ranges population as *Litotescincus bartelli*, recognized herein as a subspecies of nominate *Abbasaurum coventryi.*

The putative species is now divided four ways with nominate *A. coventryi* being found from just north and east of Ballarat in the west, through the Great Dividing Range and eastern Victoria to the Australian Capital Territory in the north.

The population at the northern extremity of this range, being the Brindabella Ranges and immediately north-west of there is referred to the morphologically divergent subspecies *A. coventryi bartelli* (Wells and Wellington, 1985).

*Abbasaurum maxinehoserae sp. nov*. is strictly confined to the Otway Ranges area, being bound by Gherang in the north-east, Airey's Inlet in the east, Point Reginald in the south-west and not as far north as Colac in the north.

*Abbasaurum bobbottomi sp. nov.* is found in the Grampians, western Victoria, with specimens found in the hills between Ballarat and Ararat (Mount Buangor area) being tentatively referred to the same taxon.

*Abbasaurum abba sp. nov.* is the taxon found in the cold country west of the Blue Mountains in New South Wales from near Bathurst and Lithgow in the north, south through Oberon and the Jenolan Caves precinct, to the Wombeyan Caves area.

The four species are readily separated from one another as follows:

Nominate *A. coventryi* has a medium brown dorsum, bounded by a semi-distinct dark border at the top of the flank. The dorsum has semi-distinct dark and light flecks, always visible, except in some large and aged specimens. The anterior body, neck and upper surface of the head has scattered tiny black dots or flecks. The upper flank is a dark brownish-black. The lower to mid flank, also dark in colour is punctuated by scattered and distinct tiny white spots that are not arranged in lines of any form. Upper surfaces of limbs are mainly dark brown to black and sometimes obviously marked with both. The side of the head is mainly brown. but with some white flecks or markings, then becoming darker behind the ear as one moves along the flank to the body.

The subspecies *A. coventryi bartelli* is similar in most respects to nominate *A. coventryi coventryi* as described above, but is separated from that subspecies by not having scattered and distinct tiny white spots on the mid to lower flank that are not arranged in lines of any form. Instead there is a very noticeable lightening of the lower flank, which also has tiny semi-distinct spots closely placed and forming 3-5 semi-distinct lateral lines on each flank. Dorsally there is an absence of any black flecks or spots on the head, neck or body, except for the anterior half of tail, which has both dark and light flecks. The side of the head is a light greyish-brown, grading to near black on the neck.

*A. abba sp. nov*. has a light brown dorsum that is bounded on the edges of the top of the flank by a well-defined black border, the black extending down the upper flank, whereupon it grades to grey lower down, before turning white near the belly. The top of the head is also light brown, but the sides of the head are blackish from the tip of the snout back. The dorsum has obvious black peppering throughout, including on the head, but no lighter flecks. The upper surfaces of the limbs are mainly black, although some specimens have obvious dark brown scales as well on the limbs.

*A. maxinehoserae sp. nov*. and *A. bobbottomi sp. nov*. are very different to the other species in that they are both mainly greyish in dorsal body colour, rather than brown.

*A. maxinehoserae sp. nov.* has a metallic grey dorsum of the body in turn with numerous black flecks, while the upper surface of the head is invariably brown, at least at the anterior part of the snout, in front of the eyes. In some specimens the change from grey to brown starts on the neck. There is less black flecking on the upper surface of the head than there is on the dorsum. The upper half of each flank is black, the upper and lower boundary lines being jagged edged, but well defined. Lower flanks are whitish grey with some scattered black flecks. In common with the other species, the dark of the flank extends onto the anterior half of the tail, where it persists, but in a somewhat reduced form. Upper labials have semi-distinct white markings.

*A. bobbottomi sp. nov.* is also a mainly metallic grey lizard and is separated from the other species and *A. maxinehoserae sp. nov.* in particular by having a head that is also grey, all the way to the snout; a weak contrast between the grey on the dorsum and the upper flank, which is also more dark grey, rather than a bold dark black, making the boundary ill defined. The lower boundary of the dark zone of the upper flank is not a defined line, but instead gradually fades lighter below. The dorsum has white or light, as well as black flecks.

*Abbasaurum gen. nov*. the total of which are the four preceding species, and single subspecies, are separated from the species in the morphologically similar genera *Carinascincus* Wells and Wellington, 1985, with a type species of *Leiolopisma greeni* Rawlinson, 1975 and *Litotescincus* Wells and Wellington, 1985 with a type species of *Mocoa metallica* O'Shaughnessy, 1874 (until now including the newly named genus *Ocellatalbum gen. nov.*) by having no supranasals and frontoparietals that are paired. All species within the genera *Carinascincus*, *Litotescincus* and the newly named genus *Ocellatalbum gen. nov.* have frontoparietals fused to form a single shield.

The four genera *Abbasaurum gen. nov*., *Carinascincus*, *Litotescincus* and the newly named genus *Ocellatalbum gen. nov.* (formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

*A. maxinehoserae sp. nov.* in life is depicted in Wilson and Swan (2017) on page 193 at top left and online at:

https://www.inaturalist.org/observations/109033305

and

https://www.inaturalist.org/observations/105940535

*A. coventryi* is depicted in life online at:
https://www.inaturalist.org/observations/71855834
and
https://www.inaturalist.org/observations/17739150
*A. coventryi bartelli* is depicted in life in Hoser (1989) on page 101, bottom photo and online at:
https://www.flickr.com/photos/189037423@N06/51955947154/
and
https://canberra.naturemapr.org/sightings/4415757
*A. abba sp. nov.* is depicted in life in Swan, Shea and Sadlier (2004), page 175 and online at:
https://www.inaturalist.org/observations/65375794
and
https://www.inaturalist.org/observations/74818572
and
https://www.inaturalist.org/observations/65379281

**Distribution:** *Abbasaurum bobbottomi sp. nov.* is found in the Grampians, western Victoria, with specimens found in the hills between Ballarat and Ararat (Mount Buangor area) being tentatively referred to the same taxon.

**Etymology:** *A. bobbottomi sp. nov.* is named in honour of Robert Godier Bottom, OAM, better known as Bob Bottom, a retired Australian investigative journalist and author.

His crime and corruption books published in the 1970's and 1980's were best-sellers. While corruption has worsened in Australia since his books were published, his stellar efforts in combating endemic corruption should not go unrecognized.

***LITOTESCINCUS EVANWHITTONI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:94EB4543-C588-4C84-B7A5-3D10A705C543**

**Holotype:** A preserved specimen at the Tasmanian Museum and Art Gallery, Hobart, Tasmania, Australia, specimen number C963 collected from Garden Island, Tasmania, Australia, Latitude -43.258620 S., Longitude 147.13 E.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ 28 preserved specimens at the Tasmanian Museum and Art Gallery, Hobart, Tasmania, Australia, specimen numbers C964, C965, C966, C967, C968, C969, C970, C971, C972, C973, C974, C975, C976, C977, C978, C979, C980, C981, C982, C983, C984, C985, C986, C987, C988, C989, C990 and C991 all collected from Garden Island, Tasmania, Australia, Latitude -43.258620 S., Longitude 147.13 E., 2/ A preserved specimen at the Tasmanian Museum and Art Gallery, Hobart, Tasmania, Australia, specimen number C695 collected from Hastings, Tasmania, Australia, Latitude -43.42 S., Longitude 146.92 E., 3/ Two preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D2594 and D2596 collected from Port Esperance, Tasmania, Australia, Latitude -43.33 S., Longitude 147.02 E.

**Diagnosis:** Putative *Mocoa metallica* O'Shaughnessy, 1874, with a type locality of Tasmania, now the type species for the genus *Litotescincus* Wells and Wellington, 1985 has since 1874 been treated by all herpetologists as a single species found in most parts of Tasmania, across the islands of Bass Strait and into southern Victoria.

Dismemberment of the species complex commenced with the discovery of and diagnosis of *L. wellsi* Hoser, 2016, being a divergent form from far south-west Tasmania.

Kreger *et al*. (2019) found deep divergences of 2.8 MYA or more between five populations of putative *Litotescincus metallica* from across most of the known range of the putative species.

They made no attempt to identify and name these species.

Inspection of hundreds of (mainly live) specimens and photos from across this range showed each clade identified by Kreger *et al*. (2019) conforms to morphologically distinct forms herein formally identified and named as new species, with the exception of the already named nominate form from north-east Tasmania and *L. wellsi* Hoser, 2016 which was not sampled by Kreger *et al*. (2019).

The relevant species in the *L. metallica* complex are as follows:

*L. metallica* (O'Shaughnessy, 1874) which occurs in north-east Tasmania, north of Falmouth on the east coast and east of Hillwood near the north coast.

*L. wellsi* Hoser, 2016 is found in the far south-west of Tasmania in the vicinity of New Harbour and Melaleuca.

*L. evanwhittoni sp. nov.* is found in the far south-east of Tasmania in an area bounded by Garden Island and Hartz Peak in the North and South Cape in the south.

*L. fiacummingae sp. nov.* is found in most of the south and central parts of Tasmania, including most of the central plateau and the Hobart area, being generally bound by a region within King William Creek in the south-west, Fortescue Bay in the south-east, Bicheno in the north-east, Cataract Gorge in the North, Pine Lake and Clarence Lagoon in the west.

*L. martinekae sp. nov.* is found in the eastern Bass Strait islands, from the Flinders Island Group (including outliers) to Victoria and also within southern Victoria, including the Bellarine and Mornington Peninsulas in the west, extending across southern and south-eastern Melbourne east to Woodside (east of Wilson's Promontory) and including nearby ranges, including the Dandenong and Yarra Ranges and as far north as the Mount Baw Baw National Park.

*L. colinrayi sp. nov*. is found in north-west Tasmania, north of Lake St. Clair in the south-east of the range, and west of here, Quamby Bluff, Deloraine and Beauty Point, to include most if not all the north-west corner of Tasmania, at least as far west as Lake Chisholm in the north-west, and presumably including the specimens also on King Island to the immediate north-west.

The six species are separated from one another by the following unique suites of characters:

*L. metallica* as described by O'Shaughnessy (1874), is unique among the complex by having a colour combination as follows: "*Above bright bronzed green, with a median dark brown stripe and lateral variegations more or less irregular; sides dark brown, broken up into irregular variegations; beneath greenish, dotted on chin*." The variegations in the form of spots or flecks may be dark, light or both.

*L. wellsi* Hoser, 2016 is characterised by being heavily striped and lacks significant dorsal or lateral speckling found in other members of the *L. metallica* complex. Furthermore *L. wellsi* have strongly keeled scales, not seen in other species in the *L. metallica* complex, making this almost certainly the most divergent member in this group. The body of *L. wellsi* is dark chocolate brown on the dorsum. The top two thirds of the upper flank form a well-defined very dark, nearly black stripe that is bound on the bottom by an extremely well-defined thin white line, this latter trait shared only with *L. colinrayi sp. nov*..

*L. evanwhittoni sp. nov.* is a is a generally silver-grey lizard on the dorsum, which also has semi-distinct dark and/or light specking on the back and no obvious mid-dorsal line, although some specimens do have a very slight darkening along the midline near the rear of the dorsum and at the beginning of the tail.

The upper flank is greyish-black with obvious white speckling on it (in contrast to *L. wellsi* which does not), while the lower flank is whitish-grey, with semi-distinct scattered white dots. The boundary between the dark and the light on the flank is not in the form of a well-defined white line. Head lacks obvious spots or flecks and is usually slightly brownish. Upper surfaces of limbs are usually a uniform dark greyish colour, rarely with semi-distinct lighter flecks or spots.

*L. fiacummingae sp. nov.* is a dark brownish-black lizard with numerous black, brown and/or beige flecks on the dorsum. There is no evidence of any mid-dorsal line. The upper flanks are jet black and with many obvious white or light coloured dots overlaying the darker area. Upper surfaces of limbs also have numerous white dots on the otherwise darker surface. Lower flanks also grey and with obvious tiny white flecks.

*L. martinekae sp. nov.* is a beige to light greenish beige coloured lizard, with a dorsum heavily flecked, especially with white or some other light colour, including on the head. There is no evidence of any mid-dorsal line. Upper flanks are black and heavily spotted white. The upper and lower boundary of the black on the flank is not well defined. Below the dark zone is a grey lower flank with more white semi-distinct spots on the same area. Upper surfaces of the limbs are beige with obvious black spots or similar markings.

*L. colinrayi sp. nov*. is brown on the upper surface of the dorsum. Along the midline is a well-defined black line extending the length of the body. On either side of the mid-dorsal line and on the dorsal surface, are two other less well-defined lines running the length of

the dorsum (giving a total of five). The mid-dorsal line also runs onto the anterior part of the tail.

The upper border of the upper dark zone of the flank is dark brown, with lighter brown below that and then below that a dark brown border, which in turn borders a well-defined white line.

*L. colinrayi sp. nov*. is the only member of the complex in which the dark upper zone of the flank is not just black or dark grey in the form of a line in effect occupying most of the flank, but rather forms a three line configuration with the darker upper and lower area, between which is a lighter coloured line. The three lines in effect take up the same space as the single dark line in the other species.

There are no white or light spots dotting the upper flank as seen in most other species in the complex.

Unlike the other species in the complex, (except sometimes *L. wellsi*), this lizard gives an appearance of having stripes on the dorsum of moderately good definition. In this species, the upper labials white is well defined and contrasts sharply with the brown above, giving the appearance of a well-defined white line running from the tip of the snout, along the jawline, neck and joining the same white line that bounds the lower flank.

In the other species the white of the upper labials are either not as strongly contrasting or otherwise interspersed with grey, peppering or similar.

The six preceding species comprising the entirety of the *L. metallica* complex are separated from all other species within *Litotescincus* Wells and Wellington, 1985, *Abbasaurum gen. nov*., *Carinascincus* Wells and Wellington, 1985 and *Ocellatalbum gen. nov.* by the following suite of characters;

Supranasal scales absent; frontoparietal scales fused to form a single shield; suture between the rostral and frontonasal is much narrower than the frontal; 5-7 supraciliaries; 24-28 midbody scale rows; paravertebral scales are transversely enlarged and wider than the adjacent dorsal scales; transparent disc of the lower eyelid is moderate and much smaller than the eye; smooth subdigital lamellae with 16-22 under the fourth toe; tail about 1.5 times snout-vent; adpressed limbs meeting or slightly overlapping (modified from Cogger 2014).

The four genera *Abbasaurum gen. nov*., *Carinascincus*, *Litotescincus* and *Ocellatalbum gen. nov.* (formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

*L. metallica* is depicted in life online at:
https://www.inaturalist.org/observations/2763149
and
https://www.inaturalist.org/observations/25734908

*L. wellsi* Hoser, 2016 is depicted in life in Wilson and Swan (2017) on page 193 at middle right and online at:
https://www.inaturalist.org/observations/18708902
and
https://www.inaturalist.org/observations/18638878

*L. evanwhittoni sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/57810630
and
https://www.inaturalist.org/observations/57810617
and
https://www.inaturalist.org/observations/93945547

*L. fiacummingae sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/87534217
and
https://www.inaturalist.org/observations/87533319
and
https://www.inaturalist.org/observations/5782400
and
https://www.inaturalist.org/observations/69000825
and
https://www.inaturalist.org/observations/106478175
and
https://www.inaturalist.org/observations/63415828

*L. martinekae sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/70663928
and
https://www.inaturalist.org/observations/98758709
and
https://www.inaturalist.org/observations/97741022
and
http://reptilesofaustralia.com/lizards/skinks/metallicskink.html#.YuIVhL1Bypp
(top two images).

*L. colinrayi sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/39347293
and
https://www.inaturalist.org/observations/75634401
and
https://www.inaturalist.org/observations/102917875
and
https://www.inaturalist.org/observations/56724299

Kreger *et al*. (2019) found this species to have diverged from its nearest congener some 5.8 MYA.

**Distribution:** *L. evanwhittoni sp. nov.* is found in the far south-east of Tasmania in an area bounded by Garden Island and Hartz Peak in the North and South Cape in the south.

**Etymology:** *L. evanwhittoni sp. nov.* is named in honour of Evan Whitton, born 5 March 1928, died 16 July 2018), in recognition for services to Australia in (unsuccessfully) fighting corruption in the Australian legal system.

His best selling books included:

*Can of Worms: A Citizen's Reference Book to Crime and the Administration of Justice* (1986) ISBN 0949054313

*Can of Worms II: A Citizen's Reference Book to Crime and the Administration of Justice* (1986) ISBN 0949054968

*Amazing Scenes* (1987) ISBN 064212809X

*The Hillbilly Dictator: Australia's Police State* (1989) ISBN 064212809X

*Trial by Voodoo: Why the Law Defeats Justice and Democracy* (1994) ISBN 0091828805

*The Cartel: Lawyers and their Nine Magic Tricks* (1998) ISBN 0646348876

*Serial Liars: How Lawyers Get the Money and Get the Criminals Off* (2005) ISBN 9781411658752

*Our Corrupt Legal System* (2010) ISBN 9781921681073

***LITOTESCINCUS FIACUMMINGAE SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:4FCA9CD6-967E-4AD2-BFFF-9DAB9E390908**

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.178849 collected from about 3 km south of Orford, Tasmania, at a place called "Three Thumbs", Latitude -42.583 S., Longitude 147.866 E.

This government-owned facility allows access to its holdings.

**Paratypes:** Ten preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.176623, R.176624, R.176625, R.176626, R.176627, R.176628, R.176629, R.176630, R.178850 and R.178851 all collected from about 3 km south of Orford, Tasmania, at a place called "Three Thumbs", Latitude -42.583 S., Longitude 147.866 E.

**Diagnosis:** Putative *Mocoa metallica* O'Shaughnessy, 1874, with a type locality of Tasmania, now the type species for the genus *Litotescincus* Wells and Wellington, 1985 has since 1874 been treated by all herpetologists as a single species found in most parts of Tasmania, across the islands of Bass Strait and into southern Victoria.

Dismemberment of the species complex commenced with the discovery of and diagnosis of *L. wellsi* Hoser, 2016, being a divergent form from far south-west Tasmania.

Kreger *et al*. (2019) found deep divergences of 2.8 MYA or more between five populations of putative *Litotescincus metallica* from across most of the known range of the putative species.

They made no attempt to identify and name these species.

Inspection of hundreds of (mainly live) specimens and photos from across this range showed each clade identified by Kreger *et al*. (2019) conforms to morphologically distinct forms herein formally identified and named as new species, with the exception of the already named nominate form from north-east Tasmania and *L. wellsi* Hoser, 2016 which was not sampled by Kreger *et al*. (2019).

The relevant species in the *L. metallica* complex are as follows:

*L. metallica* (O'Shaughnessy, 1874) which occurs in north-east Tasmania, north of Falmouth on the east coast and east of Hillwood near the north coast.

*L. wellsi* Hoser, 2016 is found in the far south-west of Tasmania in the vicinity of New Harbour and Melaleuca.

*L. evanwhittoni sp. nov.* is found in the far south-east of Tasmania in an area bounded by Garden Island and Hartz Peak in the North and South Cape in the south.

*L. fiacummingae sp. nov.* is found in most of the south and central parts of Tasmania, including throughout most of the central plateau and the Hobart area, being generally bound by a region within King William Creek in the south-west, Fortescue Bay in the south-east, Bicheno in the north-east, Cataract Gorge in the North, Pine Lake and Clarence Lagoon in the west. The species is most commonly seen in lowland areas near the east coast.

*L. martinekae sp. nov.* is found in the eastern Bass Strait islands, from the Flinders Island Group (including outliers) to Victoria and also within southern Victoria, including the Bellarine and Mornington Peninsulas in the west, extending across southern and south-eastern Melbourne east to Woodside (east of Wilson's Promontory) and including nearby ranges, including the Dandenong and Yarra Ranges and as far north as the Mount Baw Baw National Park.

*L. colinrayi sp. nov*. is found in north-west Tasmania, north of Lake St. Clair in the south-east of the range, and west of here, Quamby Bluff, Deloraine and Beauty Point, to include most if not all the north-west corner of Tasmania, at least as far west as Lake Chisholm in the north-west, and presumably including the specimens also on King Island to the immediate north-west.

The six species are separated from one another by the following unique suites of characters:

*L. metallica* as described by O'Shaughnessy (1874), is unique among the complex by having a colour combination as follows: "*Above bright bronzed green, with a median dark brown stripe and lateral variegations more or less irregular; sides dark brown, broken up into irregular variegations; beneath greenish, dotted on chin*." The variegations in the form of spots or flecks may be dark, light or both.

*L. wellsi* Hoser, 2016 is characterised by being heavily striped and lacks significant dorsal or lateral speckling found in other members of the *L. metallica* complex. Furthermore *L. wellsi* have strongly keeled scales, not seen in other species in the *L. metallica* complex, making this almost certainly the most divergent member in this group. The body of *L. wellsi* is dark chocolate brown on the dorsum. The top two thirds of the upper flank form a well-defined very dark, nearly black stripe that is bound on the bottom by an extremely well-defined thin white line, this latter trait shared only with *L. colinrayi sp. nov*..

*L. evanwhittoni sp. nov.* is a is a generally silver-grey lizard on the dorsum, which also has semi-distinct dark and/or light specking on the back and no obvious mid-dorsal line, although some specimens do have a very slight darkening along the midline near the rear of the dorsum and at the beginning of the tail.

The upper flank is greyish-black with obvious white speckling on it (in contrast to *L. wellsi* which does not), while the lower flank is whitish-grey, with semi-distinct scattered white dots. The boundary between the dark and the light on the flank is not in the form of a well-defined white line. Head lacks obvious spots or flecks and is usually slightly brownish. Upper surfaces of limbs are usually a uniform dark greyish colour, rarely with semi-distinct lighter flecks or spots.

*L. fiacummingae sp. nov.* is a dark brownish-black lizard with numerous black, brown and/or beige flecks on the dorsum. There is no evidence of any mid-dorsal line. The upper flanks are jet black and with many obvious white or light coloured dots overlaying the darker area. Upper surfaces of limbs also have numerous white dots on the otherwise darker surface. Lower flanks also grey and with obvious tiny white flecks.

*L. martinekae sp. nov.* is a beige to light greenish beige coloured lizard, with a dorsum heavily flecked, especially with white or some other light colour, including on the head. There is no evidence of any mid-dorsal line. Upper flanks are black and heavily spotted white. The upper and lower boundary of the black on the flank is not well defined. Below the dark zone is a grey lower flank with more white semi-distinct spots on the same area. Upper surfaces of the limbs are beige with obvious black spots or similar markings.

*L. colinrayi sp. nov*. is brown on the upper surface of the dorsum. Along the midline is a well-defined black line extending the length of the body. On either side of the mid-dorsal line and on the dorsal surface, are two other less well-defined lines running the length of the dorsum (giving a total of five). The mid-dorsal line also runs onto the anterior part of the tail.

The upper border of the upper dark zone of the flank is dark brown, with lighter brown below that and then below that a dark brown border, which in turn borders a well-defined white line.

*L. colinrayi sp. nov*. is the only member of the complex in which the dark upper zone of the flank is not just black or dark grey in the form of a line in effect occupying most of the flank, but rather forms a three line configuration with the darker upper and lower area, between which is a lighter coloured line. The three lines in effect take up the same space as the single dark line in the other species.

There are no white or light spots dotting the upper flank as seen in most other species in the complex.

Unlike the other species in the complex, (except sometimes *L. wellsi*), this lizard gives an appearance of having stripes on the dorsum of moderately good definition. In this species, the upper labials white is well defined and contrasts sharply with the brown above, giving the appearance of a well-defined white line running from the tip of the snout, along the jawline, neck and joining the same white line that bounds the lower flank.

In the other species the white of the upper labials are either not as strongly contrasting or otherwise interspersed with grey, peppering or similar.

The six preceding species comprising the entirety of the *L. metallica* complex are separated from all other species within *Litotescincus* Wells and Wellington, 1985, *Abbasaurum gen. nov*., *Carinascincus* Wells and Wellington, 1985 and *Ocellatalbum gen. nov.* by the following suite of characters;

Supranasal scales absent; frontoparietal scales fused to form a single shield; suture between the rostral and frontonasal is much narrower than the frontal; 5-7 supraciliaries; 24-28 midbody scale rows; paravertebral scales are transversely enlarged and wider than the adjacent dorsal scales; transparent disc of the lower eyelid is moderate and much smaller than the eye; smooth subdigital lamellae with 16-22 under the fourth toe; tail about 1.5 times snout-vent; adpressed limbs meeting or slightly overlapping (modified from Cogger 2014).

The four genera *Abbasaurum gen. nov*., *Carinascincus*, *Litotescincus* and *Ocellatalbum gen. nov.* (formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

*L. metallica* is depicted in life online at:
https://www.inaturalist.org/observations/2763149
and
https://www.inaturalist.org/observations/25734908

*L. wellsi* Hoser, 2016 is depicted in life in Wilson and Swan (2017) on page 193 at middle right and online at:
https://www.inaturalist.org/observations/18708902
and
https://www.inaturalist.org/observations/18638878

*L. evanwhittoni sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/57810630
and
https://www.inaturalist.org/observations/57810617
and

https://www.inaturalist.org/observations/93945547
*L. fiacummingae sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/87534217
and
https://www.inaturalist.org/observations/87533319
and
https://www.inaturalist.org/observations/5782400
and
https://www.inaturalist.org/observations/69000825
and
https://www.inaturalist.org/observations/106478175
and
https://www.inaturalist.org/observations/63415828
*L. martinekae sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/70663928
and
https://www.inaturalist.org/observations/98758709
and
https://www.inaturalist.org/observations/97741022
and
http://reptilesofaustralia.com/lizards/skinks/metallicskink.html#.YuIVhL1Bypp
(top two images).
*L. colinrayi sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/39347293
and
https://www.inaturalist.org/observations/75634401
and
https://www.inaturalist.org/observations/102917875
and
https://www.inaturalist.org/observations/56724299
Kreger *et al*. (2019) found this species to have diverged from its nearest congener some 4.4 MYA, that species being *L. metallica.*

**Distribution:** *L. fiacummingae sp. nov.* is found in most of the south and central parts of Tasmania, including throughout most of the central plateau and the Hobart area, being generally bound by a region within King William Creek in the south-west, Fortescue Bay in the south-east, Bicheno in the north-east, Cataract Gorge in the North, Pine Lake and Clarence Lagoon in the west. The species is most commonly seen in lowland areas near the east coast.

**Etymology:** *L. fiacummingae sp. nov.* is named in honour of Fia Cumming of Lyons, Canberra, ACT, Australia, previously of Chatswood, (Sydney), New South Wales, Australia in recognition of her services to wildlife conservation in Australia. For further details refer to Hoser (1996).

***LITOTESCINCUS MARTINEKAE SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:524AFE3D-8C16-478B-932F-F081F799EA91**

**Holotype:** A preserved male specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D52928 collected from 2.5 km east of Tooradin, Victoria, Australia, Latitude -38.22 S., Longitude 145.4 S.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ Two preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D35380 and D35381 both collected from Shoreham, Western Port Bay area, Victoria, Australia, Latitude -38.43 S., Longitude 145.05 E., 2/ Three preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D53685, D53689 and D53690 all collected from 1 km north-west of Bayles, Victoria, Australia at the local rubbish tip, Latitude -38.18 S., Longitude 145.58 E. 3/ Nine preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D55451, D55452, D60512, D60513, D60514, D60515, D60516, D60517 and D60518 all collected from various locations along the Bunyip River, Victoria, Australia.

**Diagnosis:** Putative *Mocoa metallica* O'Shaughnessy, 1874, with a type locality of Tasmania, now the type species for the genus *Litotescincus* Wells and Wellington, 1985 has since 1874 been treated by all herpetologists as a single species found in most parts of Tasmania, across the islands of Bass Strait and into southern Victoria.

Dismemberment of the species complex commenced with the discovery of and diagnosis of *L. wellsi* Hoser, 2016, being a divergent form from far south-west Tasmania.

Kreger *et al*. (2019) found deep divergences of 2.8 MYA or more between five populations of putative *Litotescincus metallica* from across most of the known range of the putative species, with *L. martinekae sp. nov*. being the least divergent of the forms formally named in this paper, having a 2.8 MYA divergence from north-east Tasmanian congeners, being the nominate form of *L. metallica*.

Kreger *et al*. (2019) made no attempt to identify and name these various divergent species.

Inspection of hundreds of (mainly live) specimens and photos from across this range showed each clade identified by Kreger *et al*. (2019) conforms to morphologically distinct forms herein formally identified and named as new species, with the exception of the already named nominate form from north-east Tasmania and *L. wellsi* Hoser, 2016 which was not sampled by Kreger *et al*. (2019).

The relevant species in the *L. metallica* complex are as follows:

*L. metallica* (O'Shaughnessy, 1874) which occurs in north-east Tasmania, north of Falmouth on the east coast and east of Hillwood near the north coast.

*L. wellsi* Hoser, 2016 is found in the far south-west of Tasmania in the vicinity of New Harbour and Melaleuca.

*L. evanwhittoni sp. nov.* is found in the far south-east of Tasmania in an area bounded by Garden Island and Hartz Peak in the North and South Cape in the south.

*L. fiacummingae sp. nov.* is found in most of the south and central parts of Tasmania, including most of the central plateau and the Hobart area, being generally bound by a region within King William Creek in the south-west, Fortescue Bay in the south-east, Bicheno in the north-east, Cataract Gorge in the North, Pine Lake and Clarence Lagoon in the west.

*L. martinekae sp. nov.* is found in the eastern Bass Strait islands, from the Flinders Island Group (including outliers) to Victoria and also within southern Victoria, including the Bellarine and Mornington Peninsulas in the west, extending across southern and south-eastern Melbourne east to Woodside (east of Wilson's Promontory) and including nearby ranges, including the Dandenong and Yarra Ranges and as far north as the Mount Baw Baw National Park.

*L. colinrayi sp. nov*. is found in north-west Tasmania, north of Lake St. Clair in the south-east of the range, and west of here, Quamby Bluff, Deloraine and Beauty Point, to include most if not all the north-west corner of Tasmania, at least as far west as Lake Chisholm in the north-west, and presumably including the specimens also on King Island to the immediate north-west.

The six species are separated from one another by the following unique suites of characters:

*L. metallica* as described by O'Shaughnessy (1874), is unique among the complex by having a colour combination as follows: "*Above bright bronzed green, with a median dark brown stripe and lateral variegations more or less irregular; sides dark brown, broken up into irregular variegations; beneath greenish, dotted on chin*." The variegations in the form of spots or flecks may be dark, light or both.

*L. wellsi* Hoser, 2016 is characterised by being heavily striped and lacks significant dorsal or lateral speckling found in other members of the *L. metallica* complex. Furthermore *L. wellsi* have strongly keeled scales, not seen in other species in the *L. metallica* complex, making this almost certainly the most divergent member in this group. The body of *L. wellsi* is dark chocolate brown on the dorsum. The top two thirds of the upper flank form a well-defined very dark, nearly black stripe that is bound on the bottom by an extremely well-defined thin white line, this latter trait shared only with *L. colinrayi sp. nov*..

*L. evanwhittoni sp. nov.* is a is a generally silver-grey lizard on the dorsum, which also has semi-distinct dark and/or light specking on the back and no obvious mid-dorsal line, although some specimens do have a very slight darkening along the midline near the rear of the dorsum and at the beginning of the tail.

The upper flank is greyish-black with obvious white speckling on it (in contrast to *L. wellsi* which does not), while the lower flank is whitish-grey, with semi-distinct scattered white dots. The boundary between the dark and the light on the flank is not in the form of a

well-defined white line. Head lacks obvious spots or flecks and is usually slightly brownish. Upper surfaces of limbs are usually a uniform dark greyish colour, rarely with semi-distinct lighter flecks or spots.

*L. fiacummingae sp. nov.* is a dark brownish-black lizard with numerous black, brown and/or beige flecks on the dorsum. There is no evidence of any mid-dorsal line. The upper flanks are jet black and with many obvious white or light coloured dots overlaying the darker area. Upper surfaces of limbs also have numerous white dots on the otherwise darker surface. Lower flanks also grey and with obvious tiny white flecks.

*L. martinekae sp. nov.* is a beige to light greenish beige coloured lizard, with a dorsum heavily flecked, especially with white or some other light colour, including on the head. There is no evidence of any mid-dorsal line. Upper flanks are black and heavily spotted white. The upper and lower boundary of the black on the flank is not well defined. Below the dark zone is a grey lower flank with more white semi-distinct spots on the same area. Upper surfaces of the limbs are beige with obvious black spots or similar markings.

*L. colinrayi sp. nov*. is brown on the upper surface of the dorsum. Along the midline is a well-defined black line extending the length of the body. On either side of the mid-dorsal line and on the dorsal surface, are two other less well-defined lines running the length of the dorsum (giving a total of five). The mid-dorsal line also runs onto the anterior part of the tail.

The upper border of the upper dark zone of the flank is dark brown, with lighter brown below that and then below that a dark brown border, which in turn borders a well-defined white line.

*L. colinrayi sp. nov*. is the only member of the complex in which the dark upper zone of the flank is not just black or dark grey in the form of a line in effect occupying most of the flank, but rather forms a three line configuration with the darker upper and lower area, between which is a lighter coloured line. The three lines in effect take up the same space as the single dark line in the other species. There are no white or light spots dotting the upper flank as seen in most other species in the complex.

Unlike the other species in the complex, (except sometimes *L. wellsi*), this lizard gives an appearance of having stripes on the dorsum of moderately good definition. In this species, the upper labials white is well defined and contrasts sharply with the brown above, giving the appearance of a well-defined white line running from the tip of the snout, along the jawline, neck and joining the same white line that bounds the lower flank.

In the other species the white of the upper labials are either not as strongly contrasting or otherwise interspersed with grey, peppering or similar.

The six preceding species comprising the entirety of the *L. metallica* complex are separated from all other species within *Litotescincus* Wells and Wellington, 1985, *Abbasaurum gen. nov*., *Carinascincus* Wells and Wellington, 1985 and *Ocellatalbum gen. nov.* by the following suite of characters;

Supranasal scales absent; frontoparietal scales fused to form a single shield; suture between the rostral and frontonasal is much narrower than the frontal; 5-7 supraciliaries; 24-28 midbody scale rows; paravertebral scales are transversely enlarged and wider than the adjacent dorsal scales; transparent disc of the lower eyelid is moderate and much smaller than the eye; smooth subdigital lamellae with 16-22 under the fourth toe; tail about 1.5 times snout-vent; adpressed limbs meeting or slightly overlapping (modified from Cogger 2014).

The four genera *Abbasaurum gen. nov*., *Carinascincus*, *Litotescincus* and *Ocellatalbum gen. nov.* (formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

*L. metallica* is depicted in life online at:
https://www.inaturalist.org/observations/2763149
and
https://www.inaturalist.org/observations/25734908

*L. wellsi* Hoser, 2016 is depicted in life in Wilson and Swan (2017) on page 193 at middle right and online at:
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and
https://www.inaturalist.org/observations/18638878

*L. evanwhittoni sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/57810630
and
https://www.inaturalist.org/observations/57810617
and
https://www.inaturalist.org/observations/93945547

*L. fiacummingae sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/87534217
and
https://www.inaturalist.org/observations/87533319
and
https://www.inaturalist.org/observations/5782400
and
https://www.inaturalist.org/observations/69000825
and
https://www.inaturalist.org/observations/106478175
and
https://www.inaturalist.org/observations/63415828

*L. martinekae sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/70663928
and
https://www.inaturalist.org/observations/98758709
and
https://www.inaturalist.org/observations/97741022
and
http://reptilesofaustralia.com/lizards/skinks/metallicskink.html#.YuIVhL1Bypp
(top two images).

*L. colinrayi sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/39347293
and
https://www.inaturalist.org/observations/75634401
and
https://www.inaturalist.org/observations/102917875
and
https://www.inaturalist.org/observations/56724299

Kreger *et al*. (2019) found this species to have diverged from its nearest congener some 2.8 MYA, that species being *L. metallica.*

**Distribution:** *L. martinekae sp. nov.* is found in the eastern Bass Strait islands, from the Flinders Island Group (including outliers) to Victoria and also within southern Victoria, including the Bellarine and Mornington Peninsulas in the west, extending across southern and south-eastern Melbourne east to Woodside (east of Wilson's Promontory) and including nearby ranges, including the Dandenong and Yarra Ranges and as far north as the Mount Baw Baw National Park.

**Etymology:** *L. martinekae sp. nov.* is named in honour of Maryann Martinek of Bendigo, Victoria, Australia in recognition of services to media and wildlife conservation in Australia including by exposing fake news stories perpetrated by corrupt wildlife officers and their friends in the State controlled media of Australia. For further details see Hoser (2010).

***LITOTESCINCUS COLINRAYI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:ED786B7F-A45F-4D47-B128-D439FE38B1A0**

**Holotype:** A preserved female specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D62298 collected from Mount Bishoff, Waratah, Tasmania, Australia, Latitude -41.42 S., Longitude 145.52 S.

This government-owned facility allows access to its holdings.

**Paratypes:** 31 preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D62286, D62287, D62288, D62289, D62290, D62291, D62292, D62293, D62294, D62295, D62296, D62297, D62299, D62300, D62301, D62302, D62304, D62305, D62306, D62307, D62308, D62309,

D62310, D62311, D62312, D62313, D62314, D62315, D62316, D62317 and D62318 collected from Mount Bishoff, Waratah, Tasmania, Australia, Latitude -41.42 S., Longitude 145.52 S.

**Diagnosis:** Putative *Mocoa metallica* O'Shaughnessy, 1874, with a type locality of Tasmania, now the type species for the genus *Litotescincus* Wells and Wellington, 1985 has since 1874 been treated by all herpetologists as a single species found in most parts of Tasmania, across the islands of Bass Strait and into southern Victoria.

Dismemberment of the species complex commenced with the discovery of and diagnosis of *L. wellsi* Hoser, 2016, being a divergent form from far south-west Tasmania.

Kreger *et al*. (2019) found deep divergences of 2.8 MYA or more between five populations of putative *Litotescincus metallica* from across most of the known range of the putative species.

They made no attempt to identify and name these species.

Inspection of hundreds of (mainly live) specimens and photos from across this range showed each clade identified by Kreger *et al*. (2019) conforms to morphologically distinct forms herein formally identified and named as new species, with the exception of the already named nominate form from north-east Tasmania and *L. wellsi* Hoser, 2016 which was not sampled by Kreger *et al*. (2019).

The relevant species in the *L. metallica* complex are as follows:

*L. metallica* (O'Shaughnessy, 1874) which occurs in north-east Tasmania, north of Falmouth on the east coast and east of Hillwood near the north coast.

*L. wellsi* Hoser, 2016 is found in the far south-west of Tasmania in the vicinity of New Harbour and Melaleuca.

*L. evanwhittoni sp. nov.* is found in the far south-east of Tasmania in an area bounded by Garden Island and Hartz Peak in the North and South Cape in the south.

*L. fiacummingae sp. nov.* is found in most of the south and central parts of Tasmania, including throughout most of the central plateau and the Hobart area, being generally bound by a region within King William Creek in the south-west, Fortescue Bay in the south-east, Bicheno in the north-east, Cataract Gorge in the North, Pine Lake and Clarence Lagoon in the west. The species is most commonly seen in lowland areas near the east coast.

*L. martinekae sp. nov.* is found in the eastern Bass Strait islands, from the Flinders Island Group (including outliers) to Victoria and also within southern Victoria, including the Bellarine and Mornington Peninsulas in the west, extending across southern and south-eastern Melbourne east to Woodside (east of Wilson's Promontory) and including nearby ranges, including the Dandenong and Yarra Ranges and as far north as the Mount Baw Baw National Park.

*L. colinrayi sp. nov*. is found in north-west Tasmania, north of Lake St. Clair in the south-east of the range, and west of here, Quamby Bluff, Deloraine and Beauty Point, to include most if not all the north-west corner of Tasmania, at least as far west as Lake Chisholm in the north-west, and presumably including the specimens also on King Island to the immediate north-west.

The six species are separated from one another by the following unique suites of characters:

*L. metallica* as described by O'Shaughnessy (1874), is unique among the complex by having a colour combination as follows: "*Above bright bronzed green, with a median dark brown stripe and lateral variegations more or less irregular; sides dark brown, broken up into irregular variegations; beneath greenish, dotted on chin*." The variegations in the form of spots or flecks may be dark, light or both.

*L. wellsi* Hoser, 2016 is characterised by being heavily striped and lacks significant dorsal or lateral speckling found in other members of the *L. metallica* complex. Furthermore *L. wellsi* have strongly keeled scales, not seen in other species in the *L. metallica* complex, making this almost certainly the most divergent member in this group. The body of *L. wellsi* is dark chocolate brown on the dorsum. The top two thirds of the upper flank form a well-defined very dark, nearly black stripe that is bound on the bottom by an extremely well-defined thin white line, this latter trait shared only with *L. colinrayi sp. nov*..

*L. evanwhittoni sp. nov.* is a is a generally silver-grey lizard on the dorsum, which also has semi-distinct dark and/or light specking on the back and no obvious mid-dorsal line, although some specimens do have a very slight darkening along the midline near the rear of the dorsum and at the beginning of the tail.

The upper flank is greyish-black with obvious white speckling on it (in contrast to *L. wellsi* which does not), while the lower flank is whitish-grey, with semi-distinct scattered white dots. The boundary between the dark and the light on the flank is not in the form of a well-defined white line. Head lacks obvious spots or flecks and is usually slightly brownish. Upper surfaces of limbs are usually a uniform dark greyish colour, rarely with semi-distinct lighter flecks or spots.

*L. fiacummingae sp. nov.* is a dark brownish-black lizard with numerous black, brown and/or beige flecks on the dorsum. There is no evidence of any mid-dorsal line. The upper flanks are jet black and with many obvious white or light coloured dots overlaying the darker area. Upper surfaces of limbs also have numerous white dots on the otherwise darker surface. Lower flanks also grey and with obvious tiny white flecks.

*L. martinekae sp. nov.* is a beige to light greenish beige coloured lizard, with a dorsum heavily flecked, especially with white or some other light colour, including on the head. There is no evidence of any mid-dorsal line. Upper flanks are black and heavily spotted white. The upper and lower boundary of the black on the flank is not well defined. Below the dark zone is a grey lower flank with more white semi-distinct spots on the same area. Upper surfaces of the limbs are beige with obvious black spots or similar markings.

*L. colinrayi sp. nov*. is brown on the upper surface of the dorsum. Along the midline is a well-defined black line extending the length of the body. On either side of the mid-dorsal line and on the dorsal surface, are two other less well-defined lines running the length of the dorsum (giving a total of five). The mid-dorsal line also runs onto the anterior part of the tail.

The upper border of the upper dark zone of the flank is dark brown, with lighter brown below that and then below that a dark brown border, which in turn borders a well-defined white line.

*L. colinrayi sp. nov*. is the only member of the complex in which the dark upper zone of the flank is not just black or dark grey in the form of a line in effect occupying most of the flank, but rather forms a three line configuration with the darker upper and lower area, between which is a lighter coloured line. The three lines in effect take up the same space as the single dark line in the other species.

There are no white or light spots dotting the upper flank as seen in most other species in the complex.

Unlike the other species in the complex, (except sometimes *L. wellsi*), this lizard gives an appearance of having stripes on the dorsum of moderately good definition. In this species, the upper labials white is well defined and contrasts sharply with the brown above, giving the appearance of a well-defined white line running from the tip of the snout, along the jawline, neck and joining the same white line that bounds the lower flank.

In the other species the white of the upper labials are either not as strongly contrasting or otherwise interspersed with grey, peppering or similar.

The six preceding species comprising the entirety of the *L. metallica* complex are separated from all other species within *Litotescincus* Wells and Wellington, 1985, *Abbasaurum gen. nov.*, *Carinascincus* Wells and Wellington, 1985 and *Ocellatalbum gen. nov.* by the following suite of characters;

Supranasal scales absent; frontoparietal scales fused to form a single shield; suture between the rostral and frontonasal is much narrower than the frontal; 5-7 supraciliaries; 24-28 midbody scale rows; paravertebral scales are transversely enlarged and wider than the adjacent dorsal scales; transparent disc of the lower eyelid is moderate and much smaller than the eye; smooth subdigital lamellae with 16-22 under the fourth toe; tail about 1.5 times snout-vent; adpressed limbs meeting or slightly overlapping (modified from Cogger 2014).

The four genera *Abbasaurum gen. nov*., *Carinascincus*, *Litotescincus* and *Ocellatalbum gen. nov.* (formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

*L. metallica* is depicted in life online at:
https://www.inaturalist.org/observations/2763149
and
https://www.inaturalist.org/observations/25734908
*L. wellsi* Hoser, 2016 is depicted in life in Wilson and Swan (2017) on page 193 at middle right and online at:
https://www.inaturalist.org/observations/18708902
and
https://www.inaturalist.org/observations/18638878
*L. evanwhittoni sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/57810630
and
https://www.inaturalist.org/observations/57810617
and
https://www.inaturalist.org/observations/93945547
*L. fiacummingae sp. nov.* is depicted in life online at:
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and
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and
https://www.inaturalist.org/observations/5782400
and
https://www.inaturalist.org/observations/69000825
and
https://www.inaturalist.org/observations/106478175
and
https://www.inaturalist.org/observations/63415828
*L. martinekae sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/70663928
and
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and
https://www.inaturalist.org/observations/97741022
and
http://reptilesofaustralia.com/lizards/skinks/metallicskink.html#.YuIVhL1Bypp
(top two images).
*L. colinrayi sp. nov.* is depicted in life online at:
https://www.inaturalist.org/observations/39347293
and
https://www.inaturalist.org/observations/75634401
and
https://www.inaturalist.org/observations/102917875
and
https://www.inaturalist.org/observations/56724299
Kreger *et al*. (2019) found this species to have diverged from its nearest congeners some 10 MYA.

**Distribution:** *L. colinrayi sp. nov*. is found in north-west Tasmania, north of Lake St. Clair in the south-east of the range, and west of here, Quamby Bluff, Deloraine and Beauty Point, to include most if not all the north-west corner of Tasmania, at least as far west as Lake Chisholm in the north-west, and presumably including the specimens also on King Island to the immediate north-west.

**Etymology:** *L. colinrayi sp. nov.* is named in honour of Colin Ray of Cranbourne, Victoria, Australia who has been breeding reptiles (mainly pythons) for decades and played a critically important role in the administration of various herpetological societies in Victoria Australia.

Some of his breeding successes in recent years can be seen online at:
https://www.facebook.com/profile.php?id=100054640741176

***OCELLATALBUM GEN. NOV.***

**LSIDurn:lsid:zoobank.org:act:28E5DCED-A3A9-489E-B51A-F25A0D702B3B**

**Type species:** *Ocellatalbum dannygoodwini sp. nov.*

**Diagnosis:** *Ocellatalbum gen. nov.* are separated from the species in the morphologically similar genera *Carinascincus* Wells and Wellington, 1985, with a type species of *Leiolopisma greeni* Rawlinson, 1975 and *Litotescincus* Wells and Wellington, 1985 with a type species of *Mocoa metallica* O'Shaughnessy, 1874 and the newly named genus *Abbasaurum gen. nov*. with a type species of *A. maxinehoserae sp. nov*. by the unique combination of no supranasals; frontoparietals fused to form a single shield and most importantly 45 or more midbody scale rows, versus less in all the other preceding named genera.

The four genera *Ocellatalbum gen. nov.*, *Carinascincus*, *Litotescincus* and *Abbasaurum gen. nov.* (also formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

**Distribution:** Restricted to Tasmania, including the Flinders Island group to the north-east where it appears to be confined to rocky areas.

**Etymology:** *Ocellatalbum gen. nov*. comes directly from the Latin words meaning white spots in reflection of the dominant feature of the dorsum of species in the genus.

**Content:** *Ocellatalbum dannygoodwini sp. nov.* (type species); *O. alexdudleyi sp. nov*.; *O. assangei sp. nov*.; *O. ocellata* (Gray, 1845)

***OCELLATALBUM DANNYGOODWINI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:E8A836D6-33E1-4F6B-8E05-5244D433D023**

**Holotype:** A preserved specimen at the Tasmanian Museum and Art Gallery, Hobart, Tasmania, Australia, specimen number C484 collected from Mount Campbell, Tasmania, Australia, Latitude -41.658622 S., Longitude 145.971041 E.

This government-owned facility allows access to its holdings.

**Paratypes:** Two preserved specimens at the Tasmanian Museum and Art Gallery, Hobart, Tasmania, Australia, specimen numbers C485 and C486 collected from Mount Campbell, Tasmania, Australia, Latitude -41.658622 S., Longitude 145.971041 E.

**Diagnosis:** Until now, *Ocellatalbum gen. nov*. as defined in this paper, comprised the single putative species *Mocoa ocellata* Gray, 1845, most recently placed by most authors into the genus *Carinascincus* Wells and Wellington, 1985, type species *Leiolopisma greeni* Rawlinson, 1975 (e.g. Cogger, 2014).

Molecular divergence between four populations identified by Cliff *et al*. (2015), that they said occurred about 2 MYA matches morphological divergences identified herein and so I have had no hesitation in formally naming three unnamed populations as new species.

The four relevant species are as follows:

*Ocellatalbum ocellata* (Gray, 1845) found in most parts of Tasmania, generally including the south-south-east and most of the central plateau, as far north as Lake St. Clair in the north-west, Lake MacKenzie in the north, then Lost Falls and Coles Bay in the north-east. The range generally encompasses most of the state south of these places.

*Ocellatalbum dannygoodwini sp. nov.* is only known from Dove Lake, Mount Oakleigh and nearby areas, being found generally west of the River Forth and east of Lake Mackintosh, all in north-west Tasmania.

*O. alexdudleyi sp. nov*. is found in north-east Tasmania, north of Bicheno on the east coast and east of Cataract Gorge, with a centre of distribution on the Ben Lomond Range and adjacent uplands, but extending north to include the Flinders Island group.

*O. assangei sp. nov*. is known only from the vicinity of Lake MacKenzie in the northern part of the central plateau in northern Tasmania and areas north of there to the coast.

The four species are separated from one another as follows:

*O. ocellata* has a brown background colour on the flanks and is the same or brownish black on the dorsum. Upper labials are white, and any dark colour on them, if present at all, is usually in the form of distinctive dark bars. The creamy white spots on the dorsum are large in that they are two or more scales in size and commonly merge to form a somewhat variegated pattern. The head is brown with black or dark-brown flecks and similar; there are small markings on the dorsal surface of the head. White from the belly infuses the lower and mid flanks.

*O. dannygoodwini sp. nov*. is dark silver-grey to black on both

dorsum and flanks with bold and distinct light grey spots or markings on the dorsum and flanks.

Most, but not necessarily all of the light grey spots on the dorsum are small, being less than 2 or more scales in size. The flanks are generally dark with scattered light spots, but far less dense than on the dorsum. The background colour of the head is blackish, with extensive grey flecks and colouration caused by merging of flecks or peppering.

*O. alexdudleyi sp. nov*. is a lizard that has a silver-grey dorsum and markings that are dull and/or of reduced intensity, this being unique to this species in the genus. Lighter markings on the dorsum are often indistinct to the extent they are barely visible and are not in the form of ocelli or spots, instead being in the form of clusters of irregular light blotches and scales tending to form cross bands, but extensively broken and irregular in between the darker background colour.

The upper surface of the head is light grey with dark grey spots, but the contrast between the colours is not well defined.

*O. assangei sp. nov*. in appearance is similar in most respects to *O. occellata*, but is separated from that species by having a mid-dorsum that is black; chocolate brown on the flanks, rather than either reddish brown or light brown; dull, yellow brown labials (not white) and having dark upper surfaces of the lower parts of the limbs, versus not so in *O. occellata*.

*O. ocellata* is depicted in life in Cogger (2014) on page 429 at top and online at:

https://www.inaturalist.org/observations/73141294

and

https://www.inaturalist.org/observations/109708052

and

https://www.inaturalist.org/observations/107872581

*O. dannygoodwini sp. nov*. is depicted online at:

https://www.inaturalist.org/observations/99748051

and

https://www.inaturalist.org/observations/68735095

and

https://www.inaturalist.org/observations/107021118

*O. alexdudleyi sp. nov*. is depicted online at:

https://www.inaturalist.org/observations/25734009

and

https://www.inaturalist.org/observations/25733856

and

https://www.inaturalist.org/observations/25734790

*O. assangei sp. nov*. is depicted online at:

https://www.inaturalist.org/observations/62539154

and

https://www.inaturalist.org/observations/105347381

and

https://www.inaturalist.org/observations/40403547

The four preceding species, forming the entirety of the genus *Ocellatalbum gen. nov.* are separated from the species in the morphologically similar genera *Carinascincus* Wells and Wellington, 1985, with a type species of *Leiolopisma greeni* Rawlinson, 1975, *Litotescincus* Wells and Wellington, 1985 with a type species of *Mocoa metallica* O'Shaughnessy, 1874 and the newly named genus *Abbasaurum gen. nov*. with a type species of *A. maxinehoserae sp. nov*. by the unique combination of no supranasals; frontoparietals fused to form a single shield and most importantly 45 or more midbody scale rows, versus less in all the other preceding named genera.

The four genera *Ocellatalbum gen. nov.*, *Carinascincus*, *Litotescincus* and *Abbasaurum gen. nov.* (a genus also formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

**Distribution:** *Ocellatalbum dannygoodwini sp. nov.* is only known from Dove Lake, Mount Oakleigh and nearby areas, being found generally west of the River Forth and east of Lake Mackintosh, all in north-west Tasmania.

**Etymology:** *O. dannygoodwini sp. nov*. is named in honour of Danny Goodwin, currently of Inverloch, Victoria, Australia, who has spent considerable time in Tasmania, where this species occurs, including living there for some years, in recognition of his contributions to herpetology spanning many decades.

***OCELLATALBUM ALEXDUDLEYI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:D9EC0862-93A8-458C-8075-BFEE481E9B33**

**Holotype:** A preserved male specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D71176 collected from Legges Tor, Ben Lomond, Tasmania, Australia, Latitude -41.53 S., Longitude 147.67 E.

This government-owned facility allows access to its holdings.

**Paratypes:** 1/ Four preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D39295 (adult male), D39296 (adult female), D39309 and D39310 all collected from 12 km north west of St. Helens, Tasmania, Australia, Latitude -41.25 S., Longitude 148.15 E. 2/ A preserved specimen at the Tasmanian Museum and Art Gallery, Hobart, Tasmania, Australia, specimen number C1209 collected from South Mount Cameron, Tasmania, Australia, Latitude -41.03 S., Longitude 147.95 E.

**Diagnosis:** Until now, *Ocellatalbum gen. nov*. as defined in this paper, comprised the single putative species *Mocoa ocellata* Gray, 1845, most recently placed by most authors into the genus *Carinascincus* Wells and Wellington, 1985, type species *Leiolopisma greeni* Rawlinson, 1975 (e.g. Cogger, 2014).

Molecular divergence between four populations identified by Cliff *et al*. (2015), that they said occurred about 2 MYA matches morphological divergences identified herein and so I have had no hesitation in formally naming three unnamed populations as new species.

The four relevant species are as follows:

*Ocellatalbum ocellata* (Gray, 1845) found in most parts of Tasmania, generally including the south-south-east and most of the central plateau, as far north as Lake St. Clair in the north-west, Lake MacKenzie in the north, then Lost Falls and Coles Bay in the north-east. The range generally encompasses most of the state south of these places.

*Ocellatalbum alexdudleyi sp. nov*. is found in north-east Tasmania, north of Bicheno on the east coast and east of Cataract Gorge, with a centre of distribution on the Ben Lomond Range and adjacent uplands, but extending north to include the Flinders Island group.

*O. dannygoodwini sp. nov.* is only known from Dove Lake, Mount Oakleigh and nearby areas, being found generally west of the River Forth and east of Lake Mackintosh, all in north-west Tasmania.

*O. assangei sp. nov*. is known only from the vicinity of Lake MacKenzie in the northern part of the central plateau in northern Tasmania and areas north of there to the coast.

The four species are separated from one another as follows:

*O. ocellata* has a brown background colour on the flanks and is the same or brownish black on the dorsum. Upper labials are white, and any dark colour on them, if present at all, is usually in the form of distinctive dark bars. The creamy white spots on the dorsum are large in that they are two or more scales in size and commonly merge to form a somewhat variegated pattern. The head is brown with black or dark-brown flecks and similar; there are small markings on the dorsal surface of the head. White from the belly infuses the lower and mid flanks.

*O. alexdudleyi sp. nov*. is a lizard that has a silver-grey dorsum and markings that are dull and/or of reduced intensity, this being unique to this species in the genus. Lighter markings on the dorsum are often indistinct to the extent they are barely visible and are not in the form of ocelli or spots, instead being in the form of clusters of irregular light blotches and scales tending to form cross bands, but extensively broken and irregular in between the darker background colour.

The upper surface of the head is light grey with dark grey spots, but the contrast between the colours is not well defined.

*O. dannygoodwini sp. nov*. is dark silver-grey to black on both dorsum and flanks with bold and distinct light grey spots or markings on the dorsum and flanks.

Most, but not necessarily all of the light grey spots on the dorsum are small, being less than 2 or more scales in size. The flanks are generally dark with scattered light spots, but far less dense than on the dorsum. The background colour of the head is blackish, with extensive grey flecks and colouration caused by merging of flecks or peppering.

*O. assangei sp. nov*. in appearance is similar in most respects to *O. occellata*, but is separated from that species by having a mid-dorsum that is black; chocolate brown on the flanks, rather than either reddish brown or light brown; dull, yellow brown labials (not white) and having dark upper surfaces of the lower parts of the limbs, versus not so in *O. occellata*.

*O. ocellata* is depicted in life in Cogger (2014) on page 429 at top and online at:
https://www.inaturalist.org/observations/73141294
and
https://www.inaturalist.org/observations/109708052
and
https://www.inaturalist.org/observations/107872581
*O. dannygoodwini sp. nov*. is depicted online at:
https://www.inaturalist.org/observations/99748051
and
https://www.inaturalist.org/observations/68735095
and
https://www.inaturalist.org/observations/107021118
*O. alexdudleyi sp. nov*. is depicted online at:
https://www.inaturalist.org/observations/25734009
and
https://www.inaturalist.org/observations/25733856
and
https://www.inaturalist.org/observations/25734790
*O. assangei sp. nov*. is depicted online at:
https://www.inaturalist.org/observations/62539154
and
https://www.inaturalist.org/observations/105347381
and
https://www.inaturalist.org/observations/40403547

The four preceding species, forming the entirety of the genus *Ocellatalbum gen. nov.* are separated from the species in the morphologically similar genera *Carinascincus* Wells and Wellington, 1985, with a type species of *Leiolopisma greeni* Rawlinson, 1975 and *Litotescincus* Wells and Wellington, 1985 with a type species of *Mocoa metallica* O'Shaughnessy, 1874 and the newly named genus *Abbasaurum gen. nov*. with a type species of *A. maxinehoserae sp. nov*. by the unique combination of no supranasals; frontoparietals fused to form a single shield and most importantly 45 or more midbody scale rows, versus less in all the other preceding named genera.

The four genera *Ocellatalbum gen. nov.*, *Carinascincus*, *Litotescincus* and *Abbasaurum gen. nov.* (a genus also formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

**Distribution:** *Ocellatalbum alexdudleyi sp. nov*. is found in north-east Tasmania, north of Bicheno on the east coast and east of Cataract Gorge, with a centre of distribution on the Ben Lomond Range and adjacent uplands, but extending north to include the Flinders Island group.

**Etymology:** *O. alexdudleyi sp. nov*. is named in honour of Alexander (Alex) Dudley, originally of Kenturst (Sydney), New South Wales, Australia but who has spent many years in Tasmania conducting herpetological fieldwork there, in recognition of many decades of services to herpetology.

***OCELLATALBUM ASSANGEI SP. NOV.***

**LSIDurn:lsid:zoobank.org:act:C17AE575-A476-4940-ACEB-12149ED3C7A3**

**Holotype:** A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R6619 collected from Greens Beach, Tasmania, Australia, Latitude -41.08 S., Longitude 146.75 E.

This government-owned facility allows access to its holdings.

**Paratype:** A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R6620 collected from Greens Beach, Tasmania, Australia, Latitude -41.08 S., Longitude 146.75 E.

**Diagnosis:** Until now, *Ocellatalbum gen. nov*. as defined in this paper, comprised the single putative species *Mocoa ocellata* Gray, 1845, most recently placed by most authors into the genus *Carinascincus* Wells and Wellington, 1985, type species *Leiolopisma greeni* Rawlinson, 1975 (e.g. Cogger, 2014).

Molecular divergence between four populations identified by Cliff *et al*. (2015), that they said occurred about 2 MYA matches morphological divergences identified herein and so I have had no hesitation in formally naming three unnamed populations as new species.

The four relevant species are as follows:

*Ocellatalbum ocellata* (Gray, 1845) found in most parts of Tasmania, generally including the south-south-east and most of the central plateau, as far north as Lake St. Clair in the north-west, Lake MacKenzie in the north, then Lost Falls and Coles Bay in the north-east. The range generally encompasses most of the state south of these places.

*Ocellatalbum alexdudleyi sp. nov*. is found in north-east Tasmania, north of Bicheno on the east coast and east of Cataract Gorge, with a centre of distribution on the Ben Lomond Range and adjacent uplands, but extending north to include the Flinders Island group.

*O. dannygoodwini sp. nov.* is only known from Dove Lake, Mount Oakleigh and nearby areas, being found generally west of the River Forth and east of Lake Mackintosh, all in north-west Tasmania.

*O. assangei sp. nov*. is known only from the vicinity of Lake MacKenzie in the northern part of the central plateau in northern Tasmania and areas north of there to the coast.

The four species are separated from one another as follows:

*O. ocellata* has a brown background colour on the flanks and is the same or brownish black on the dorsum. Upper labials are white, and any dark colour on them, if present at all, is usually in the form of distinctive dark bars. The creamy white spots on the dorsum are large in that they are two or more scales in size and commonly merge to form a somewhat variegated pattern. The head is brown with black or dark-brown flecks and similar; there are small markings on the dorsal surface of the head. White from the belly infuses the lower and mid flanks.

*O. alexdudleyi sp. nov*. is a lizard that has a silver-grey dorsum and markings that are dull and/or of reduced intensity, this being unique to this species in the genus. Lighter markings on the dorsum are often indistinct to the extent they are barely visible and are not in the form of ocelli or spots, instead being in the form of clusters of irregular light blotches and scales tending to form cross bands, but extensively broken and irregular in between the darker background colour.

The upper surface of the head is light grey with dark grey spots, but the contrast between the colours is not well defined.

*O. dannygoodwini sp. nov*. is dark silver-grey to black on both dorsum and flanks with bold and distinct light grey spots or markings on the dorsum and flanks.

Most, but not necessarily all of the light grey spots on the dorsum are small, being less than 2 or more scales in size. The flanks are generally dark with scattered light spots, but far less dense than on the dorsum. The background colour of the head is blackish, with extensive grey flecks and colouration caused by merging of flecks or peppering.

*O. assangei sp. nov*. in appearance is similar in most respects to *O. occellata*, but is separated from that species by having a mid-dorsum that is black; chocolate brown on the flanks, rather than either reddish brown or light brown; dull, yellow brown labials (not white) and having dark upper surfaces of the lower parts of the

limbs, versus not so in *O. occellata*.

*O. ocellata* is depicted in life in Cogger (2014) on page 429 at top and online at:
https://www.inaturalist.org/observations/73141294
and
https://www.inaturalist.org/observations/109708052
and
https://www.inaturalist.org/observations/107872581

*O. dannygoodwini sp. nov*. is depicted online at:
https://www.inaturalist.org/observations/99748051
and
https://www.inaturalist.org/observations/68735095
and
https://www.inaturalist.org/observations/107021118

*O. alexdudleyi sp. nov*. is depicted online at:
https://www.inaturalist.org/observations/25734009
and
https://www.inaturalist.org/observations/25733856
and
https://www.inaturalist.org/observations/25734790

*O. assangei sp. nov*. is depicted online at:
https://www.inaturalist.org/observations/62539154
and
https://www.inaturalist.org/observations/105347381
and
https://www.inaturalist.org/observations/40403547

The four preceding species, forming the entirety of the genus *Ocellatalbum gen. nov.* are separated from the species in the morphologically similar genera *Carinascincus* Wells and Wellington, 1985, with a type species of *Leiolopisma greeni* Rawlinson, 1975 and *Litotescincus* Wells and Wellington, 1985 with a type species of *Mocoa metallica* O'Shaughnessy, 1874 and the newly named genus *Abbasaurum gen. nov*. with a type species of *A. maxinehoserae sp. nov*. by the unique combination of no supranasals; frontoparietals fused to form a single shield and most importantly 45 or more midbody scale rows, versus less in all the other preceding named genera.

The four genera *Ocellatalbum gen. nov.*, *Carinascincus*, *Litotescincus* and *Abbasaurum gen. nov.* (a genus also formally named in this paper) are separated from all other Australian skinks by the following suite of characters: parietal shields in contact behind the interparietal; 5-7 (usually 5) supraciliaries, which are not noticeably enlarged; transparent palpabral disc in a movable lower eyelid, being no more than about half the size of the eye; nasals narrowly separated; more than 16 lamellae under the fourth toe and viviparous reproduction.

**Distribution:** *O. assangei sp. nov*. is known only from the vicinity of Lake MacKenzie in the northern part of the central plateau in northern Tasmania and areas north of there to the coast, but west of the Tamar River.

**Etymology:** *O. assangei sp. nov*. is named in honour of Julian Paul Assange born 3 July 1971, who is an Australian editor, publisher, and activist who founded Wikileaks in 2006. Wikileaks came to international attention in 2010 when it published a series of leaks provided by U.S. Army intelligence analyst Chelsea Manning. These leaks included the Baghdad airstrike Collateral Murder video (April 2010), the Afghanistan war logs (July 2010), the Iraq war logs (October 2010), and Cablegate (November 2010). After the 2010 leaks, the United States government launched a criminal investigation into Wikileaks. As of mid 2022, he remains languishing in a barbaric UK prison awaiting extradition to the USA.

So while Assange has worked in the public interest by disclosing government-backed murders and is now in jail, the murderers remain free, many of them with full military and imperial honours, over-generous government pensions and the like.

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**CONFLICT OF INTEREST**

None.