

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

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RAYMOND T. HOSER

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

488 Park Road, Park Orchards, Victoria, 3134, Australia.

Phone: +61 3 9812 3322 Fax: 9812 3355 E-mail: snakeman (at) snakeman.com.au

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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. davemericeai* *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*; *davemericeai*; *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 *Ipsosfactoscincus* 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 darwiniensis* 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* Cogger, 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 biogeographical 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 davemericeai 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 *Mocoo 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, 1877), 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 swansonii* 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 swansonii* 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 swansonii* (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; post-supralabials 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 inscriptions 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.

LSIDDurn: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. davemericeai* 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 davemericeai* 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. davemericeai* sp. nov. and *I. reticulatus* the two species can be readily separated as mature adults by the fact that *I. davemericeai* sp. nov. is a bluish-grey colouration, while *I. reticulatus* is invariably brownish. In immature specimens, young *I. davemericeai* sp. nov. have more dark scales on the sides of the anterior snout, versus more light in *I. reticulatus*.

Both *I. davemericeai* 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 davemericeai* 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 davemericeai* 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 davemericeai* 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 *Ophisosincus 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/akashsherp/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 *Mococa 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. amhemicus* (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

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 divergens 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, *Rhiannodon* 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, *Rhiannodon* 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, *Rhiannodon* 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 divergens 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 divergens subsp. nov.* is found in the coast and ranges south of Kuranda, to the Paluma Range, Queensland, Australia.

Etymology: *C. fuscicaudis divergens 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.

Diagnosis: 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, *Rhiannodon* 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, *Rhiannodon* 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 Forty Mile Scrub and Mount Garnet, which while generally of lower and somewhat flatter relief than where specimens have been caught (Forty Mile Scrub and Mount Garnet), is not a known biogeographical 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 Forty 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. pumilis* (Boulenger, 1877), the only other species in this genus, by having two infralabials contacted by the postmental, versus one in *I. pumilis*, 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, *Rhiannodon* Wells, 2009 and *Caudatenobrosus 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, *Rhiannodon* Wells, 2009, *Caudatenobrosus 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 Forty 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. pumilis* (Boulenger, 1877), the only other species in this genus, by having two infralabials contacted by the postmental, versus one in *I. pumilis*, 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 *Rhiannadon* Wells, 2009 and *Caudatenebrosus* 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 "pipe" 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. darwiniensis* (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 addressed 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/hamidun/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/hamidun/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.

REFERENCES CITED

- Annable, T. 1995. Observations on the biology of the punctate worm-skink *Anomalopus (Vermiseps) swansoni* Greer and Cogger, 1985 (Sauria: Scincidae). *Herpetofauna* (Sydney, Australia) 25(2):45-49.
- Bauer, A. M., Günther, R. and Klipfel, M. 1995. *The herpetological contributions of Wilhelm C. H. Peters (1815-1883)*. SSAR Facsimile Reprints in Herpetology:714 pp.
- Beolens, B., Watkins, M. and Grayson, M. 2011. *The Eponym Dictionary of Reptiles*. Johns Hopkins University Press, Baltimore, USA.
- Blackburn, D. G. 1999. Are Viviparity and Egg-guarding Evolutionarily Labile in Squamates? *Herpetologica* 55(4):556-573.
- Boulenger, G. A. 1887. *Catalogue of the lizards in the British Museum (Nat. Hist.) III. Lacertidae, Gerrhosauridae, Scincidae, Anelytropsidae, Dibamidae, Chamaeleontidae*. BMNH, London:575 pp.
- Boulenger, G. A. 1895. On a collection of reptiles and batrachians from Ferguson Island, D'Entrecasteaux group British New Guinea. *Ann. Mag. Nat. Hist.* (6)16:28-32.
- Capocaccia, L. 1961. Catalogo dei tipi di Rettili del Museo Civico di Storia Naturale di Genova [MSNG]. *Ann. Mus. Civ. Stor. Nat. Giacomo Doria* 72:86-111.
- Cogger, H. G. 2000. *Reptiles and Amphibians of Australia* (Sixth edition). Ralph Curtis Publishing, Sanibel Island, USA:808 pp.
- Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh edition). CSIRO Publishing, Australia:xxx+1033 pp.
- Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia (1): Amphibia and Reptilia*.

- AGPS, Canberra, ACT, Australia:313 pp.
- Cope, E. D. 1864. On the characters of the higher groups of Reptilia: Squamata, and especially of the Diploglossa. *Proc. Acad. Nat. Sci. Philadelphia* 1864:224-231.
- Copland, S. J. 1946. Catalogue of reptiles in the Macleay Museum. Part I. *Sphenomorphus pardalis pardalis* (Macleay) and *Sphenomorphus nigricaudis nigricaudis* (Macleay). *Proceedings of the Linnean Society of New South Wales* 70:291-311.
- Copland, S. J. 1950. Nomenclature and type specimens of two species of *Sphenomorphus* (Sauria: Scincidae). *Copeia* 1950(1):57.
- Couper, P. J. 1992. A nesting record for *Coeranoscincus reticulatus* (Günther). *Memoirs of the Queensland Museum* 32(1):60.
- Couper, P., Covacevich, J., Amey, A. and Baker, A. 2006. The genera of skinks (Family Scincidae) of Australia and its island territories: diversity, distribution and identification. pp. 367-384 in: Merrick, J. R., Archer, M., Hickey, G. M. and Lee, M. S. Y. (eds.). *Evolution and Zoogeography of Australasian Vertebrates*. Australian Scientific Publishing, Sydney, Australia.
- Covacevich, J. 1971. Amphibian and reptile type specimens in the Queensland Museum. [type catalogue]. *Memoirs of the Queensland Museum* 16:49-68.
- Covacevich, J. A., Couper, P.J. and McDonald, K. R. 1998. Reptile diversity at risk in the Brigalow Belt, Queensland. *Memoirs of the Queensland Museum* 42(2):475-486.
- Daan, S. and Hillenius, D. 1966. Catalogue of the type specimens of amphibians and reptiles in the Zoological Museum, Amsterdam. *Beaufortia* 13:117-144.
- Dale, D. F. 1973. *Forty Queensland Lizards*. Queensland Museum, Brisbane, Queensland, Australia:64 pp.
- De Rooij, N. 1915. *The Reptiles of the Indo-Australian Archipelago. I. Lacertilia, Chelonina, Emydosauria*. Leiden (E. J. Brill), xiv+384 pp.
- De Vis, C. W. 1888. A contribution to the herpetology of Queensland. *Proceedings of the Linnean Society of New South Wales* (2)2:811-826 [1887].
- Duméril, A. M. C. and Duméril, A. H. A. 1851. *Catalogue méthodique de la collection des reptiles du Muséum d'Histoire Naturelle de Paris*. Gide et Baudry/Roret, Paris, France:224 pp.
- Escoriza Boj, D. 2005. Australia. Reptiles and Amphibians, Part 1: Rainforest. *Reptilia* (UK) (40):70-75.
- Greer, A. E. 1979. A new *Sphenomorphus* (Lacertilia: Scincidae) from the rainforests of north eastern Queensland. *Records of the Australian Museum* 32:373-382.
- Greer, A. E. 1985. A new species of *Sphenomorphus* from northeastern Queensland. *Journal of Herpetology* 19(4):469-473.
- Greer, A. E. 1990. Notes on reproduction in the skink *Sphenomorphus darwiniensis*. *NT. Naturalist* 12:27-28.
- Greer, A. E. and Cogger, H. G. 1985. Systematics of the reduce-limbed and limbless skinks currently assigned to the genus *Anomalopus* (Lacertilia: Scincidae). *Records of the Australian Museum* 37(1) 1985:11-54.
- Günther, A. 1873. Notes on and descriptions of some lizards with rudimentary limbs, in the British Museum. *Ann. Mag. Nat. Hist.* (4)12:145-148.
- Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, Australia:238 pp.
- Hoser, R. T. 1991. *Endangered Animals of Australia*. Pierson Publishing, Moss Vale, NSW, Australia:240 pp.
- Hoser, R. T. 1993. *Smuggled: The Underground Trade in Australia's Wildlife*. Apollo Books, Moss Vale, NSW, Australia:160 pp.
- Hoser, R. T. 1996. *Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia*. Kotabi Publishing, Doncaster, Victoria, Australia:280 pp.
- Hoser, R. T. 2007. Wells and Wellington - It's time to bury the hatchet! *Calodema Supplementary Paper*, 1:1-9.
- Hoser, R. T. 2009. Creationism and contrived science: A review of recent python systematics papers and the resolution of issues of taxonomy and nomenclature. *Australasian Journal of Herpetology* 2:1-34. (3 February).
- Hoser, R. T. 2012a. Exposing a fraud! *Afronaja* Wallach, Wüster and Broadley 2009, is a junior synonym of *Spracklandus* Hoser 2009! *Australasian Journal of Herpetology* 9 (3 April 2012):1-64.
- Hoser, R. T. 2012b. Robust taxonomy and nomenclature based on good science escapes harsh fact-based criticism, but remains unable to escape an attack of lies and deception. *Australasian Journal of Herpetology* 14:37-64.
- Hoser, R. T. 2013. The science of herpetology is built on evidence, ethics, quality publications and strict compliance with the rules of nomenclature. *Australasian Journal of Herpetology* 18:2-79.
- Hoser, R. T. 2015a. Dealing with the "truth haters" ... a summary! Introduction to Issues 25 and 26 of *Australasian Journal of Herpetology*. Including "A timeline of relevant key publishing and other events relevant to Wolfgang Wüster and his gang of thieves." and a "Synonyms list". *Australasian Journal of Herpetology* 25:3-13.
- Hoser, R. T. 2015b. The Wüster gang and their proposed "Taxon Filter": How they are knowingly publishing false information, recklessly engaging in taxonomic vandalism and directly attacking the rules and stability of zoological nomenclature. *Australasian Journal of Herpetology* 25:14-38.
- Hoser, R. T. 2015c. Best Practices in herpetology: Hinrich Kaiser's claims are unsubstantiated. *Australasian Journal of Herpetology* 25:39-64.
- Hoser, R. T. 2015d. PRINO (Peer reviewed in name only) journals: When quality control in scientific publications fails. *Australasian Journal of Herpetology* 26:3-64.
- Hoser, R. T. 2015e. Rhodin *et al.* 2015, Yet more lies, misrepresentations and falsehoods by a band of thieves intent on stealing credit for the scientific works of others. *Australasian Journal of Herpetology* 27:3-36.
- Hoser, R. T. 2015f. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see *BZN* 70: 234-237; comments *BZN* 71:30-38, 133-135). *Australasian Journal of Herpetology* 27:37-44.
- Hoser, R. T. 2018. A revised taxonomy of the gecko genera *Lepidodactylus* Fitzinger, 1843, *Luperosaurus* Gray, 1845 and *Pseudogekko* Taylor, 1922 including the formal erection of new genera and subgenera to accommodate the most divergent taxa and description of 26 new species. *Australasian Journal of Herpetology* 38:32-64.
- Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian Journal of Herpetology* 39:23-52.
- Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian Journal of Herpetology* 39:53-63
- Hoser, R. T. 2020a. From a putative new taxon to a mutt! Formal descriptions of three new genetically divergent Mountain Pygmy Possums from Victoria and New South Wales closely associated with *Burrmys parvus* Broom, 1896. *Australasian Journal of Herpetology* 42:3-10.
- Hoskin, C. and Couper, P. J. 2014. Two new skinks (Scincidae: *Glaphyromorphus*) from rainforest habitats in north-eastern Australia. *Zootaxa* (PRINO) (Online) 3869(1):1-16.
- Hutchinson, M. N., Couper, P., Amey, A. and Wilmer, J. W. 2021. Diversity and Systematics of Limbless Skinks (*Anomalopus*) from

- Eastern Australia and the Skeletal Changes that Accompany the Substrate Swimming Body Form. *Journal of Herpetology* 55(4):361-384.
- Ingram, G. J. 1977. A new species of legless skink *Anomalopus pluto* from Cape York Peninsula, Queensland. *Victorian Naturalist* 94(2):52-53.
- Iskandar, D. T. and Erdelen, W. R. 2006. Conservation of amphibians and reptiles in Indonesia: issues and problems. *Amphibian and Reptile Conservation* 4(1):60-87.
- Kay, G. M., Michael, D., Crane, M., Okada, S., MacGregor, C., Florance, D., Trengove, D., McBurney, L., Blair, D. and Lindenmayer, D. B. 2013. A list of reptiles and amphibians from Box Gum Grassy Woodlands in south-eastern Australia. *Check List* 9(3):476-481.
- Kramer, E. 1979. Typenkatalog der Echsen im Naturhistorischen Museum Basel (BM), Stand 1978. [type catalogue]. *Revue Suisse de Zoologie* 86(1):159-166.
- Lesson, R. P. 1830. Description de quelques reptiles nouveaux ou peu connus. in: Duperrey, M. L. I. *Voyage Autour du Monde Execute par Ordre du Roi, sur la Corvette de La Majeste, La Coquille, Pendant les Annees 1822, 1823, 1824 et 1825*. 2. Zoologie Tome 2, Partie 1. Arthur Bertrand, Paris:1-65.
- Longman, H. A. 1916. Snakes and lizards from Queensland and the Northern Territory. *Memoirs of the Qld. Museum* 5:46-51.
- Macleay, W. 1877. The lizards of the Chevert Expedition. *Proc. of the Linnean Society of New South Wales* 2:60-69 and 97-104.
- Mecke, S., Mader, F., Kieckbusch, M., Kaiser, H., Böhme, W. and Ernst, R. 2016. Tracking a syntype of the Australian skink *Anomalopus leuckartii* (Weinland, 1862): 'lost' treasures in the Senckenberg Natural History Collections Dresden highlight the importance of reassessing and safe guarding natural history collections. *Vertebrate Zoology* 66(2):169-177.
- Oudemans, J. Th. 1894. Eidechsen und Schildkröten. in Semon, R. *Zoologische Forschungsreisen in Australien und dem Malayischen Archipel. Denkschriften der Medicinisch-Naturwissenschaftlichen Gesellschaft zu Jena*, 8:127-146
- Peters, W. C. H. 1867. Herpetologische Notizen. *Monatsber. königl. Akad. Wiss. Berlin*. 1867 (January):13-37.
- Peters, W. C. H. 1871. Über einige Arten der herpetologischen Sammlung des Berliner zoologischen Museums. *Monatsber. Preuss. Akad. Wiss. Berlin* 1871:644-652.
- Peters, W. C. H. and Doria, G. 1878. Catalogo dei rettili e dei batraci raccolti da O. Beccari, L. M. D'Alberts e A. A. Brujini. nella sotto-regione Austro-Malese. *Annali del Museo Civico di Storia Naturale di Genova*. ser. 1, 13:323-450.
- Pyron, R. A., Burbrink, F. T. and Weins, J. J. 2013. A phylogeny and revised classification of Squamata, including 4161 species of lizards and snakes. Published online at: <http://www.biomedcentral.com/1471-2148/13/93>.
- Rabosky, D. L., Donnellan, S. C., Grundler, M. and Lovette, I. J. 2014. Analysis and Visualization of Complex Macroevolutionary Dynamics: An Example from Australian Scincid Lizards. *Syst Biol* 63:610-627.
- Reeder, T. W. 2003. A phylogeny of the Australian *Sphenomorphus* group (Scincidae: Squamata) and the phylogenetic placement of the crocodile skinks (*Tribolonotus*): Bayesian approaches to assessing congruence and obtaining confidence in maximum likelihood inferred relationships. *Molecular Phylogenetics and Evolution* 27:384-397.
- Ride, W. D. L. (ed.) et al. (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature*. The Natural History Museum - Cromwell Road, London SW7 5BD, UK.
- Roux, J. 1919. Note sur quelques reptiles provenant de la Nouvelle-Guinée. *Revue Suisse de Zoologie* 27:347-351.
- Shea, G. M. and Greer, A. E. 1999. The identity of two little-known skinks from New Guinea, *Sphenomorphus wirzi* (Roux, 1919) and *Sphenomorphus comtus* (Roux, 1927). *Journal of Herpetology* 33(3):507-511.
- Shea, G. M. and Sadlier, R. A. 1999. A catalogue of the non-fossil amphibian and reptile type specimens in the collection of the Australian Museum: types currently, previously and purportedly present. *Technical Reports of the Australian Museum* 15:1-91.
- Shea, G., Millgate, M. and Peck, S. 1987. A range extension for the rare skink *Anomalopus mackayi*. *Herpetofauna* (Sydney, Australia) 17(1-2):16-19.
- Singhal, S., Huang, H., Grundler, M. R., Marchán-Rivadeneira, M. R., Holmes, I., Title, P. O., Donnellan, S. C. and Rabosky, D. L. 2018. Does Population Structure Predict the Rate of Speciation? A Comparative Test across Australia's Most Diverse Vertebrate Radiation. *The American Naturalist*, 192(4):432-447
- Skinner, A., Hutchinson, M. N. and Lee, M. S. Y. 2013. Phylogeny and Divergence Times of Australian *Sphenomorphus* Group Skinks (Scincidae, Squamata). *Molecular Phylogenetics and Evolution* 69(3):906-918.
- Smith, M. A. 1937. A review of the genus *Lygosoma* (Scincidae: Reptilia) and its allies. *Rec. of the Indian Museum* 39(3):213-234.
- Storr, G. M. 1967. The genus *Sphenomorphus* (Lacertilia, Scincidae) in Western Australia and the Northern Territory. *Journal of the Royal Society of Western Australia*. 50(1):10-20.
- Swan, G., Sadlier, R. and Shea, G. 2017. *A field guide to reptiles of New South Wales*. Reed New Holland, NSW, Australia:328 pp.
- Torr, G. A. 1991. Arboreality in the skink *Sphenomorphus fuscicaudis*? *Herpetofauna* (Sydney, Australia) 21(2):32.
- Wells, R. W. 2009. Some taxonomic and nomenclatural considerations on the class Reptilia in Australia. A review of the genera *Eulamprus* and *Glaphyromorphus* (Scincidae), including the description of new genera and species. *Australian Biodiversity Record* (3):1-96.
- Wells, R. W. and Wellington, C. R. 1984. A synopsis of the class Reptilia in Australia. *Australian Journal of Herpetology* 1(3-4):73-129.
- Wells, R. W. and Wellington, C. R. 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology Supplementary Series* 1:1-61.
- Wells, R. W. and Wellington, C. W. 1988. Amphibians and Reptiles of the Upper Cox's River area, Sydney Basin, New South Wales, Australia, with comments on Greer and Cogger's recent Reclassification of the Genus *Anomalopus* (*sensu lato*). *The Australian Herpetologist* 505:15 pp. and cover.
- Weinland, D. F. 1863. Beschreibung und Abbildung von drei neuen Sauriern. (*Embryopus habichii* und *Amphisbaena innocens* von Haiti, und *Brachymeles leuckarti* von Neuholland.). *Abh. senckenb. naturf. Ges.* (Frankfurt) 4:131-143 [1862].
- Wilson, S. K. 2015. *A field guide to reptiles of Queensland*. Reed New Holland, Chatswood, NSW, Australia:304 pp.
- Wilson, S. K. 2022. *A field guide to reptiles of Queensland*. Reed New Holland, Chatswood, NSW, Australia:335 pp.
- Wilson, S. and Swan, G. 2010. *A complete guide to reptiles of Australia* (Third edition). Reed New Holland, Chatswood, NSW, Australia:558 pp.
- Wilson, S. and Swan, G. 2017. *A complete guide to reptiles of Australia* (Fifth edition). Reed New Holland, Chatswood, NSW, Australia:647 pp.
- Zietz, F. R. 1920. Catalogue of Australian lizards. *Records of the South Australian Museum* 1:181-228.

CONFLICT OF INTEREST

None.

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