ISSUE 40, PUBLISHED 10 JULY 2019

Australasian Journal of Herpetology

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

CONTENTS ON PAGE 2

Australasian Journal of Herpetology

Issue 40, 10 July 2019.

Contents

Cover photos: Raymond Hoser.
Front: Healthy 16 month old Olive Python (see paper on pages 62-64).
Back: Three photos of the same Olive Python taken four months prior:
Top: With skin split.
Middle: Wound sealed by application of Super Glue.
Bottom: Snake with wound effectively healed (minimal scarring) 13 days after injury occurred.

***Australasian Journal of Herpetology* ®**

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

Full details at:

http://www.herp.net

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

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

Australasian Journal of Herpetology **40:3-49.**
Published 10 July 2019.

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

Eight new skink genera and 45 newly named species associated with *Emoia* Gray, 1845 *sensu lato* that reflects ancient divergence and recent speciation within the assemblage (Reptilia: Squamata).

LSID urn:lsid:zoobank.org:pub:88C0C262-ABA2-4878-80D9-F85838DB90DD

RAYMOND T. HOSER

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
Received 29 March 2018, Accepted 18 June 2019, Published 10 July 2019.

ABSTRACT

The lizard genus *Emoia* Gray, 1845 within the Lygosominae as recognized in 2019 contains about 80 recognized species. Morphological studies have long recognized various species groups (e.g. Brown 1991).

More recent molecular studies show ancient divergences. In fact some of these groups are not even closely related to one another, but in fact occur some distance away in the Lygosominae sub familial tree (e.g. Pyron *et al*. 2013).

Based on both morphological and molecular divergence as cited, seven new genera of skinks formerly placed within *Emoia* as currently recognized are formally named according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999).

Species in the new genera were mainly placed within the so-called *E. samoensis* group as defined by Brown (1991).

The genus *Emoa* Girard, 1857, type species *Emoa nigra*, is resurrected for this divergent taxon, also previously placed in the *E. samoensis* group. The taxon also subdivided into 6 allopatric species.

A subgenus for the taxon described as *Emoia parkeri* Brown, Pernetta and Watling, 1980 is also assigned as well as another subgenus for the species *Emoia ponapea* Kiester, 1982, the latter being within *Emoia sensu stricto*.

The putative species originally described as *Lygosoma stellatus* Boulenger, 1900, more recently known as *Sphenomorphus stellatus* (Boulenger, 1900), is in fact not closely related to other *Sphenomorphus* Fitzinger, 1843 species at all. Instead the species group is closest to a clade treated as being within *Emoia sensu lato*, this being the so-called *E. samoensis* group. However it is divergent enough from that group to be formally placed in a newly named genus, giving a total of eight newly named genera of skinks associated with *Emoia sensu lato*.

Furthermore, 45 obvious but previously unnamed species within relevant genera are also named according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999) for the first time. There also remains further unrecognized and unnamed species within this assemblage.

Keywords: taxonomy; nomenclature; lizards; subfamily; Lygosominae; skinks; genus; *Emoia*; *Sphenomorphus*; *Emoa*; Pacific; Asia; New Guinea; Fiji; Solomon Islands; Indonesia; Papua New Guinea; Malaysia; *panopea*; *nigra*; *atrocostata*; *concolor*; *loyaltiensis*; *stellatus*; new genus; *Notanemoia*; *Cannotbeemoia*; *Silvaemoia*; *Griseolaterus*; *Aintemoia*; *Caeruleocaudascincus*; *Ventripallidusscincus*; *Shireenhoserscincus*; new subgenus; *Paraemoia*; *Aquilonariemoia*; new species; *kimaniadilboden*; *timdalei*; *karkarensis*; *tonylovelinayi*; *anggigidaensis*; *stefanbroghammeri*; *euanedwardsi*; *paulmulvanyi*; *martinmulvanyi*; *paulwoolfi*; *jamesbondi*; *richardwarneri*; *morriedorisioi*; *minusguttata*; *dorsalinea*; *bougainvilliensis*; *boreotis*; *aquacauda*; *yusufmohamudi*; *davidaltmani*; *stephengoldsteini*; *rodneysommerichi*; *robertekseteini*; *georgemariolisi*; *karlagambellae*; *cathysonnemannae*; *neilsonnemanni*; *robvalentici*; *dannygoodwini*; *latishadarwinae*; *stevebennetti*; *lucybennettae*; *clivebennetti*; *craigbennetti*; *brettbarnetti*; *williambennetti*; *kamahlbenneti*; *drubennetti*; *jaibennetti*; *danielbenneti*; *graysonoconnori*; *michaelguiheneufi*; *rosssadlieri*; *shireenhoserae*; *daranini*.

INTRODUCTION

The skink genus *Emoia* Gray, 1845 within the Lygosominae as recognized by most herpetologists in 2018 contains about 80 recognized species.

Morphological studies have long recognized various species groups.

The major study of Brown (1991) created numerous species groups and these have been retained as functional groups by later authors.

Some, but not all of these species groups as determined by Brown (1991) have also been confirmed by molecular studies.

They also show ancient divergences.

In fact some of these groups are not even closely related to one another, but in fact occur some distance away in the Lygosominae sub familial tree as shown in the supermatrix of Pyron *et al.* (2013).

Based on previously published morphological and molecular divergence seven new genera of skinks formerly placed within *Emoia* as currently recognized are formally named according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Species in the new genera were mainly placed within the so-called *E. samoensis* group as defined by Brown (1991).

The genus *Emoa* Girard, 1857, type species *Emoa nigra*, is resurrected for this divergent taxon, also previously placed in the *E. samoensis* group. The putative species is also subdivided into 6 allopatric species, 5 formally named for the first time.

A subgenus for the taxon described as *Emoia parkeri* Brown, Pernetta and Watling, 1980 is also assigned as well as another subgenus for the species *Emoia ponapea* Kiester, 1982, the latter being within *Emoia sensu stricto*.

The putative species originally described as *Lygosoma stellatus* Boulenger, 1900, more recently known as *Sphenomorphus stellatus* (Boulenger, 1900), is in fact not closely related to other *Sphenomorphus* Fitzinger, 1843 species at all.

Instead the species group is closest to a clade treated as being within *Emoia sensu lato*, this being the so-called *E. samoensis* group. However it is divergent enough from that group to be formally placed in a newly named genus.

Furthermore, some obvious but previously unnamed species and subspecies within relevant genera are also named according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) for the first time.

MATERIALS, METHODS AND RESULTS

These are inferred in both the abstract and introduction, but as a matter of trite I spell them out in a little more explicit detail.

The available literature was examined relevant to the genus *Emoia sensu lato* and other phylogentically close taxa.

Additional to this has been inspection of specimens as required and possible in order to ascertain the classification of the genera or species within the genera, both as defined or including unnamed taxa when they are evident.

Available information in the form of photos of specimens with good available locality data and other information was also utilized in this study.

I also note that, notwithstanding the theft of relevant materials from this author in an illegal armed raid on 17 August 2011, which were not returned in breach of undertakings to the court (Court of Appeal Victoria 2014 and VCAT 2015), I have made a decision to publish this paper, even though it would be clearly improved if I took some further years to get further data,

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

This comment is made noting the extensive increase in human population in the relevant region and the general environmental destruction across the planet as documented by Hoser (1991), including low density areas without a large permanent human population.

I also note the abysmal environmental record of various National, State and Local governments in the relevant region over the past 200 years as detailed by Hoser (1989, 1991, 1993, 1996 and 2010) in the face of ongoing threats as diverse as introduced species, habitat destruction and modification, introduced pathogens and other factors and combinations thereof.

It is also noteworthy that I cannot guarantee another illegal armed raid on our facility, involving theft of materials and data again at some unspecified date in the future. Therefore it is important that the taxonomy of this group be largely resolved herein, rather than be potentially delayed indefinitely.

Published literature relevant to the taxonomy and nomenclature adopted within this paper includes the following: Adler *et al.* (1995), Allison and Greer (1986), Angel (1935), Auffenberg (1980), Austin and Zug (1999), Bacon (1967), Baker (1928), Baker (2016), Barbour (1912), Bauer (1994), Bauer and Sadlier (2000), Bauer and Vindum (1990), Bauer *et al.* (1995), Blanchard (1923), Bobrov and Semenov (2008), Boettger (1895), Boulenger (1886. 1887, 1895. 1897a, 1897b, 1900, 1914), Bourret (1937), Brabanov and Milto (2017), Brongersma (1931, 1948), Brown (1953, 1954, 1983, 1991), Brown and Alcala (1980), Brown and Allison (1986), Brown and Falanruw (1972), Brown and Gibbons (1986), Brown and Marshall (1953), Brown and Parker (1985), Bruna *et al.* (1980, 1996a, 1996b), Buden (2007, 2008, 2015a, 2015b), Buden and Taboroši (2016), Clause *et al.* (2018), Cogger (2014), Couper *et al.* (1996), Crombie and Pregill (1999), Daan and Hillenius (1966), Darevsky (1964a, 1964b), Das (2004), De Jong (1927), de Rooij (1915), De Vis (1890, 1892), Dryden and Taylor (1969), Duméril and Bibron (1839), Duméril and Duméril (1851), Dunn (1927), Fischer (1886), Fisher and Ineich (2012), Fisher *et al.* (2017), Fitzinger (1843), Garman (1899, 1901), Gaulke (1999, 2011), Gaulke and Alcala (2009), Gibson-Hill (1947), Gill (1993), Gill *et al.* (1994), Girard (1858a, 1858b), Goldberg and Grismer (2017), Goldberg and Kraus (2008), Goris and Maeda (2004), Gray (1845), Greer (1974), Grismer (2011a, 2011b) Grismer *et al.* (2009, 2010, 2013), Grossmann and Tillack (2005), Guillaume *et al.* (1994), Günther (1874), Hamilton (2008), Hamilton *et al.* (2010), Heatwole (1975), Hendrickson (1966), Henle (1990), Higgins (1943), How *et al.* (1998), Ineich (1987, 2009, 2011), Ineich and Zug (1991), Iskandar and Mumpini (2002), Jacquinot and Guichenot (1853), Kiester (1982), Klein *et al.* (2016), Koch (2011, 2012), Kopstein (1926), Kramer (1979), Kraus (2018), Lesson (1826, 1830), Liu-Yu (1970), LiVigni (2013), Longman (1916), Macleay (1877), Manthey and Grossmann (1997), McCoid *et al.* (1995), McCoy (2006), McCoy and Webber (1984), McGregor (1904), McKeown (1999), Medway (1974), Medway and Marshall (1975), Meiri *et al.* (2017), Mertens (1922, 1927, 1930), Meyer (1874), Mittleman (1952), Morley and Winder (2015), Morrison (2003), Mys (1988), Oliver *et al.* (2018). Ota (2000), Parker (1925, 1936), Peters (1966), Peters (1864, 1871, 1874a, 1874b, 1878), Peters and Doria (1878), Procter (1923), Pyron *et al.* (2013), Read (1998), Reed *et al.* (2007), Rehman *et al.* (2013), Resetar and Voris (1997), Ride *et al.* (1999), Rodda (2015a, 2015b), Roux (1913), Sadlier and Bauer (1997), Sang *et al.* (2009), Sauvage (1879), Schmidt (1932), Schmidt and Burt (1930), Schwaner and Ineich (1998), Setiadi and Hamidy (2006), Shea (2016), Siler and Brown (2010), Smith (1935, 1937), Steindachner (1870), Stejneger (1899), Sternfeld (1918), Stuart and Emmett (2006), Sy and Buday (2014), Tanner (1950), Taylor (1915, 1924, 1963), ter Borg (2005, 2007), Truong *et al.* (2011), Vogt (1922), Waite (1903), Wanger *et al.* (2011), Werner (1898, 1899), Whiting *et al.* (2003), Wilson and Swan (2010), Zug (2012, 2013), Zug and Ineich (1995, 1997), Zug (1991), Zug *et al.* (1989, 2011, 2012), and sources cited therein.

KEY POINTS ON THE TAXONOMIC DECISIONS MADE HEREIN

While the species descriptions below, effectively summarize the results of the audit of *Emoia sensu lato*, it is important that relevant considerations in terms of most of the decisions is spelt out first. Without exception, each named species is allopatric to their nearest congener. Each is also morphologically and reproductively divergent and therefore fits the general diagnosis of being different species.

Most of the taxa named as new species have also been separated from one another by significant divergence in molecular studies as cited above.

Where there has been an absence of molecular evidence, biogeographical evidence also makes the same case for division. This evidence may include isolation by water bodies, including at times of glacial maxima, competing species and other potential barriers or eliminating factors.

Divergent, newly named and resurrected from synonymy genera can be seen appropriately placed in the published molecular phylogenies of Zug (1999), Hamilton (2008), Zug *et al.* (2011), Pyron *et al.* (2013) and Klein *et al.* (2016), where the relevant species groups are usually listed as "*Emoia*" or "*Sphenomorphus*". The divergent species or groups simply match the new genus level entities.

Within *Emoia sensu lato*, the various species groups are divided in line with the formal descriptions below and the result is self evident.

Within *Emoia sensu lato* numerous new species are formally named for the first time.

As stated already, these have obvious divergence backed by previously published molecular evidence or alternatively such divergence is supported by the biogeographical and geological evidence. The morphological differences between the taxa as outlined herein, are logical by-products of the preceding.

Genus level divisions all have a molecular basis based on cited published phylogenies of relevance.

The putative species *Emoia pseudocyanura* Brown, 1991 is divided into three species, two formally named for the first time, evidence in support of which can be found in the phylogeny of Klein *et al*. (2016) at figs 3 and 4, as well as McCoy (2006).

The morphological divergence between the three populations of these lizards also speaks for itself.

The taxon *Emoia bougainvilliensis sp. nov*., formerly treated as a population of *E. cyanura* (Lesson, 1830), is justified on a molecular basis by the evidence found in the phylogeny of Klein *et al*. (2016) at figs 3 and 4 and the morphological divergence of the specimens as well, as detailed by Brown (1991).

The species *E. boreotis* also treated until now as (two) island populations of *E. cyanura* is shown to be different species by the molecular evidence provided by Bruna *et al.* (1996b).

The species *Emoia aquacauda sp. nov.* has until now been treated as a population of *Emoia impar* (Werner, 1898) and justification for separating the two comes again from in the phylogeny of Klein *et al.* (2016) at figs 3 and 4 as well as clear morphological divergence and geographical isolation by means of deep sea barriers.

The species *Emoia nigra* (Jacquinot and Guichenot, 1853) now placed in the genus *Emoa* Girard, 1857 would until now be treated as monotypic for this genus grouping. The putative taxon *Emoia nigra* (Jacquinot and Guichenot, 1853) is clearly by any reasonable assessment a species complex (as inferred by Brown 1991) and this is supported by the molecular phylogeny published by Hamilton (2008).

Furthermore at page 57, Brown (1991) described "*Emoia nigra*" as a "superspecies". At page 58, Brown wrote: "*Emoia nigra* exhibits some variation when populations from different islands are compared. Consideration of possible subspecies or very similar sibling species is held in abeyance pending the availability of detailed field and possibly genetic studies."

That was written 27 years prior to the publication of this paper and in that time populations on some islands have been decimated and/or wiped out totally as a result of human intervention by way of introduced species including mongoose and cats. Rather than wait another 27 years to elapse and there is still no further steps taken to recognize various island populations as biological entities and being worthy of protection measures, I have taken the important step of giving five distinct island populations taxonomic recognition so that they may be formally identified and legally protected and avoid the fate of unrecognized species as identified by Hoser (2019a, 2019b). I have no doubt that other island populations also probably warrant full taxonomic recognition.

In terms of the Fiji Islands, Zug (1991) wrote: "*E. nigra* is spottedly distributed in Fiji (map 15). Old records (pre-1880 and pre-mongoose) demonstrate its former occurrence on Vanua Levu and Viti Levu. Its extinction on the main islands likely resulted from mongoose predation."

This justifies the need to take steps to preserve this putative species throughout its range. It is also worth noting that Kadavu, the third largest island in the Fiji group still does not have mongoose, but no "*E. nigra*" have been reported from the island and I was unable to locate museum specimens ostensibly from there. The absence from this island is interesting as it goes against the trend for other Fijian reptile species groups, including for example the so-called "*Emoia concolor* (Duméril, 1851)" species group or the "*Emoia trossula* Brown and Gibbons" species group.

The putative species "*Emoia concolor* (Duméril, 1851)" and closely related taxa are herein placed in the new genus *Notanemoia gen. nov.*. The putative species "*Emoia concolor* (Duméril, 1851)" is herein split five ways based on morphological and geographical divergence of each main population in the Fiji Islands group. A molecular basis for this division can also be found in Austin and Zug (1999) at page 432 and in Hamilton (2008).

The putative species "*Emoia parkeri* Brown, Pernetta and Watling, 1980" and "*Emoia trossula* Brown and Gibbons, 1986", both now also placed in the genus *Notanemoia gen. nov.* are also divided on a similar basis to that for the "*Emoia concolor* (Duméril, 1851)" species group as just outlined. In the case of "*Emoia parkeri* Brown, Pernetta and Watling, 1980", two new related species-level taxa are formally named for the first time. In the case of "*Emoia trossula* Brown and Gibbons, 1986" two new species are also formally named for the first time.

The putative taxon "*Emoia flavigularis* Schmidt, 1932" herein placed in the genus *Silvaemoia gen. nov.* is divided into two based on morphological and geographical divergence, separated by a deep water barrier.

Zug and Ineich (1997) wrote: "*E. caeruleocauda* harbors several cryptic species" and following on from this both *Lygosoma cyanurum var. n. werneri* Vogt, 1912:5. Type locality: "Marianen" (= Mariana Islands) and *Lygosoma werneri triviale* Schüz, 1929:7. Type locality: "Dore auf New Guinea" (= Dore, Japen Island, Irian Jaya) are resurrected from synonymy and ten new species-level taxa within this species complex are also formally named for the first time. All are morphologically distinct, geographically separated and clearly have evolved apart for a significant time frame, believed to be in excess of 2 MYA for each species defined herein.

E. caeruleocauda De Vis, (1892) and the other twelve related species are all herein placed in the newly named genus *Caeruleocaudascincus gen. nov.*.

The genus *Ventripallidusscincus gen. nov.* is erected to accommodate the divergent species *E. schmidti* Brown 1954, which is in turn split into two species, the second formally named for the first time and notably separated from the first by a sea barrier not exposed by land during the last glacial maxima. It is also morphologically divergent, warranting taxonomic recognition.

Numerous other species, still within the genus *Emoia*, generally distributed on or adjacent to the Island of New Guinea are formally divided based on identifiable morphological divergence across known biogeographical barriers of known antiquity, including for example the central cordillera of New Guinea. Which species the newly named ones are most closely related to is spelt out clearly in each description.

For the species group associated with the species *Lygosoma stellatus* Boulenger, 1900, more recently placed in the genus *Sphenomorphus* Fitzinger, 1843, the phlogeny of Pyron *et al.* (2013) clearly shows that it should be placed in a genus apart from any of *Lygosoma* Hardwickeý and ýGrayý, 1828, *Sphenomorphus*, or *Emoia*. The genus *Shireenhoserscincus gen. nov.* has been erected to accommodate *Sphenomorphus stellatus* (Boulenger, 1900) and three others, all until now treated by most herpetologists as being of a single species.

The division of one putative species into four is justified on the basis that each are allopatric and separated by well-defined biogeographical barriers of unsuitable habitat and/or competing species, as well as significant morphological divergence between the four populations, which indicates divergence and allopatric breeding populations,

Two of those species are formally named for the first time.

In terms of the following descriptions the following points should be noted:
1/ All descriptions of specimens in terms of form and colour relate to normal adult specimens of typical form for each taxon unless otherwise stated.

2/ Spellings of names assigned to taxa should not be altered in any way unless mandated by the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) or superseding nomenclatural rules.
3/ In the unlikely event a first revisor seeks to merge any taxa formally named herein, the name to be used is that of the first name used in terms of page priority, also as listed in the abstract keywords.
4/ There is no conflict of interest in terms of this paper or the conclusions arrived at herein.

GENUS *NOTANEMOIA GEN. NOV.*

LSID urn:lsid:zoobank.org:act:BD022E5F-7CC7-4754-99A4-1C5BCF317493

Type species: *Gongylus concolor* Duméril, 1851 (now widely known as *Emoia concolor* (Duméril, 1851)).

Diagnosis: The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 were all formerly included in the so-called *E. samoensis* group and are defined and separated from other species in the genus *Emoia* Gray, 1845 below.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 are separated from species in the genus *Emoia* Gray, 1845, in which they were formerly included, by the following suite of characters: SVL at maturity of 45-122 mm; snout tapered and slightly to moderately depressed; scales smooth; midbody scale rows 26-42; dorsal scale rows 51-84; subdigital lamellae rounded to moderately thinned, fourth toe lamellae 32-81; frontoparietals fused; interparietal nearly always distinct, ranging from long and narrow to small; nasal bones separate; parietal eye present; palate alpha type; dorsal ground color ranges from greenish or greenish tan to light or rarely dark brown, usually with darker markings on dorsal and upper lateral surfaces and sometimes pale spots or dashes.
This is also an effective diagnosis for the so-called *Emoia samoensis* group.

The genus *Notanemoia gen. nov.* (type species *Gongylus concolor* Duméril, 1851) is separated from the genera *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal also long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 44-65 (sometimes less in *Cannotbeemoia gen. nov.*); midbody scale rows 28-36; number of lamellae under fourth toe 44-65; dorsal scale rows between parietals and base of tail 54-68.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone in adults having a dorsum that is a more-or-less uniform dark brown to black or grey from snout on to the tail.

The genus *Cannotbeemoia gen. nov.* (type species *Lygosoma samoense loyaltiensis* Roux, 1913) can be separated from the genera *Notanemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters being one or other of:

1/ Fourth toe lamellae 60-81; Scale rows between parietals and base of tail 56-64; SVL at maturity 68-115 mm; color pattern on dorsum nearly uniform greenish, olivaceous, or brownish, marked by few or many small to large dark spots; head frequently marked by a large brownish patch; (*C. sanfordi*), or:

2/ Snout tapered, narrowly rounded at tip; interparietal distinct, long, longer than broad (rarely fused or partly fused with frontoparietals); prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; number of lamellae under fourth toe 44-60, midbody scale rows 30-34; dorsal scale rows between parietals and base of tail 62-71 (rarely less than 64); SVL at maturity 60-73 mm; color of dorsum tannish green, of upper lateral surfaces darker grayish tan, marked by some darker blotches; limbs tan with darker brown mottling (*C. loyaltiensis*).

The genus *Silvaemoia gen. nov.* can be separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Fourth toe lamellae 34-60; dorsal scale rows between parietals and base of tail 52-72; interparietal fused with frontoparietals; prefrontals usually in contact; dorsal color brown with scattered dark or vague transverse lines posteriorly; lateral surfaces slightly darker; undersurface of head and neck yellowish or yellowish-greenish.

The genus *Griseolaterus gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Emoa* Girard, 1857 by the following unique combination of characters: Midbody scale rows 36-38; dorsal scale rows between the parietals and the base of tail 77-84; fourth toe lamellae 47-53; first toe lamellae 14-17; interparietal of intermediate length, longer than broad; prefrontals in relatively broad contact; color pattern being a dorsal ground color of greenish tan to dark chocolate-brown; lighter specimens marked by some scattered dark brown flecks or small spots: upper lateral surface with grayish to slate-tan or brown band, marked by row of light blotches or dashes along dorsal margin.

The genus *Aintemoia gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by one or other of the following 7 suites of characters:

1/ Fourth toe lamellae 38-44; dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 38-44; midbody scale rows 28-34; color pattern: dorsum greenish or grayish, nearly uniform or with dark flecks or spots; blackish lateral bands or series of dark spots on the upper lateral surface (*A. nigromarginata*), or:

2/ Fourth toe lamellae 45-65; dorsal scale rows between parietals and base of tail 54-68; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 78-118 mm; number of lamellae under fourth toe 45-65; midbody scale rows 30-34 (usually 32); color pattern: dorsum nearly uniform greenish to greenish tan, or with brownish to blackish spots, usually forming transverse bands (tiger pattern); without large, yellowish blotches dorsolaterally (*A. samoensis*), or:

3/ Dorsal scale rows between parietals and base of tail 72-84. Fourth toe lamellae 36-42; midbody scale rows 40-42 (*A. aneityumensis*), or:

4/ Fourth toe lamellae 43-55; dorsal scale rows between parietals and base of tail 52-72; rostral forming moderate, slightly concave suture with frontonasal; supranasals slightly broader anteriorly, in contact with anterior loreal; prefrontals narrowly separated to moderately in contact; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad and narrow; prefrontals narrowly separated to broadly in contact; one

pair of nuchals; anterior loreal slightly shorter than, to nearly as long as, posterior and slightly higher, in contact with first and second, second, or first, second and third upper labials; ground color of dorsum not brown to blackish; SVL at maturity 66-108 mm; number of lamellae under fourth toe 43-55; Midbody scale rows 32-40 (rarely less than 34); color feature of dorsum usually brownish marked by a few to numerous whitish dashes (*A. michaelguiheneufi sp. nov.*, *A. mokolahi*, *A. rosssadlieri sp. nov.*, *A. trossula*), or:

5/ Number of middorsal scales from nape to base of tail 62-67; interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown dorsally and laterally, neck and trunk with transverse series of dark brown irregular-shaped bars; dark bars medium sized and numerous, dark brown postorbital stripe or spot on rear of head and usually on neck; transverse series of bright yellow streaks on neck and trunk; number of fourth finger lamellae 34-42, (*A. oriva*), or:

6/ Interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown, number of middorsal scale rows 59-71 and number of fourth finger lamellae 28-42; dorsal surface of trunk boldly marked with transverse series of bright yellow streaks on background of numerous dark bars; number of fourth toe lamellae 50-65, (*A. tuitarere*), or:

7/ Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33, (*A. parkeri, A. dannygoodwini sp. nov., A. latishadarwinae sp. nov.*).

The preceding diagnosis for *Aintemoia gen. nov.* could have been distilled significantly to about two character suites, but the longer definition allows identification to species level in most cases.

The subgenus *Paraemoia subgen. nov.* (type species *Emoia parkeri* Brown, Pernetta and Watling, 1980) within the genus *Aintemoia gen. nov.* is separated from all other species within the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33.

The subgenus *Aquilonariemoia subgen. nov.* (type species *Emoia ponapea* Kiester, 1982) within the genus *Emoia* is separated from all other species within the genera *Emoia* Gray, 1845, *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Unfused nasal bones and distinct parietal eye; a palate somewhat intermediate between the alpha and beta types and the unique feature of 13 premaxillary teeth rather than 11, which is otherwise characteristic of other groups of species referred to the genus *Emoia sensu lato*, including the genera and subgenera formally named herein.

Emoia sensu lato including the newly described genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* as well as *Emoa* Girard, 1857 are separated from all other skink genera by the following suite of characters: supranasals present; window in movable lower eyelid; frontoparietals fused; limbs well developed, pentadactyl.

These four characters are shared by all species of thegenera. However, one or both of the derived characters (window in moveable lower eyelid and frontoparietals fused) also characterize some species of *Lipinia* Gray, 1845 and *Leiolopisma* Duméril and Bibron, 1839 being Lygasomine genera lacking supranasals.

Several additional characters are common to all species of *Emoia sensu lato*. but they are not diagnostic because they are also found in most species of several other genera of skinks. These include: (1) rostral broader than high; (2) frontal as long as or longer than broad and in contact with two anterior supraoculars; (3) four large supraoculars; (4) parietals large and in contact; (5) ear

prominent, usually with small lobules anteriorly, but always much smaller than eye; (6) rank of adpressed toes from the shortest to the longest: first, second or fifth, third, fourth; (7) tail slender and much longer than body (modified from Brown, 1991).

Distribution: Fiji, Tonga.

Etymology: As said, “not an *Emoia*”.

Content: *Notanemoia concolor* (Duméril, 1851) (type species); *N. campbelli* (Brown and Gibbons, 1986); *N. cathysonnemannae sp. nov.*; *N. georgemariolisi sp. nov.*; *N. karlagambellae sp. nov.*; *N. mokosariniveikau* (Zug and Ineich, 1995); *N. neilsonnemanni sp. nov.*; *N. tongana* (Werner, 1899).

GENUS *CANNOTBEEMOIA GEN. NOV.*

LSID urn:lsid:zoobank.org:act:FBFDC585-DF78-453E-8794-A97FA2923C1A

Type species: *Lygosoma samoense loyaltiensis* Roux, 1913 now widely known as *Emoia loyaltiensis* (Roux, 1913).

Diagnosis: The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 were all formerly included in the so-called *E. samoensis* group and are defined and separated from other species in the genus *Emoia* Gray, 1845 below.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 are separated from species in the genus *Emoia* Gray, 1845, in which they were formerly included, by the following suite of characters: SVL at maturity of 45-122 mm; snout tapered and slightly to moderately depressed; scales smooth; midbody scale rows 26-42; dorsal scale rows 51-84; subdigital lamellae rounded to moderately thinned, fourth toe lamellae 32-81; frontoparietals fused; interparietal nearly always distinct, ranging from long and narrow to small; nasal bones separate; parietal eye present; palate alpha type; dorsal ground color ranges from greenish or greenish tan to light or rarely dark brown, usually with darker markings on dorsal and upper lateral surfaces and sometimes pale spots or dashes.
This is an effective diagnosis also for the so-called *Emoia samoensis* group.

The genus *Notanemoia gen. nov.* (type species *Gongylus concolor* Duméril, 1851) is separated from the genera *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal also long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 44-65 (sometimes less in *Cannotbeemoia gen. nov.*); midbody scale rows 28-36; number of lamellae under fourth toe 44-65; dorsal scale rows between parietals and base of tail 54-68.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone in having a dorsum that is uniform dark brown to black from snout onto the tail.

The genus *Cannotbeemoia gen. nov.* (type species *Lygosoma samoense loyaltiensis* Roux, 1913) can be separated from the genera *Notanemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters being one or other of:

1/ Fourth toe lamellae 60-81; Scale rows between parietals and base of tail 56-64; SVL at maturity 68-115 mm; color pattern on dorsum nearly uniform greenish, olivaceous, or brownish, marked by few or many small to large dark spots; head frequently marked by a large brownish patch; (*C. sanfordi*), or:

2/ Snout tapered, narrowly rounded at tip; interparietal distinct, long, longer than broad (rarely fused or partly fused with frontoparietals); prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; number of lamellae under fourth toe 44-60, midbody scale rows 30-34; dorsal scale rows between parietals and base of tail 62-71 (rarely less than 64); SVL at maturity 60-73 mm; color of dorsum tannish green, of upper lateral surfaces darker grayish tan, marked by some darker blotches; limbs tan with darker brown mottling (*C. loyaltiensis*).

The genus *Silvaemoia gen. nov.* can be separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Fourth toe lamellae 34-60; dorsal scale rows between parietals and base of tail 52-72; interparietal fused with frontoparietals; prefrontals usually in contact; dorsal color brown with scattered dark or vague transverse lines posteriorly; lateral surfaces slightly darker; undersurface of head and neck yellowish or yellowish-greenish.

The genus *Griseolaterus gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Emoa* Girard, 1857 by the following unique combination of characters: Midbody scale rows 36-38; dorsal scale rows between the parietals and the base of tail 77-84; fourth toe lamellae 47-53; first toe lamellae 14-17; interparietal of intermediate length, longer than broad; prefrontals in relatively broad contact; color pattern being a dorsal ground color of greenish tan to dark chocolate-brown; lighter specimens marked by some scattered dark brown flecks or small spots: upper lateral surface with grayish to slate-tan or brown band, marked by row of light blotches or dashes along dorsal margin.

The genus *Aintemoia gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by one or other of the following 7 suites of characters:

1/ Fourth toe lamellae 38-44; dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 38-44; midbody scale rows 28-34; color pattern: dorsum greenish or grayish, nearly uniform or with dark flecks or spots; blackish lateral bands or series of dark spots on the upper lateral surface (*A. nigromarginata*), or:

2/ Fourth toe lamellae 45-65; dorsal scale rows between parietals and base of tail 54-68; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 78-118 mm; number of lamellae underneath fourth toe 45-65; midbody scale rows 30-34 (usually 32); color pattern: dorsum nearly uniform greenish to greenish tan, or with brownish to blackish spots, usually forming transverse bands (tiger pattern); without large, yellowish blotches dorsolaterally (*A. samoensis*), or:

3/ Dorsal scale rows between parietals and base of tail 72-84. Fourth toe lamellae 36-42; midbody scale rows 40-42 (*A. aneityumensis*), or:

4/ Fourth toe lamellae 43-55; dorsal scale rows between parietals and base of tail 52-72; rostral forming moderate, slightly concave suture with frontonasal; supranasals slightly broader anteriorly, in contact with anterior loreal; prefrontals narrowly separated to moderately in contact; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad and narrow; prefrontals narrowly separated to broadly in contact; one pair of nuchals; anterior loreal slightly shorter than, to nearly as long as, posterior and slightly higher, in contact with first and second, second, or first, second and third upper labials; ground color of dorsum not brown to blackish; SVL at maturity 66-108 mm; number of lamellae under fourth toe 43-55; Midbody scale rows 32-40 (rarely less than 34); color feature of dorsum usually brownish marked by a few to numerous whitish dashes (*A. michaelguiheneufi sp. nov.*, *A. mokolahi*, *A. rosssadlieri sp. nov.*, *A. trossula*), or:

5/ Number of middorsal scales from nape to base of tail 62-67; interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown dorsally and laterally, neck and trunk with transverse series of dark brown irregular-shaped bars; dark bars medium sized and numerous, dark brown postorbital stripe or spot on rear of head and usually on neck; transverse series of bright yellow streaks on neck and trunk; number of fourth finger lamellae 34-42, (*A. oriva*), or:

6/ Interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown, number of middorsal scale rows 59-71 and number of fourth finger lamellae 28-42; dorsal surface of trunk boldly marked with transverse series of bright yellow streaks on background of numerous dark bars; number of fourth toe lamellae 50-65, (*A. tuitarere*), or:

7/ Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33, (*A. parkeri, A. dannygoodwini sp. nov., A. latishadarwinae sp. nov.*).

The preceding diagnosis for *Aintemoia gen. nov.* could have been distilled significantly to about two character suites, but the longer definition allows identification to species level in most cases.

The subgenus *Paraemoia subgen. nov.* (type species *Emoia parkeri* Brown, Pernetta and Watling, 1980) within the genus *Aintemoia gen. nov.* is separated from all other species within the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33.

The subgenus *Aquilonariemoia subgen. nov.* (type species *Emoia ponapea* Kiester, 1982) within the genus *Emoia* is separated from all other species within the genera *Emoia* Gray, 1845, *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Unfused nasal bones and distinct parietal eye; a palate somewhat intermediate between the alpha and beta types and the unique feature of 13 premaxillary teeth rather than 11, which is otherwise characteristic of other groups of species referred to the genus *Emoia sensu lato*, including the genera and subgenera formally named herein.

Emoia sensu lato including the newly described genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* as well as *Emoa* Girard, 1857 are separated from all other skink genera by the following suite of characters: supranasals present; window in movable lower eyelid; frontoparietals fused; limbs well developed, pentadactyl.

These four characters are shared by all species of thegenera. However, one or both of the derived characters (window in moveable lower eyelid and frontoparietals fused) also characterize some species of *Lipinia* Gray, 1845 and *Leiolopisma* Duméril and

Bibron, 1839 being Lygasomine genera lacking supranasals.

Several additional characters are common to all species of *Emoia sensu lato*. but they are not diagnostic because they are also found in most species of several other genera of skinks. These include: (1) rostral broader than high; (2) frontal as long as or longer than broad and in contact with two anterior supraoculars; (3) four large supraoculars; (4) parietals large and in contact; (5) ear

prominent, usually with small lobules anteriorly, but always much smaller than eye; (6) rank of adpressed toes from the shortest to the longest: first, second or fifth, third, fourth; (7) tail slender and much longer than body (modified from Brown, 1991).

Distribution: Mare and Lifou islands, Loyalty Islands, New Caledonia (*C. loyaltiensis*) and Vanuatu (Banks Islands and New Hebrides), Fauro, Toga, Tegua Islands (*C. sanfordi*).

Etymology: As said, “cannot be an *Emoia*”.

Content: *Cannotbeemoia loyaltiensis* (Roux, 1913) (type species); *C. sanfordi* (Schmidt and Burt, 1930).

GENUS *SILVAEMOIA GEN. NOV.*

LSID urn:lsid:zoobank.org:act:481B193A-E901-4E55-97C7-0FB5991CE4AC

Type species: *Emoia flavigularis* Schmidt, 1932.

Diagnosis: The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 were all formerly included in the so-called *E. samoensis* group and are defined and separated from other species in the genus *Emoia* Gray, 1845 below.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 are separated from species in the genus *Emoia* Gray, 1845, in which they were formerly included, by the following suite of characters: SVL at maturity of 45-122 mm; snout tapered and slightly to moderately depressed; scales smooth; midbody scale rows 26-42; dorsal scale rows 51-84; subdigital lamellae rounded to moderately thinned, fourth toe lamellae 32-81; frontoparietals fused; interparietal nearly always distinct, ranging from long and narrow to small; nasal bones separate; parietal eye present; palate alpha type; dorsal ground color ranges from greenish or greenish tan to light or rarely dark brown, usually with darker markings on dorsal and upper lateral surfaces and sometimes pale spots or dashes.
This is an effective diagnosis also for the so-called *Emoia samoensis* group.

The genus *Notanemoia gen. nov.* (type species *Gongylus concolor* Duméril, 1851) is separated from the genera *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal also long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 44-65 (sometimes less in *Cannotbeemoia gen. nov.*); midbody scale rows 28-36; number of lamellae under fourth toe 44-65; dorsal scale rows between parietals and base of tail 54-68.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone in having a dorsum that is uniform dark brown to black from snout onto the tail.

The genus *Cannotbeemoia gen. nov.* (type species *Lygosoma samoense loyaltiensis* Roux, 1913) can be separated from the genera *Notanemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters being one or other of:

1/ Fourth toe lamellae 60-81; Scale rows between parietals and base of tail 56-64; SVL at maturity 68-115 mm; color pattern on dorsum nearly uniform greenish, olivaceous, or brownish, marked by few or many small to large dark spots; head frequently marked by a large brownish patch; (*C. sanfordi*), or:

2/ Snout tapered, narrowly rounded at tip; interparietal distinct, long, longer than broad (rarely fused or partly fused with frontoparietals); prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; number of lamellae under fourth toe 44-60, midbody scale rows 30-34; dorsal scale rows between parietals and base of tail 62-71 (rarely less than 64); SVL at maturity 60-73 mm; color of dorsum tannish green, of upper lateral surfaces darker grayish tan, marked by some darker blotches; limbs tan with darker brown mottling (*C. loyaltiensis*).

The genus *Silvaemoia gen. nov.* can be separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Fourth toe lamellae 34-60; dorsal scale rows between parietals and base of tail 52-72; interparietal fused with frontoparietals; prefrontals usually in contact; dorsal color brown with scattered dark or vague transverse lines posteriorly; lateral surfaces slightly darker; undersurface of head and neck yellowish or yellowish-greenish.

The genus *Griseolaterus gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Emoa* Girard, 1857 by the following unique combination of characters: Midbody scale rows 36-38; dorsal scale rows between the parietals and the base of tail 77-84; fourth toe lamellae 47-53; first toe lamellae 14-17; interparietal of intermediate length, longer than broad; prefrontals in relatively broad contact; color pattern being a dorsal ground color of greenish tan to dark chocolate-brown; lighter specimens marked by some scattered dark brown flecks or small spots: upper lateral surface with grayish to slate-tan or brown band, marked by row of light blotches or dashes along dorsal margin.

The genus *Aintemoia gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by one or other of the following 7 suites of characters:

1/ Fourth toe lamellae 38-44; dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 38-44; midbody scale rows 28-34; color pattern: dorsum greenish or grayish, nearly uniform or with dark flecks or spots; blackish lateral bands or series of dark spots on the upper lateral surface (*A. nigromarginata*), or:

2/ Fourth toe lamellae 45-65; dorsal scale rows between parietals and base of tail 54-68; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 78-118 mm; number of lamellae under, fourth toe 45-65; midbody scale rows 30-34 (usually 32); color pattern: dorsum nearly uniform greenish to greenish tan, or with brownish to blackish spots, usually forming transverse bands (tiger pattern); without large, yellowish blotches dorsolaterally (*A. samoensis*), or:

3/ Dorsal scale rows between parietals and base of tail 72-84. Fourth toe lamellae 36-42; midbody scale rows 40-42 (*A. aneityumensis*), or:

4/ Fourth toe lamellae 43-55; dorsal scale rows between parietals and base of tail 52-72; rostral forming moderate, slightly concave suture with frontonasal; supranasals slightly broader anteriorly, in contact with anterior loreal; prefrontals narrowly separated to moderately in contact; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad and narrow; prefrontals narrowly separated to broadly in contact; one pair of nuchals; anterior loreal slightly shorter than, to nearly as long as, posterior and slightly higher, in contact with first and second, second, or first, second and third upper labials; ground color of dorsum not brown to blackish; SVL at maturity 66-108 mm; number of lamellae under fourth toe 43-55; Midbody scale rows 32-40 (rarely less than 34); color feature of dorsum usually brownish

marked by a few to numerous whitish dashes (*A. michaelguiheneufi sp. nov.*, *A. mokolahi*, *A. rosssadlieri sp. nov.*, *A. trossula*), or:

5/ Number of middorsal scales from nape to base of tail 62-67; interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown dorsally and laterally, neck and trunk with transverse series of dark brown irregular-shaped bars; dark bars medium sized and numerous, dark brown postorbital stripe or spot on rear of head and usually on neck; transverse series of bright yellow streaks on neck and trunk; number of fourth finger lamellae 34-42, (*A. oriva*), or:

6/ Interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown, number of middorsal scale rows 59-71 and number of fourth finger lamellae 28-42; dorsal surface of trunk boldly marked with transverse series of bright yellow streaks on background of numerous dark bars; number of fourth toe lamellae 50-65, (*A. tuitarere*), or:

7/ Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33, (*A. parkeri, A. dannygoodwini sp. nov., A. latishadarwinae sp. nov.*).

The preceding diagnosis for *Aintemoia gen. nov.* could have been distilled significantly to about two character suites, but the longer definition allows identification to species level in most cases.

The subgenus *Paraemoia subgen. nov.* (type species *Emoia parkeri* Brown, Pernetta and Watling, 1980) within the genus *Aintemoia gen. nov.* is separated from all other species within the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33.

The subgenus *Aquilonariemoia subgen. nov.* (type species *Emoia ponapea* Kiester, 1982) within the genus *Emoia* is separated from all other species within the genera *Emoia* Gray, 1845, *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Unfused nasal bones and distinct parietal eye; a palate somewhat intermediate between the alpha and beta types and the unique feature of 13 premaxillary teeth rather than 11, which is otherwise characteristic of other groups of species referred to the genus *Emoia sensu lato*, including the genera and subgenera formally named herein.

Emoia sensu lato including the newly described genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* as well as *Emoa* Girard, 1857 are separated from all other skink genera by the following suite of characters: supranasals present; window in movable lower eyelid; frontoparietals fused; limbs well developed, pentadactyl.

These four characters are shared by all species of thegenera. However, one or both of the derived characters (window in moveable lower eyelid and frontoparietals fused) also characterize some species of *Lipinia* Gray, 1845 and *Leiolopisma* Duméril and Bibron, 1839 being Lygasomine genera lacking supranasals.

Several additional characters are common to all species of *Emoia sensu lato*. but they are not diagnostic because they are also found in most species of several other genera of skinks. These include: (1) rostral broader than high; (2) frontal as long as or longer than broad and in contact with two anterior supraoculars; (3) four large supraoculars; (4) parietals large and in contact; (5) ear prominent, usually with small lobules anteriorly, but always much smaller than eye; (6) rank of adpressed toes from the shortest to the longest: first, second or fifth, third, fourth; (7) tail slender and much longer than body (modified from Brown, 1991).

Distribution: Bougainville, Papua New Guinea and the Solomon Islands.

Etymology: Silva in Latin means forest, hence the name means "forest *Emoia*", in reflection of the habitat where the genus is usually found.

Content: *Silvaemoia flavigularis* (Schmidt, 1932); *S. robvalentici sp. nov.*.

GENUS *GRISEOLATERUS GEN. NOV.*

urn:lsid:zoobank.org:act:910DEDAA-0B25-47DC-9D02-E6C52CACAB82

Type species: *Emoia erronan* Brown, 1991.

Diagnosis: The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 were all formerly included in the so-called *E. samoensis* group and are defined and separated from other species in the genus *Emoia* Gray, 1845 below.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 are separated from species in the genus *Emoia* Gray, 1845, in which they were formerly included, by the following suite of characters: SVL at maturity of 45-122 mm; snout tapered and slightly to moderately depressed; scales smooth; midbody scale rows 26-42; dorsal scale rows 51-84; subdigital lamellae rounded to moderately thinned, fourth toe lamellae 32-81; frontoparietals fused; interparietal nearly always distinct, ranging from long and narrow to small; nasal bones separate; parietal eye present; palate alpha type; dorsal ground color ranges from greenish or greenish tan to light or rarely dark brown, usually with darker markings on dorsal and upper lateral surfaces and sometimes pale spots or dashes.
This is also an effective diagnosis for the so-called *Emoia samoensis* group.

The genus *Griseolaterus gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Emoa* Girard, 1857 by the following unique combination of characters: Midbody scale rows 36-38; dorsal scale rows between the parietals and the base of tail 77-84; fourth toe lamellae 47-53; first toe lamellae 14-17; interparietal of intermediate length, longer than broad; prefrontals in relatively broad contact; color pattern being a dorsal ground color of greenish tan to dark chocolate-brown; lighter specimens marked by some scattered dark brown flecks or small spots: upper lateral surface with grayish to slate-tan or brown band, marked by row of light blotches or dashes along dorsal margin.

The genus *Notanemoia gen. nov.* (type species *Gongylus concolor* Duméril, 1851) is separated from the genera *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal also long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 44-65 (sometimes less in *Cannotbeemoia gen. nov.*); midbody scale rows 28-36; number of lamellae under fourth toe 44-65; dorsal scale rows between parietals and base of tail 54-68.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone in having a dorsum that is uniform dark brown to black from snout onto the tail.

The genus *Cannotbeemoia gen. nov.* (type species *Lygosoma samoense loyaltiensis* Roux, 1913) can be separated from the genera *Notanemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters being one or other of:

1/ Fourth toe lamellae 60-81; Scale rows between parietals and base of tail 56-64; SVL at maturity 68-115 mm; color pattern on dorsum nearly uniform greenish, olivaceous, or brownish, marked by few or many small to large dark spots; head frequently marked by a large brownish patch; (*C. sanfordi*), or:

2/ Snout tapered, narrowly rounded at tip; interparietal distinct, long, longer than broad (rarely fused or partly fused with frontoparietals); prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; number of lamellae under fourth toe 44-60, midbody scale rows 30-34; dorsal scale rows between parietals and base of tail 62-71 (rarely less than 64); SVL at maturity 60-73 mm; color of dorsum tannish green, of upper lateral surfaces darker grayish tan, marked by some darker blotches; limbs tan with darker brown mottling (*C. loyaltiensis*).

The genus *Silvaemoia gen. nov*. can be separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Fourth toe lamellae 34-60; dorsal scale rows between parietals and base of tail 52-72; interparietal fused with frontoparietals; prefrontals usually in contact; dorsal color brown with scattered dark or vague transverse lines posteriorly; lateral surfaces slightly darker; undersurface of head and neck yellowish or yellowish-greenish.

The genus *Aintemoia gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by one or other of the following 7 suites of characters:

1/ Fourth toe lamellae 38-44; dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 38-44; midbody scale rows 28-34; color pattern: dorsum greenish or grayish, nearly uniform or with dark flecks or spots; blackish lateral bands or series of dark spots on the upper lateral surface (*A. nigromarginata*), or:

2/ Fourth toe lamellae 45-65; dorsal scale rows between parietals and base of tail 54-68; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 78-118 mm; number of lamellae under fourth toe 45-65; midbody scale rows 30-34 (usually 32); color pattern: dorsum nearly uniform greenish to greenish tan, or with brownish to blackish spots, usually forming transverse bands (tiger pattern); without large, yellowish blotches dorsolaterally (*A. samoensis*), or:

3/ Dorsal scale rows between parietals and base of tail 72-84. Fourth toe lamellae 36-42; midbody scale rows 40-42 (*A. aneityumensis*), or:

4/ Fourth toe lamellae 43-55; dorsal scale rows between parietals and base of tail 52-72; rostral forming moderate, slightly concave suture with frontonasal; supranasals slightly broader anteriorly, in contact with anterior loreal; prefrontals narrowly separated to moderately in contact; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad and narrow; prefrontals narrowly separated to broadly in contact; one pair of nuchals; anterior loreal slightly shorter than, to nearly as long as, posterior and slightly higher, in contact with first and second, second, or first, second and third upper labials; ground color of dorsum not brown to blackish; SVL at maturity 66-108 mm; number of lamellae under fourth toe 43-55; Midbody scale rows 32-40 (rarely less than 34); color feature of dorsum usually brownish marked by a few to numerous whitish dashes (*A. michaelguiheneufi sp. nov.*, *A. mokolahi*, *A. rosssadlieri sp. nov.*, *A. trossula*), or:

5/ Number of middorsal scales from nape to base of tail 62-67; interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown dorsally and laterally, neck and trunk with transverse series of dark brown irregular-shaped bars; dark bars medium sized and numerous, dark brown postorbital stripe or spot on rear of head and usually on neck; transverse series of bright yellow streaks on neck and trunk; number of fourth finger lamellae 34-42, (*A. oriva*), or:

6/ Interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown, number of middorsal scale rows 59-71 and number of fourth finger lamellae 28-42; dorsal surface of trunk boldly marked with transverse series of bright yellow streaks on background of numerous dark bars; number of fourth toe lamellae 50-65, (*A. tuitarere*), or:

7/ Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33, (*A. parkeri, A. dannygoodwini sp. nov., A. latishadarwinae sp. nov.*).

The preceding diagnosis for *Aintemoia gen. nov.* could have been distilled significantly to about two character suites, but the longer definition allows identification to species level in most cases.

The subgenus *Paraemoia subgen. nov.* (type species *Emoia parkeri* Brown, Pernetta and Watling, 1980) within the genus *Aintemoia gen. nov.* is separated from all other species within the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33.

The subgenus *Aquilonariemoia subgen. nov.* (type species *Emoia ponapea* Kiester, 1982) within the genus *Emoia* is separated from all other species within the genera *Emoia* Gray, 1845, *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Unfused nasal bones and distinct parietal eye; a palate somewhat intermediate between the alpha and beta types and the unique feature of 13 premaxillary teeth rather than 11, which is otherwise characteristic of other groups of species referred to the genus *Emoia sensu lato*, including the genera and subgenera formally named herein.

Emoia sensu lato including the newly described genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* as well as *Emoa* Girard, 1857 are separated from all other skink genera by the following suite of characters: supranasals present; window in movable lower eyelid; frontoparietals fused; limbs well developed, pentadactyl.

These four characters are shared by all species of thegenera. However, one or both of the derived characters (window in moveable lower eyelid and frontoparietals fused) also characterize some species of *Lipinia* Gray, 1845 and *Leiolopisma* Duméril and Bibron, 1839 being Lygasomine genera lacking supranasals.

Several additional characters are common to all species of *Emoia sensu lato*. but they are not diagnostic because they are also found in most species of several other genera of skinks. These include: (1) rostral broader than high; (2) frontal as long as or longer than broad and in contact with two anterior supraoculars; (3) four large supraoculars; (4) parietals large and in contact; (5) ear

prominent, usually with small lobules anteriorly, but always much smaller than eye; (6) rank of adpressed toes from the shortest to the longest: first, second or fifth, third, fourth; (7) tail slender and much longer than body (modified from Brown, 1991).

Distribution: Futuna Island, Vanuatu and nearby islands.

Etymology: The name comes from the Latin which means grey sides, in reflection of the colour of the relevant lizards.

Content: *Griseolaterus erronan* (Brown, 1991).

GENUS *AINTEMOIA GEN. NOV.*

LSID urn:lsid:zoobank.org:act:6A6A2AF8-C609-4984-A7E0-DE51DAAB1D84

Type species: *Gongylus* (*Eumeces*) *samoensis* Duméril and Bibron, 1851.

Diagnosis: The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 were all formerly included in the so-called *E. samoensis* group and are defined and separated from other species in the genus *Emoia* Gray, 1845 below.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 are separated from species in the genus *Emoia* Gray, 1845, in which they were formerly included, by the following suite of characters: SVL at maturity of 45-122 mm; snout tapered and slightly to moderately depressed; scales smooth; midbody scale rows 26-42; dorsal scale rows 51-84; subdigital lamellae rounded to moderately thinned, fourth toe lamellae 32-81; frontoparietals fused; interparietal nearly always distinct, ranging from long and narrow to small; nasal bones separate; parietal eye present; palate alpha type; dorsal ground color ranges from greenish or greenish tan to light or rarely dark brown, usually with darker markings on dorsal and upper lateral surfaces and sometimes pale spots or dashes.
This is an effective diagnosis also for the so-called *Emoia samoensis* group.

The genus *Aintemoia gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by one or other of the following 7 suites of characters:

1/ Fourth toe lamellae 38-44; dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae underneath fourth toe 38-44; midbody scale rows 28-34; color pattern: dorsum greenish or grayish, nearly uniform or with dark flecks or spots; blackish lateral bands or series of dark spots on the upper lateral surface (*A. nigromarginata*), or:

2/ Fourth toe lamellae 45-65; dorsal scale rows between parietals and base of tail 54-68; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 78-118 mm; number of lamellae under fourth toe 45-65; midbody scale rows 30-34 (usually 32); color pattern: dorsum nearly uniform greenish to greenish tan, or with brownish to blackish spots, usually forming transverse bands (tiger pattern); without large, yellowish blotches dorsolaterally (*A. samoensis*), or:

3/ Dorsal scale rows between parietals and base of tail 72-84. Fourth toe lamellae 36-42; midbody scale rows 40-42 (*A. aneityumensis*), or:

4/ Fourth toe lamellae 43-55; dorsal scale rows between parietals and base of tail 52-72; rostral forming moderate, slightly concave suture with frontonasal; supranasals slightly broader anteriorly, in contact with anterior loreal; prefrontals narrowly separated to moderately in contact; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad and narrow; prefrontals narrowly separated to broadly in contact; one pair of nuchals; anterior loreal slightly shorter than, to nearly as long as, posterior and slightly higher, in contact with first and second, second, or first, second and third upper labials; ground color of dorsum not brown to blackish; SVL at maturity 66-108 mm; number of lamellae under fourth toe 43-55; Midbody scale rows 32-40 (rarely less than 34); color feature of dorsum usually brownish marked by a few to numerous whitish dashes (*A. michaelguiheneufi sp. nov.*, *A. mokolahi*, *A. rosssadlieri sp. nov.*, *A. trossula*), or:

5/ Number of middorsal scales from nape to base of tail 62-67; interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown dorsally and laterally, neck and trunk with transverse series of dark brown irregular-shaped bars; dark bars medium sized and numerous, dark brown postorbital stripe or spot on rear of head and usually on neck; transverse series of bright yellow streaks on neck and trunk; number of fourth finger lamellae 34-42, (*A. oriva*), or:

6/ Interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown, number of middorsal scale rows 59-71 and number of fourth finger lamellae 28-42; dorsal surface of trunk boldly marked with transverse series of bright yellow streaks on background of numerous dark bars; number of fourth toe lamellae 50-65, (*A. tuitarere*), or:

7/ Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33, (*A. parkeri, A. dannygoodwini sp. nov., A. latishadarwinae sp. nov.*).

The preceding diagnosis for *Aintemoia gen. nov.* could have been distilled significantly to about two character suites, but the longer definition allows identification to species level in most cases.

The subgenus *Paraemoia subgen. nov.* (type species *Emoia parkeri* Brown, Pernetta and Watling, 1980) within the genus *Aintemoia gen. nov.* is separated from all other species within the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33.

The genus *Griseolaterus gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Emoa* Girard, 1857 by the following unique combination of characters: Midbody scale rows 36-38; dorsal scale rows between the parietals and the base of tail 77-84; fourth toe lamellae 47-53; first toe lamellae 14-17; interparietal of intermediate length, longer than broad; prefrontals in relatively broad contact; color pattern being a dorsal ground color of greenish tan to dark chocolate-brown; lighter specimens marked by some scattered dark brown flecks or small spots: upper lateral surface with grayish to slate-tan or brown band, marked by row of light blotches or dashes along dorsal margin.

The genus *Notanemoia gen. nov.* (type species *Gongylus concolor* Duméril, 1851) is separated from the genera *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal also long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae under fourth toe 44-65 (sometimes less in

Cannotbeemoia gen. nov.); midbody scale rows 28-36; number of lamellae under fourth toe 44-65; dorsal scale rows between parietals and base of tail 54-68.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone in having a dorsum that is uniform dark brown to black from snout onto the tail.

The genus *Cannotbeemoia gen. nov.* (type species *Lygosoma samoense loyaltiensis* Roux, 1913) can be separated from the genera *Notanemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters being one or other of:

1/ Fourth toe lamellae 60-81; Scale rows between parietals and base of tail 56-64; SVL at maturity 68-115 mm; color pattern on dorsum nearly uniform greenish, olivaceous, or brownish, marked by few or many small to large dark spots; head frequently marked by a large brownish patch; (*C. sanfordi*), or:

2/ Snout tapered, narrowly rounded at tip; interparietal distinct, long, longer than broad (rarely fused or partly fused with frontoparietals); prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; number of lamellae under fourth toe 44-60, midbody scale rows 30-34; dorsal scale rows between parietals and base of tail 62-71 (rarely less than 64); SVL at maturity 60-73 mm; color of dorsum tannish green, of upper lateral surfaces darker grayish tan, marked by some darker blotches; limbs tan with darker brown mottling (*C. loyaltiensis*).

The genus *Silvaemoia gen. nov.* can be separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Fourth toe lamellae 34-60; dorsal scale rows between parietals and base of tail 52-72; interparietal fused with frontoparietals; prefrontals usually in contact; dorsal color brown with scattered dark or vague transverse lines posteriorly; lateral surfaces slightly darker; undersurface of head and neck yellowish or yellowish-greenish.

The subgenus *Aquilonariemoia subgen. nov.* (type species *Emoia ponapea* Kiester, 1982) within the genus *Emoia* is separated from all other species within the genera *Emoia* Gray, 1845, *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Unfused nasal bones and distinct parietal eye; a palate somewhat intermediate between the alpha and beta types and the unique feature of 13 premaxillary teeth rather than 11, which is otherwise characteristic of other groups of species referred to the genus *Emoia sensu lato*, including the genera and subgenera formally named herein.

Emoia sensu lato including the newly described genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* as well as *Emoa* Girard, 1857 are separated from all other skink genera by the following suite of characters: supranasals present; window in movable lower eyelid; frontoparietals fused; limbs well developed, pentadactyl.

These four characters are shared by all species of thegenera. However, one or both of the derived characters (window in moveable lower eyelid and frontoparietals fused) also characterize some species of *Lipinia* Gray, 1845 and *Leiolopisma* Duméril and Bibron, 1839 being Lygasomine genera lacking supranasals.

Several additional characters are common to all species of *Emoia sensu lato*. but they are not diagnostic because they are also found in most species of several other genera of skinks. These include: (1) rostral broader than high; (2) frontal as long as or longer than broad and in contact with two anterior supraoculars; (3) four large supraoculars; (4) parietals large and in contact; (5) ear prominent, usually with small lobules anteriorly, but always much smaller than eye; (6) rank of adpressed toes from the shortest to the longest: first, second or fifth, third, fourth; (7) tail slender and much longer than body (modified from Brown, 1991).

Distribution: Western and American Samoa, Cook Islands, Vanuatu (including Santo, Pentecost, Malakula, Ambrym, Epi, Efate, and Anatom), New Hebrides, Tonga Islands, Rotuma (Fiji), Fiji Islands including Kadavu, Viti Levu, Taveuni, Taveuni, Rotuma Island (Fiji).

Etymology: "Aint: is Australian slang for "is not", hence the name "Aint-*Emoia*" as said literally means, "is not *Emoia*".

Content: *Aintemoia samoensis* (Duméril and Bibron, 1851) (type species); *A. aneityumensis* (Medway, 1974); *A. dannygoodwini sp. nov.*; *A. latishadarwinae sp. nov.*; *A. michaelguiheneufi sp. nov.*; *A. mokolahi* (Zug, Ineich, Pregill and Hamilton, 2012); *A. nigromarginata* (Roux, 1913); *A. oriva* Zug, (2012); *A. parkeri* (Brown, Pernetta and Watling, 1980); *A. rosssadlieri sp. nov.*, *A. trossula* (Brown and Gibbons, 1986); *A. tuitarere* (Zug, Hamilton and Austin, 2011).

SUBGENUS *PARAEMOIA SUBGEN. NOV.*

LSID urn:lsid:zoobank.org:act:05067961-F476-4836-A2F3-C8DB0A8A2B78

Type species: *Emoia parkeri* Brown, Pernetta and Watling, 1980.

Diagnosis: The subgenus *Paraemoia subgen. nov.* (type species *Emoia parkeri* Brown, Pernetta and Watling, 1980) within the genus *Aintemoia gen. nov.* is separated from all other species within the genera *Emoia*, *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33.

The genus *Aintemoia gen. nov.* is separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by one or other of the following 7 suites of characters:

1/ Fourth toe lamellae 38-44; dorsal scale rows between parietals and base of tail 52-72; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 52-118 mm; number of lamellae below fourth toe 38-44; midbody scale rows 28-34; color pattern: dorsum greenish or grayish, nearly uniform or with dark flecks or spots; blackish lateral bands or series of dark spots on the upper lateral surface (*A. nigromarginata*), or:

2/ Fourth toe lamellae 45-65; dorsal scale rows between parietals and base of tail 54-68; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad; prefrontals narrowly separated to broadly in contact; ground color of dorsum not brown to blackish; SVL at maturity 78-118 mm; number of lamellae under fourth toe 45-65; midbody scale rows 30-34 (usually 32); color pattern: dorsum nearly uniform greenish to greenish tan, or with brownish to blackish spots, usually forming transverse bands (tiger pattern); without large, yellowish blotches dorsolaterally (*A. samoensis*), or:

3/ Dorsal scale rows between parietals and base of tail 72-84. Fourth toe lamellae 36-42; midbody scale rows 40-42 (*A. aneityumensis*), or:

4/ Fourth toe lamellae 43-55; dorsal scale rows between parietals and base of tail 52-72; rostral forming moderate, slightly concave suture with frontonasal; supranasals slightly broader anteriorly, in contact with anterior loreal; prefrontals narrowly separated to moderately in contact; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad and narrow; prefrontals narrowly separated to broadly in contact; one pair of nuchals; anterior loreal slightly shorter than, to nearly as long as, posterior and slightly higher, in contact with first and second, second, or first, second and third upper labials; ground

color of dorsum not brown to blackish; SVL at maturity 66-108 mm; number of lamellae under fourth toe 43-55; Midbody scale rows 32-40 (rarely less than 34); color feature of dorsum usually brownish marked by a few to numerous whitish dashes (*A. michaelguiheneufi sp. nov.*, *A. mokolahi*, *A. rosssadlieri sp. nov.*, *A. trossula*), or:

5/ Number of middorsal scales from nape to base of tail 62-67; interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown dorsally and laterally, neck and trunk with transverse series of dark brown irregular-shaped bars; dark bars medium sized and numerous, dark brown postorbital stripe or spot on rear of head and usually on neck; transverse series of bright yellow streaks on neck and trunk; number of fourth finger lamellae 34-42, (*A. oriva*), or:

6/ Interparietal and frontoparietal scales separate; ground color dark coppery brown to medium brown, number of middorsal scale rows 59-71 and number of fourth finger lamellae 28-42; dorsal surface of trunk boldly marked with transverse series of bright yellow streaks on background of numerous dark bars; number of fourth toe lamellae 50-65, (*A. tuitarere*), or:

7/ Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33, (*A. parkeri, A. dannygoodwini sp. nov., A. latishadarwinae sp. nov.*).

The preceding diagnosis for *Aintemoia gen. nov.* could have been distilled significantly to about two character suites, but the longer definition allows identification to species level in most cases.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 were all formerly included in the so-called *E. samoensis* group and are defined and separated from other species in the genus *Emoia* Gray, 1845 below.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 are separated from species in the genus *Emoia* Gray, 1845, in which they were formerly included, by the following suite of characters: SVL at maturity of 45-122 mm; snout tapered and slightly to moderately depressed; scales smooth; midbody scale rows 26-42; dorsal scale rows 51-84; subdigital lamellae rounded to moderately thinned, fourth toe lamellae 32-81; frontoparietals fused; interparietal nearly always distinct, ranging from long and narrow to small; nasal bones separate; parietal eye present; palate alpha type; dorsal ground color ranges from greenish or greenish tan to light or rarely dark brown, usually with darker markings on dorsal and upper lateral surfaces and sometimes pale spots or dashes.

Emoia sensu lato including the newly described genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* as well as *Emoa* Girard, 1857 are separated from all other skink genera by the following suite of characters: supranasals present; window in movable lower eyelid; frontoparietals fused; limbs well developed, pentadactyl.

These four characters are shared by all species of thegenera. However, one or both of the derived characters (window in moveable lower eyelid and frontoparietals fused) also characterize some species of *Lipinia* Gray, 1845 and *Leiolopisma* Duméril and Bibron, 1839 being Lygasomine genera lacking supranasals.

Several additional characters are common to all species of *Emoia sensu lato*. but they are not diagnostic because they are also found in most species of several other genera of skinks. These include: (1) rostral broader than high; (2) frontal as long as or longer than broad and in contact with two anterior supraoculars; (3) four large supraoculars; (4) parietals large and in contact; (5) ear prominent, usually with small lobules anteriorly, but always much smaller than eye; (6) rank of adpressed toes from the shortest to the longest: first, second or fifth, third, fourth; (7) tail slender and much longer than body (modified from Brown, 1991).

Etymology: Para in Latin means near or almost and hence the full subgenus name means “almost *Emoia*”.

Content: *Cannotbeemoia* (*Paraemoia*) *parkeri* (Brown, Pernetta and Watling, 1980) (type species); *A. dannygoodwini sp. nov.*; *A. latishadarwinae sp. nov.*.

GENUS *CAERULEOCAUDASCINCUS GEN. NOV.*

LSID urn:lsid:zoobank.org:act:46EE6971-2499-40D4-B135-BFE98397F89B

Type species: *Mocoa caeruleocauda* De Vis, 1892.

Diagnosis: The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Not properly determined, but believed to include The Marianas. Carolines. Marshalls, Palaus and Fiji in the Pacific Basin region, and Vanuatu. Solomons. Bismarcks, New Guinea. Moluccas, Celebes, and at least northern Borneo and southern Philippines (Brown, 1991).

Etymology: *Caeruleocaudascincus* in Latin literally means blue tailed skink.

Content: *Caeruleocaudascincus caeruleocauda* (De Vis, 1892) (type species); *C. brettbarnetti sp. nov.*, *C. clivebennetti sp. nov.*; *C. craigbennetti sp. nov.*; *C. danielbenneti sp. nov.*; *C. drubennetti sp. nov.*; *C. jaibennetti sp. nov.*; *C. kamahlbenneti sp. nov.*; *C. lucybennettae sp. nov.*; *C. stevebennetti sp. nov.*; *C. triviale* (Schüz, 1929); *C. werneri* (Vogt,1912); *C. williambennetti sp. nov.*.

GENUS VENTRIPALLIDUSCINCUS GEN. NOV.

LSID urn:lsid:zoobank.org:act:FCA3E8DC-8B8F-474B-A893-DAC39B50661B

Type sp**ecies:** *Emoia schmidti* Brown, 1953.

Diagnosis: The genus *Ventripallidusscincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes only the species until now known as *Emoia schmidti* Brown, 1953 and the species *Ventripallidusscincus graysonoconnori sp. nov.* until now treated as a population of the former. Both are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11; Parietal eye present. Anterior loreal distinctly shorter and higher.Nasal bones not fused; palate beta-type; scale rows between parietals and base of tail 49-64; interparietal fused with frontoparietals. Pale, narrow middorsal stripe absent from head and usually from body (if present on body, grayish tan to golden light brown in colour, not less than two scale rows in breadth and not well-defined on the upper edge). Midbody scale rows 30-36; number of thin, bladelike fourth toe lamellae is 69-83; ground color of middorsal region (two full-scale rows and two half-scale rows) grayish tan to golden light brown, which merges anteriorly with the bronze-brown of the neck and head. The narrow, pale dorsolateral stripes begin in the supraciliary region; upper lateral surfaces dark brown to blackish with scattered pale scales. The tail is grey to blue-green and with darker markings which in *Ventripallidusscincus graysonoconnori sp. nov.* forms a pattern of paired spots (modified from Brown 1991).

Distribution: New Georgia and associated smaller islands in the Solomons.

Etymology: *Ventripallidusscincus* in Latin means pale bellied skink.

Content: *Ventripallidusscincus schmidti* (Brown, 1953) (type species); *V. graysonoconnori sp. nov*. (this paper).

SUBGENUS *AQUILONARIEMOIA SUBGEN. NOV.*

LSID urn:lsid:zoobank.org:act:26BE9B1E-AF5D-4960-A6B5-26E4F8829D1F

Type species: *Emoia ponapea* Kiester, 1982.

Diagnosis: The subgenus *Aquilonariemoia subgen. nov.* (type species *Emoia ponapea* Kiester, 1982) within the genus *Emoia* is separated from all other species within the genera *Emoia*, *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Unfused nasal bones and distinct parietal eye; a palate somewhat intermediate between the alpha and beta types and the unique feature of 13 premaxillary teeth rather than 11, which is otherwise characteristic of other groups of species referred to the genus *Emoia sensu lato*, including the genera and subgenera formally named herein.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 were all formerly included in the so-called *E. samoensis* group and are defined and separated from other species in the genus *Emoia* Gray, 1845 below.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 are separated from species in the genus *Emoia* Gray, 1845, in which they were formerly included, by the following suite of characters: SVL at maturity of 45-122 mm; snout tapered and slightly to moderately depressed; scales smooth; midbody scale rows 26-42; dorsal scale rows 51-84; subdigital lamellae rounded to moderately thinned, fourth toe lamellae 32-81; frontoparietals fused; interparietal nearly always distinct, ranging from long and narrow to small; nasal bones separate; parietal eye present; palate alpha type; dorsal ground color ranges from greenish or greenish tan to light or rarely dark brown, usually with darker markings on dorsal and upper lateral surfaces and sometimes pale spots or dashes.

Emoia sensu lato including the newly described genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* as well as *Emoa* Girard, 1857 are separated from all other skink genera by the following suite of characters: supranasals present; window in movable lower eyelid; frontoparietals fused; limbs well developed, pentadactyl.

These four characters are shared by all species of thegenera. However, one or both of the derived characters (window in moveable lower eyelid and frontoparietals fused) also characterize some species of *Lipinia* Gray, 1845 and *Leiolopisma* Duméril and Bibron, 1839 being Lygasomine genera lacking supranasals.

Several additional characters are common to all species of *Emoia sensu lato*. but they are not diagnostic because they are also found in most species of several other genera of skinks. These include: (1) rostral broader than high; (2) frontal as long as or longer than broad and in contact with two anterior supraoculars; (3) four large supraoculars; (4) parietals large and in contact; (5) ear

prominent, usually with small lobules anteriorly, but always much smaller than eye; (6) rank of adpressed toes from the shortest to the longest: first, second or fifth, third, fourth; (7) tail slender and much longer than body (modified from Brown, 1991).

Etymology: Aquilonaris means northern in Latin. Hence *Aquilonariemoia* translates roughly as northern *Emoia* in reflection of the northern distribution of the subgenus.

Content: *Cannotbeemoia* (*Aquilonariemoia*) *ponapea* (Kiester, 1982) (monotypic).

GENUS *SHIREENHOSERSCINCUS GEN. NOV.*

LSID urn:lsid:zoobank.org:act:9537C64A-FB53-420C-B282-470F815C23E2

Type species: *Shireenhoserscincus shireenhoserae sp. nov.* (this paper).

Diagnosis: *Shireenhoserscincus gen. nov.* as a genus includes the putative species *Lygosoma stellatum* Boulenger, 1900 and in effect includes that putative species only as recognized to date by authors who have reviewed the species complex, including most importantly Taylor, 1963 and more recently Bacon (1967) as well as Stuart and Emmett (2006). That putative species is herein split four ways, using two existing names and formally naming two other species for the first time, based on well-established geographical disjuncture of populations combined with significant morphological divergence between each, further separated by significant long-term habitat and competing species boundaries.

The genus *Sphenomorphus sensu lato* Strauch 1887 is a paraphyletic assemblage of species diagnosed as follows: lacking supranasal scales, has a deeply sunk tympanum, five digits on both limbs, fewer than 30 subdigital lamellae on the fourth toe, two rows of supradigital scales on the fourth toe, inner preanal scales overlapping the outer preanal scales and lower eyelids composed of multiple small scales (Lim 1998; Taylor 1963).

This diagnosis also applies to *Shireenhoserscincus gen. nov.*.

Shireenhoserscincus gen. nov. is however separated from *Sphenomorphus* and therefore diagnosed as separate, by having an external ear opening present; 22-24 mid-body scale rows; two median rows of dorsal scales that are distinctly widened as opposed to the other dorsal scale; an absence of white edges to the free margins of the upper and lower eyelids; adpressed limbs overlapping; convex rostral; a pair of enlarged preanal scales; bronze-brown coloration above, with scattered, light-colored spots; black spots forming vertebral and dorsolateral longitudinal stripes on body; black spots on upper and lower lips; and tail lighter in coloration than body, with narrow, transverse, black bands not connecting ventrally.

The species described as *Lygosoma annamiticum* Boettger, 1901 Type locality: Phuc-son (Vietnam), since synonymised with "*Spenomorphus stellatus*" is in fact a separate and geographically disjunct species. It is differentiated from the latter by reddish, as opposed to bluish iris in life and a dorsal pattern including mottled black pigment down the midline tending to form an ill-defined and irregular shaped line, versus no such arrangement in *S. stellatus* and for other diagnostic differences and reasons given elsewhere in this paper or in Table 1, at the top of page 28 of Bacon (1967).

Two other species in the genus, formerly treated as conspecific with "*Spenomorphus stellatus*" are formally named for the first time in this paper and included in this genus.

The four species, now comprising the total in this newly named genus are readily separated from one another by the comparative diagnostic characters published in Table 1, at the top of page 28 of Bacon (1967), under the headings "South Viet Nam", "Thailand", "Borneo" and "Malaya", the first and fourth of these coresponding to two previously named species and the other two columns corresponding to the two species named in this paper.

Distribution: Vietnam, Thailand, Cambodia, Peninsular Malaysia, Borneo.

Etymology: The name *Shireenhoserscincus* literally means Shireen Hoser Skink, named in honour of my wife, Shireen Hoser in recognition of many years important wildlife conservation work. The gender assignment is intended as in Australian slang terms it is said that this woman has "balls".

Content: *Shireenhoserscincus stellatus* (Boulenger, 1900) (type species); *S. annamiticum* (Boettger, 1901); *S. daranini sp. nov.* (this paper); *S. shireenhoserae sp. nov.* (this paper).

EMOIA KIMANIADILBODENI SP. NOV.

LSID urn:lsid:zoobank.org:act:89409DCF-AEF5-465E-89AF-9BC392AD0ADE

Holotype: A preserved specimen at the Museum of Natural History, London, UK, specimen number: 1984.994 collected from Mt. Nok, Waigeo Island, Irian Jaya, Indonesia. This facility allows access to its holdings.

Paratype: A preserved specimen at the Museum of Natural History, London, UK, specimen number: 1984.995 collected from

Mt. Nok, Waigeo Island, Irian Jaya, Indonesia.

Diagnosis: *Emoia kimaniadilbodeni sp. nov.* from Mount Nok, Waigeo Island, Irian Jaya, Indonesia is similar in most respects to *Emoia oribata* Brown, 1953, to which it would key out as using the diagnosis in Brown (1991).

However *E. kimaniadilbodeni sp. nov.* differ in color pattern from that typical of all other similar or closely related species including *E. oribata*. They lack the distinctive mottled pattern on the sides of the neck and flanks typical of *E. oribata* Brown, 1953 and they lack the dorsal, transverse banded pattern typical of *E. oribata*.

They have more prominent whitish spots on the side of the neck and anterior flanks than does the similar *E. tropidolepis* (Boulenger, 1914) and also lack the pale dorsolateral line, which is common for that species. *E. kimaniadilbodeni sp. nov.* is further diagnosed by having distinct nuchals and three to five strong keels on the dorsal scales, which distinguish them from *E. callisticta* (Peters and Doria, 1878). Premaxillary teeth number about 11; dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44, large parietal scale is absent, sixth upper labial is enlarged and under the eye.

Distribution: Known only from the type locality, Mt. Nok, Waigeo Island, Irian Jaya, Indonesia.

Etymology: Named in honour of Kimani Adil Boden, a human rights lawyer based in Melbourne, Victoria, Australia. See the full etymology in Hoser (2018a).

EMOIA TIMDALEI SP. NOV.

LSID urn:lsid:zoobank.org:act:04178ADB-6282-49D4-9BD3-AB1CD9277658

Holotype: A preserved specimen at the Museum of Natural History, London, UK, specimen number 1984.991 collected from Mount Baduri, Japen (AKA Yapen) Island, Irian Jaya, Indonesia. This facility allows access to its holdings.

Diagnosis: *Emoia timdalei sp. nov.* is separated from all other similar species in the genus *Emoia* Gray, 1845 in the so-called "*baudini*" species group, as defined by Brown (1991) at pages 15-17, by the following unique combination of characters: Head and snout moderately tapered and depressed; dorsal scales smooth; midbody scale rows 31-42; dorsal scale rows 42-68; subdigital lamellae under fourth toe rounded, numbering 23-48; interparietal fused with frontoparietal (rarely separated); anterior loreal shorter and higher than posterior; sixth upper labial enlarged and beneath eye; nasal bones fused; parietal eye absent; palate alpha type; dorsal ground color iridescent tan, or olive brown with or without darker markings including on neck not including white spots on the lower side of neck; lateral surfaces usually with a darker band. The preceding suite of characters also separates this species from all other species within *Emoia* as defined herein (this paper), as well as the genera formally named for the first time within this paper, that included species previously placed within *Emoia sensu lato* or within *Emoia* as defined by Brown (1991).

Distribution: Known only from the type locality of Mount Baduri, Japen Island, Irian Jaya, Indonesia.

Etymology: Named in honour of Tim Dale of Warrandyte, Victoria, Australia in recognition for his services to downhill snow skiing and snowboarding in Australia.

EMOIA KARKARENSIS SP. NOV.

LSID urn:lsid:zoobank.org:act:3949E073-6BCA-4A92-8F8D-97C7D8C1B8BE

Holotype: A preserved specimen in the Australian Museum, Sydney, New South Wales, Australia, specimen number R.24708 collected at Miak, Karkar Island, Madang District, Papua New Guinea, Latitude 4.60 S., Longitude 145.90 E. The Australian Museum, Sydney, New South Wales, Australia allows access to its holdings.

Paratypes: 31 preserved specimens in the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R24713-14, R24716-17, R24755, R24935-41, R25408, R25538, R25675-76, R25724, R26726, R25106-07, R25200, R25210, R25594-95, R25600, R25644, R25759, R26023, R28861-62 and R28874.

Diagnosis: *Emoia karkarensis sp. nov.* known only from Kar Kar Island, Madang Province, Papua New Guinea, has until now been treated as an insular population of *Emoia obscura* (de Jong, 1927) as defined by Brown (1991). However it is most readily separated from *E. obscura* and the similar newly described species *E. tonylovelinayi sp. nov.* on the basis that the dorsum has numerous spots arranged in a relatively indistinct pattern, versus only a few spots on dorsum in *E. obscura* and *E. tonylovelinayi sp. nov.* as well as a yellowish white venter, versus greyish white venter in *E. obscura* and *E. tonylovelinayi sp. nov.*.
Brown (1991), in table 4 on page 25, showed statistically significant differences between *Emoia karkarensis sp. nov.* (identified as a population of *E. obscura*), *E. tonylovelinayi sp. nov.* from Central Province, PNG, (also identified as a population of *E. obscura*) and *E. obscura sensu stricto* (treated herein as the entirety of that species-level taxon) from Irian Jaya in terms of counts of dorsal scale rows, mid-body scale rows and the position of the upper labial under the eye (5 or 6).

In summary, *E. karkarensis sp. nov.* averages a statistically significantly lower average count for mid-body and dorsal scale rows than the other two species, based on sizeable samples.

E. obscura has the sixth upper labial connecting with the eye, versus the fifth in both *E. karkarensis sp. nov.* and *E. tonylovelinayi sp. nov.*.

E. tonylovelinayi sp. nov. shares the same dorsal colouration as *E. obscura*, separating it from *E.karkarensis sp. nov.*, other than the obvious small spots on the limbs, which it shares with *E. karkarensis sp. nov.*, in turn separating it from *E. obscura*.

Distribution: *Emoia karkarensis sp. nov.* is known only from Kar Kar Island, Madang Province, Papua New Guinea.

Etymology: Named in reflection of where this taxon is known to occur, namely Kar Kar Island, Papua New Guinea.

EMOIA TONYLOVELINAYI SP. NOV.

LSID urn:lsid:zoobank.org:act:5BC8FB50-8FD7-4D74-9C4D-81B436A192AF

Holotype: A preserved specimen in the American Museum of Natural History, New York, USA, specimen number AMNH 74060, collected at Cape Vogel, Milne Bay, Papua New Guinea, Latitude 9.67 S., Longitude 150.02 E.

This facility allows access to its holdings.

Paratypes: 9 preserved specimens in the American Museum of Natural History, New York, USA, specimen numbers AMNH 74030, 74154, 74160, 74172, 74183, 74196, 74207, 74252 and 74316 collected at Cape Vogel, Milne Bay, Papua New Guinea, Latitude 9.67 S., Longitude 150.02 E.

Diagnosis: *Emoia karkarensis sp. nov.* known only from Kar Kar Island, Madang Province, Papua New Guinea, has until now been treated as an insular population of *Emoia obscura* (de Jong, 1927) as defined by Brown (1991). However it is most readily separated from *E. obscura* and the similar species *Emoia tonylovelinayi sp. nov.* on the basis that the dorsum has numerous spots arranged in a relatively indistinct pattern, versus only a few spots on dorsum in *E. obscura* and *E. tonylovelinayi sp. nov.* as well as a yellowish white venter, versus greyish white venter in *E. obscura* and *E. tonylovelinayi sp. nov.*.
Brown (1991), in table 4 on page 25, showed statistically significant differences between *Emoia karkarensis sp. nov.* (identified as a population of *E. obscura*), *E. tonylovelinayi sp. nov.* from Central Province, PNG, (also identified as a population of *E. obscura*) and *E. obscura sensu stricto* (treated herein as the entirety of that species-level taxon) from Irian Jaya in terms of counts of dorsal scale rows, mid-body scale rows and the position of the upper labial under the eye (5 or 6).

In summary, *E. karkarensis sp. nov.* averages a statistically significantly lower average count for mid-body and dorsal scale rows than the other two species, based on sizeable samples.

E. obscura has the sixth upper labial connecting with the eye, versus the fifth in both *E. karkarensis sp. nov.* and *E. tonylovelinayi sp. nov.*.

E. tonylovelinayi sp. nov. shares the same dorsal colouration as *E. obscura*, separating it from *E.karkarensis sp. nov.*, other than the

obvious small spots on the limbs, which it shares with *E. karkarensis sp. nov*., in turn separating it from *E. obscura*.

Distribution: Island New Guinea, generally west of the Huon Peninsula, including, Morobe, Northern Province, Central Province and Milne Bay.

Etymology: Named in honour of Tony Love-Linay of Taylors Lakes, Victoria, Australia and also Albury-Woodonga, Australia and his fantastic staff at Reconnect Telecommunications, who runs a network of mobile phone stores across southern New South Wales and Victoria in recognition of his assistances to the local community and their telecommunications needs, various overseas charities he works with and assisting Snakebusters, Australia's best reptiles shows with logistical support for their ongoing wildlife conservation and research programmes in south-east Australia, including via telecommunications support, printing and copying. On one occasion Tony Love-Linay did emergency motor vehicle repairs to a severely immobilized Toyota Land Cruiser that he meticulously removed the engine from, pulled apart into numerous fragments laid across the floor of the lounge of the Snakeman's house and then diligently re-assembled in working order.

EMOIA ANGGIGIDAENSIS SP. NOV.

LSID urn:lsid:zoobank.org:act:894854B9-20D8-4C89-BD5A-9340C8BBC1E9

Holotype: A preserved specimen at the The Bernice Pauahi Bishop Museum, Honolulu, Hawaii, USA, specimen number: BPBM 6880, collected at Kampong Surerei, Anggi Gida Lake, Irian Jaya, Indonesia, Latitude 1.36 S., Longitude 133.86 E. This facility allows access to its holdings.

Paratypes: 30 preserved specimens at the The Bernice Pauahi Bishop Museum, Honolulu, Hawaii, USA, specimen numbers BPBM 6881-95, 6897-916, 6918, 6921-22, 6924-25, collected at Anggi Gida Lake, Irian Jaya, Indonesia, Latitude 1.36 S., Longitude 133.86 E.

Diagnosis: *Emoia anggigidaensis sp. nov*. known only from the immediate vicinity of the type locality at Anggi Gida Lake, Irian Jaya, Indonesia has until now been treated as a regional and divergent population of *Emoia bogerti* (Brown, 1953) as defined by Brown (1991). It is however readily separated from that species from further east in Irian Barat by lower counts for midbody and dorsal scale rows. These are 30-31 midbody scale rows in *E. anggigidaensis sp. nov*. versus 32-33 in *E. bogerti* from the type locality of that taxon and the nearby areas it occurs, being Wissel Lakes and Baliem areas in Irian Jaya. *E. anggigidaensis sp. nov.* has 56-58 dorsal scale rows versus 59-60 in *E. bogerti.*

Distribution: *Emoia anggigidaensis sp. nov*. is known only from the immediate vicinity of the type locality at Anggi Gida Lake, Irian Jaya, Indonesia.

Etymology: Named in reflection of where the species occurs, namely Anggi Gida Lake in Irian Jaya (noting that the spelling of the locality is subject to variation).

EMOIA STEFANBROGHAMMERI SP. NOV.

LSID urn:lsid:zoobank.org:act:6BC6BA3F-293A-43B3-9DE2-40183B8C6A9D

Holotype: A preserved specimen at the Museum of Natural History in London, UK, specimen number BMNH 1984.912.945 collected at Mount Nok, Waigeo Island, Irian Jaya, Indonesia.

This facility allows access to its holdings.

Diagnosis: *Emoia stefanbroghammeri sp. nov*. has until now been referred to as a western population of *Emoia veracunda* Brown, 1953, as diagnosed by Brown (1991) at page 26. It is however readily separated from *E. veracunda* by having 46-49 dorsal scale rows, versus 43-45 in *E. veracunda. E. stefanbroghammeri sp. nov*. is further separated from *E. veracunda* by having 35-37 fourth toe lamellae, versus 31-33 in *E. veracunda.*
Emoia euanedwardsi sp. nov. from the Mimika and Otakwa drainages in southern Irian Jaya are similar in most respects to *E. stefanbroghammeri sp. nov*. (see above), including by having 46-49 dorsal scale rows, but are separated from that species and *E. veracunda* by having 34 fourth toe lamellae.

Distribution: *Emoia stefanbroghammeri sp. nov*. includes all populations previously referred to as *E. veracunda* Brown, 1953 from west of Japen Island (inclusive) in Irian Jaya and either north of the central cordillera or in the Vogelkop region and immediately adjacent islands. Specimens from the east of Irian Jaya and northern Papua New Guinea, and the far east of New Guinea referred to as *E. veracunda* remain as that species. Specimens referred to as *E. veracunda* from the Mimika and Otakwa drainages in southern Irian Jaya are now referred to as the new species *E. euanedwardsi sp. nov*..

Etymology: Named in honour of well-known German snake breeder and businessman, Stefen Broghammer, who happens to be the world's foremost expert on "Ball Pythons", usually referred to as "*Python regius* (Shaw, 1802)" in recognition to his services to conservation spanning many decades. The genus *Broghammerus* (for the Reticulated and Timor Pythons) was also named in his honour. The name "*Malayopython*" later coined by Wolfgang Wuster and his gang of thieves is an illegal junior synonym and should not be used.

The originally published papers naming "*Malayopython*", being published in several non-identical forms explicitly breached Article 8.1.3 of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) and is therefore not an available name under the Code.

EMOIA EUANEDWARDSI SP. NOV.

LSID urn:lsid:zoobank.org:act:0D3964D1-CB9C-47A6-9AFD-D783B7AA4BD5

Holotype: A preserved specimen at the Museum of Natural History in London, UK, specimen number BMNH 1913.10.31.155-164.a-e collected at Mimika River, Irian Jaya, Indonesia.

This facility allows access to its holdings.

Diagnosis: *Emoia stefanbroghammeri sp. nov*. has until now been referred to as a western population of *Emoia veracunda* Brown, 1953, as diagnosed by Brown (1991) at page 26. It is however readily separated from *E. veracunda* by having 46-49 dorsal scale rows, versus 43-45 in *E. veracunda. E. stefanbroghammeri sp. nov*. is further separated from *E. veracunda* by having 35-37 fourth toe lamellae, versus 31-33 in *E. veracunda.*
Emoia euanedwardsi sp. nov. from the Mimika and Otakwa drainages in southern Irian Jaya are similar in most respects to *E. stefanbroghammeri sp. nov*. (see above), including by having 46-49 dorsal scale rows, but are separated from that species and *E. veracunda* by having 34 fourth toe lamellae.

Distribution: *Emoia stefanbroghammeri sp. nov*. includes all populations previously referred to as *E. veracunda* Brown, 1953 from west of Japen Island (inclusive) in Irian Jaya and either north of the central cordillera or in the Vogelkop region and immediately adjacent islands. Specimens from the east of Irian Jaya and northern New Guinea, and the far east of New Guinea referred to as *E. veracunda* remain as that species. Specimens referred to as *E. veracunda* from the Mimika and Otakwa drainages in southern Irian Jaya are now referred to as the new species *E. euanedwardsi sp. nov*..

Etymology: Named in honour of well-known Australian herpetologist, Euan Edwards of the Gold Coast in Queensland, Australia for services to wildlife conservation and herpetology spanning some decades, including by way of significant fieldwork in various parts of the world including Africa, Madagascar, Australia and the United States of America.

EMOIA MARTINMULVANYI SP. NOV.

LSID urn:lsid:zoobank.org:act:B9C9BD65-D3A3-4032-A8E6-6263462119B4

Holotype: A preserved specimen at the Museum of Natural History in London, UK, specimen number 1984.907-909 collected at Mount Nok, Waigeo Island, Irian Jaya, Indonesia.

This facility allows access to its holdings.

Diagnosis: Both *Emoia martinmulvanyi sp. nov*. and *E. paulmulvanyi sp. nov.* have until now been treated as populations of *E. klossi* (Boulenger, 1914) as diagnosed by Brown (1991).

All three species are unique in the so-called *E. baudini* (Duméril and Bibron, 1839) group of species group by their significantly larger adult size and relatively longer limbs as detailed by Brown

(1991). The three species are also different from the rest in the species group in that the seventh upper labial is enlarged and below the eye, as opposed to number 5 or 6 in all other species.

Emoia martinmulvanyi sp. nov. is separated from the other two species by the presence of very slight keels (absent in the other two). *E. paulmulvanyi sp. nov.* is separated from *E. klossi* by having 44-46 fourth toe lamellae, versus 42 in *E. klossi* and 32-34 midbody scale rows versus 30 in *E. klossi.*

Distribution: *Emoia martinmulvanyi sp. nov*. is currently known only from Waigeo Island Irian Jaya, Indonesia. *E. paulmulvanyi sp. nov.* is known only from the East Sepik Province in the north of Papua New Guinea. *E. klossi* is currently only known from the Utakwa River area south of the central cordillera in Irian Jaya.

Etymology: Named in honour of Martin Mulvany of Blackburn, Victoria, Australia, owner of "One Man's Trash" in recognition to his services to wildlife conservation through his logistical assistances to Snakebusters, Australia's best reptile shows in Melbourne, Australia.

EMOIA PAULMULVANYI SP. NOV.

LSID urn:lsid:zoobank.org:act:32B437C0-AAD2-4F1C-8151-9B0D60E78D57

Holotype: A preserved specimen at the American Museum of Natural History in New York, USA, specimen number R100274 collected at Mount Nibo, East Sepik Province, Papua New Guinea.

This facility allows access to its holdings.

Diagnosis: Both *Emoia paulmulvanyi sp. nov*. and *E. martinmulvanyi sp. nov.* have until now been treated as populations of *E. klossi* (Boulenger, 1914) as diagnosed by Brown (1991).

All three species are unique in the so-called *E. baudini* (Duméril and Bibron, 1839) group of species group by their significantly larger adult size and relatively longer limbs as detailed by Brown (1991). The three species are also different from the rest in the species group in that the seventh upper labial is enlarged and below the eye, as opposed to number 5 or 6 in all other species.

Emoia paulmulvanyi sp. nov. is separated from *E. klossi* by having 44-46 fourth toe lamellae, versus 42 in *E. klossi* and 32-34 midbody scale rows versus 30 in *E. klossi. E. martinmulvanyi sp. nov.* is separated from the other two species by the presence of very slight keels (absent in the other two).

Distribution: *Emoia paulmulvanyi sp. nov.* is known only from the East Sepik Province in the north of Papua New Guinea. *E. martinmulvanyi sp. nov.* is currently only known from Waigeo Island Irian Jaya, Indonesia. *E. klossi* is currently only known from the Utakwa River area south of the central cordillera in Irian Jaya.

Etymology: Named in honour of Paul Mulvany of Blackburn, Victoria, Australia in recognition to his services to wildlife conservation through his logistical assistances to Snakebusters, Australia's best reptile shows in Melbourne, Australia, including through emergency repairs to the reptile breeding facility as required. See also Hoser (2012) at pages 71-72.

EMOIA PAULWOOLFI SP. NOV.

LSID urn:lsid:zoobank.org:act:EC470A11-C281-4D7F-9F6B-97FF44A03C29

Holotype: A preserved specimen at the California Academy of Sciences, San Francisco, USA, specimen number CAS HERP 107754 collected at Mendi in the Southern Highlands Province, Papua New Guinea, Latitude 6.14 S., Longitude 143.66 E.

This facility allows access to its holdings.

Paratypes: 5 preserved specimens at the California Academy of Sciences, San Francisco, USA, specimen number CAS HERP 107756-107760 collected at Mendi in the Southern Highlands Province, Papua New Guinea, Latitude 6.14 S., Longitude 143.66 E.

Diagnosis: Both *Emoia paulwoolfi sp. nov.* and *Emoia jamesbondi sp. nov.* have until now been treated as populations of *Emoia loveridgei* Brown (1953) as defined by Brown (1991). *E. loveridgei* is herein restricted to the region north-west of the Huon Peninsula, north of the central cordillera, through northern Papua New Guinea and nearby parts of Irian Jaya. *E. paulwoolfi sp. nov.* from south of the Cordillera in Southern Highlands, Western Highlands and Western Provinces in Papua New Guinea is readily separated from *E. loveridgei* by having 51-58 dorsal scale rows, versus 45-50 (rarely higher) in *E. loveridgei.*

E. loveridgei is readily separated from the other two species by having a head and tail noticeably darker in colour than the rest of the body, versus not so in the other two species. *E. jamesbondi sp. nov.* from the north side of the central cordillera, south-east of the Huon Peninsula in Papua New Guinea is separated from both *E. loveridgei* and *E. paulwoolfi sp. nov.* by the presence of a thick, well defined white-lateral line on the lower flank, bounded on the upper side by blackish-brown versus somewhat thinner and less well defined and bounded by dark brown in the other two species.

E. jamesbondi sp. nov. also has distinct irregular light markings on the limbs, not seen in either *E. loveridgei* and *E. paulwoolfi sp. nov.*. *E. jamesbondi sp. nov.* is depicted in life in Brown (1991) page 30 at top.

Distribution: *E. paulwoolfi sp. nov.* is confined to the region south of the Cordillera in Southern Highlands, Western Highlands and Western Provinces in Papua New Guinea.

Etymology: Named in honour of Paul Woolf of Walloon in Queensland, Australia for services to herpetology spanning many decades, including as foundation president of the Herpetological Society of Queensland Incorporated. He also performed a valuable role in facilitating the legalization of private ownership of reptiles in Australia post-dating a 20 year period in which it was effectively banned in Australia (1973-1993).

EMOIA JAMESBONDI SP. NOV.

LSID urn:lsid:zoobank.org:act:0F19ED2A-57A1-4CF9-8C62-F7BEB5D45AF2

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.80865 collected at Bulolo, Morobe District, Papua New Guinea Latitude 7.11 S., Longitude 146.39 E.

This facility allows access to its holdings.

Paratypes: 1/ A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.80866 collected at Bulolo, Morobe District, Papua New Guinea Latitude 7.11 S., Longitude 146.39 E.

2/ A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.64542 collected at Wau, Morobe District, Papua New Guinea, Latitude 7.20 S., Longitude 146.43 E.

Diagnosis: Both *Emoia jamesbondi sp. nov.* and *Emoia paulwoolfi sp. nov.* have until now been treated as populations of *Emoia loveridgei* Brown (1953) as defined by Brown (1991). *E. loveridgei* is herein restricted to the region north-west of the Huon Peninsula, north of the central cordillera, through northern Papua New Guinea and nearby parts of Irian Jaya. *E. paulwoolfi sp. nov.* from south of the Cordillera in Southern Highlands, Western Highlands and Western Provinces in Papua New Guinea is readily separated from *E. loveridgei* by having 51-58 dorsal scale rows, versus 45-50 (rarely higher) in *E. loveridgei.*

E. loveridgei is readily separated from the other two species by having a head and tail noticeably darker in colour than the rest of the body, versus not so in the other two species. *E. jamesbondi sp. nov.* from the north side of the central cordillera, south-east of the Huon Peninsula in Papua New Guinea is separated from both *E. loveridgei* and *E. paulwoolfi sp. nov.* by the presence of a thick, well defined white-lateral line on the lower flank, bounded on the upper side by blackish-brown versus somewhat thinner and less well defined and bounded by dark brown in the other two species.

E. jamesbondi sp. nov. also has distinct irregular light markings on the limbs, not seen in either *E. loveridgei* and *E. paulwoolfi sp. nov.*. *E. jamesbondi sp. nov.* is depicted in life in Brown (1991) page 30 at top.

Distribution: *E. jamesbondi sp. nov.* occurs on the north side of the central cordillera, south-east of the Huon Peninsula in Papua New Guinea

Etymology: Named in honour of James Bond of Park Orchards,

Victoria, Australia for services to herpetology including his valuable assistances with the day-to-day tasks of running Snakebusters: Australia's best reptiles shows and the scientific research projects of this author and the rest of the dedicated team.

EMOIA RICHARDWARNERI SP. NOV.

LSID urn:lsid:zoobank.org:act:0AF43673-A4F9-4AA4-887B-1A9D2856E420

Holotype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, specimen number: MCZ 112250 collected at Mimika River in southern Irian Jaya (erroneously listed as a specimen of "*Emoia baudini*"). This facility allows access to its holdings.

Paratype: A preserved specimen in the Museum of Natural History, London, UK, specimen number BMNH 1913.10.31,164F, from the Mimika River in southern Irian Jaya.

Diagnosis: *Emoia richardwarneri sp. nov.* has until now been treated as a western outlier population of *E. physicina* Brown and Parker, 1985 as defined by Brown (1991), being known only from the Mimika River area in south west Irian Jaya. However it can be readily separated from *E. physicina* from south-western Papua New Guinea and immediately adjacent Irian Jaya by the presence of strongly keeled dorsals versus only weakly keeled in *E. physicina.*

E. richardwarneri sp. nov. and *E. physicina* Brown and Parker, 1985 are separated from all other species in the genus *Emoia* Gray, 1845 and genera consisting species formerly treated as being within *Emoia* as identified in this paper by the following suite of characters: One pair of enlarged nuchals; dorsal scales with three to five weak or strong keels, barely overlapping, not forming points at posterior edge of scale and strictly limited to posterior half of body. Fifth (rarely sixth) upper labial enlarged and below eye; number of dorsal scale rows between parietals and base of tail is 45-52 (usually less than 50), 35-42 fourth toe lamellae, snout-vent-length at maturity is 38-51 mm, dorsal ground colour is a medium brown with or without darker spots outside vertebral rows. 5-6 rows of the upper lateral surface are darker brown, nearly uniform or with scattered pale scales.

Distribution: *E. richardwarneri sp. nov.* is known only from the area of the type locality being the Mimika River area in south west Irian Jaya.

Etymology: Named in honour of Richard Warner of Donvale, Victoria, Australia for his extended services to the care of the elderly and otherwise disabled people, done over many years and without ever asking for payment or any other financial rewards. See also Hoser (2017) at page 22.

EMOIA MORRIEDORISIOI SP. NOV.

LSID urn:lsid:zoobank.org:act:1EAACC55-34F5-4941-9A0C-EF93CA1D0D9F

Holotype: A preserved specimen at the Bernice Pauahi Bishop Museum, Honolulu, Hawaii, USA, specimen number Herp-BPBM 10602, collected in the vicinity of the Frieda Mining Base Camp, (Frieda River project), Western Province, Papua New Guinea.

Paratypes: Two preserved specimens at the Bernice Pauahi Bishop Museum, Honolulu, Hawaii, USA, specimen numbers Herp-BPBM 10603 and Herp-BPBM 10604, collected in the vicinity of the Frieda Mining Base Camp, (Frieda River project), Western Province, Papua New Guinea.

Diagnosis: Until now *Emoia morriedorisioi sp. nov.* has been treated as a southern (PNG) population of the species *E. battersbyi* (Proctor, 1923), as defined by Brown (1991), known from north of the Central Cordillera, from Toem and Jobi Island in Irian Jaya in the west, through lowland areas to the east as far as Lae, Huon Gulf. *Lygosoma ahli* Vogt, 1932 is a synonym of *E. battersbyi* (Shea, 2016).

Emoia morriedorisioi sp. nov. is readily separated from *E. battersbyi* by having less than 40 lamellae under the fourth toe, versus more than 40 in *E. battersbyi.*

Both *E. morriedorisioi sp. nov.* and *E. battersbyi* are separated from all other *Emoia* species by the following suite of characters: One pair of enlarged nuchals, 47-56 dorsal scale rows between the parietals and base of tail, 32-40 mid-body scale rows, three to five weak keels on the dorsal scales, dorsal colour not exhibiting dark and light transverse bands, 38-59 rounded lamellae on the fourth toe, sixth (rarely number 5 or 7) upper labial is enlarged and below the eye (derived from Brown 1991).

Distribution: *E. morriedorisioi sp. nov.* is known only from the vicinity of the Frieda Mining Base Camp, (Frieda River project), Western Province, Papua New Guinea.

Etymology: Named in honour of Morrie Dorisio, of Bulleen, Victoria, Australia, more recently moved to Reservoir, Victoria, Australia, for services to herpetology in particular for assistances with IT and related issues for this author and the team at Reptile Party, Reptile Shows in Melbourne, Australia and including in the production of books published by myself in the 1990's. See also Hoser (2012) at page 71.

EMOIA MINUSGUTTATA SP. NOV.

LSID urn:lsid:zoobank.org:act:02AED83A-E6BB-48AA-B432-895962E1ACD3

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number: R90942 collected from Malaita Island, Solomon Islands. The Australian Museum in Sydney, New South Wales, Australia allows access to its holdings.

Paratypes: 59 preserved specimens at the Australian Museum in Sydney, New South Wales, Australia, specimen numbers: R90943-69 and R9097I-9I002 all collected from Malaita Island, Solomon Islands.

Diagnosis: The two species *Emoia minusguttata sp. nov.* and *Emoia dorsalinea sp. nov.* have until now been treated as two populations of *E. pseudocyanura* Brown, 1991 and would be identified as this using the information within the diagnostic key and paper of Brown (1991), as done by Brown, (1991).

E. minusguttata sp. nov. is restricted to Malaita Island, Solomon Islands and *E. dorsalinea sp. nov.* is restricted to Bougainville Island and the immediately adjacent Shortland Island.

The three species are separated from one another as follows:

E. pseudocyanura Brown, 1991 is separated from *E. minusguttata sp. nov.* and *E. dorsalinea sp. nov.* by having a dorsal colour of very dark brown to black and with a distinctive yellowish-white mid-dorsal stripe running from the snout to around the base of the tail. See for example plates 51 and 52 of McCoy (2006) of images of *E. pseudocyanura* in life.

E. minusguttata sp. nov. is separated from both *E. pseudocyanura* and *E. dorsalinea sp. nov.* by the fact that the mid-dorsal stripe fades immediately after the front legs and does not run down most of the back and does not ever reach the pelvis.

E. dorsalinea sp. nov. is separated from both *E. minusguttata sp. nov.* and *E. pseudocyanura* by the presence of a prominent well-defined at the edges mid-dorsal stripe running past the back legs and onto the anterior tail which does not have thinning, fading or breaks at the posterior end of the body as seen in *E. pseudocyanura.*

E. dorsalinea sp. nov. is characterised and separated from the other two species further by the presence of two more well defined stripes on either side of the mid-dorsal line on the body. One of these is at the upper edge of the dorsal surface and the other midway on the flanks and in each case are bounded by blackish pigment.

E. minusguttata sp. nov. also has an absence of spotting or other markings on the (original) tail, versus a significant presence of these in both *E. dorsalinea sp. nov.* and *E. pseudocyanura.*

E. pseudocyanura is further separated from both *E. dorsalinea sp. nov.* and *E. minusguttata sp. nov.* by the presence of numerous small pale spots on the dorsal and upper lateral surfaces, not seen in the other two species.

E. dorsalinea sp. nov. is further separated from both *E. pseudocyanura* and *E. minusguttata sp. nov.* by the fact that the anterior dorsolateral line running from the snout is an immaculate yellow colour, versus with orangeish tinge in *E. pseudocyanura* and brownish tinge in *E. minusguttata sp. nov.*.

E. dorsalinea sp. nov. also has a lower average midbody scale row count (28-30) as compared to the other two species (30-34) (Brown, 1991).

McCoy (2006) has images of *E. minusguttata sp. nov*. in life at plate 53 and images of *E. dorsalinea sp. nov*. in life at plates 49 and 50.

The three species *E. minusguttata sp. nov*., *E. dorsalinea sp. nov*. and *E. pseudocyanura* are separated from all other species within *Emoia sensu lato*, by the following unique suite of characters: SVL at maturity 45.0-58.8 mm; midbody scale rows 27-34; dorsal scale rows 53-60; thinned subdigital lamellae numbering 73-98 under the fourth toe; there is always at least a narrow, pale, paravertebral stripe, limited to head and anterior part of body and becoming broader posteriorly, which may go past the rear limbs in some species, there are rows of black dots or short bars on the tail in two of three species and the tail always has a very strong bluish tinge; venter (in life) is yellow to light green.

The three species are further diagnosed as follows: rostral forming relatively short to moderately long, nearly straight suture with frontonasal; supranasals triangular; prefrontals narrowly to rather widely separated; one pair of nuchals; anterior loreal shorter than and slightly higher than posterior, in contact with first and second, or more frequently, only second upper labials; six or seven upper labials, fifth (rarely sixth) enlarged and below eye; six or seven lower labials; scales smooth, paravertebral rows not or scarcely enlarged (Brown 1991).

Distribution: *E. minusguttata sp. nov*. is known only from Malaita Island in the Solomon Islands, where at present it appears to be common.

Etymology: In Latin "*minusguttata"* literally means less spots or specks.

EMOIA DORSALINEA SP. NOV.

LSID urn:lsid:zoobank.org:act:58B38A14-21C9-42E7-ADBD-5A92B2BFFECD

Holotype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, USA, Herpetology Collection: specimen number: MCZ 93970, collected from Mutahi, at an elevation of 2200-3200 feet above sea level, Bougainville, in the country of Papua New Guinea.

This facility allows access to its holdings.

Paratypes: Three preserved specimens at the Museum of Comparative Zoology, Harvard University, USA, Herpetology Collection: specimen number: MCZ 93971-73, collected from Mutahi, at an elevation of 2200-3200 feet above sea level, Bougainville, in the country of Papua New Guinea, This facility allows access to its holdings.

Diagnosis: The two species *Emoia dorsalinea sp. nov*. and *Emoia minusguttata sp. nov*. have until now been treated as two populations of *E. pseudocyanura* Brown, 1991 and would be identified as this using the information within the diagnostic key and paper of Brown (1991), as done by Brown (1991).

E. minusguttata sp. nov. is restricted to Malaita Island, Solomon Islands and *E. dorsalinea sp. nov*. is restricted to Bougainville Island and the immediately adjacent Shortland Island.

The three species are separated from one another as follows:

E. pseudocyanura Brown, 1991 is separated from the *E. minusguttata sp. nov*. and *E. dorsalinea sp. nov*. by having a dorsal colour of very dark brown to black and with a distinctive yellowish-white mid-dorsal stripe running from the snout to around the base of the tail. See for example plates 51 and 52 of McCoy (2006) of images of *E. pseudocyanura* in life.

E. minusguttata sp. nov. is separated from both *E. pseudocyanura* and *E. dorsalinea sp. nov*. by the fact that the mid-dorsal stripe fades immediately after the front legs and does not run down most of the back and does not ever reach the pelvis.

E. dorsalinea sp. nov. is separated from both *E. minusguttata sp. nov*. and *E. pseudocyanura* by the presence of a priminant well-defined at the edges mid-dorsal stripe running past the back legs and onto the anterior tail which does not have thinning, fading or breaks at the posterior end of the body as seen in *E. pseudocyanura.*

E. dorsalinea sp. nov. is characterised and separated from the other two species further by the presence of two more well defined stripes on either side of the mid-dorsal line on the body. One of these is at the upper edge of the dorsal surface and the other midway on the flanks and in each case are bounded by blackish pigment.

E. minusguttata sp. nov. also hasan absence of spotting or other markings on the (original) tail, versus a significant presence of these in both *E. dorsalinea sp. nov*. and *E. pseudocyanura.*

E. pseudocyanura is further separated from both *E. dorsalinea sp. nov*. and *E. minusguttata sp. nov*. by the presence of numerous small pale spots on the dorsal and upper lateral surfaces, not seen in the other two species.

E. dorsalinea sp. nov. is further separated from both *E. pseudocyanura* and *E. minusguttata sp. nov*. by the fact that the anterior dorsolateral line running from the snout is an immaculate yellow colour, versus with orangeish tinge in *E. pseudocyanura* and brownish tinge in *E. minusguttata sp. nov*..

E. dorsalinea sp. nov. also has a lower average midbody scale row count (28-30) as compared to the other two species (30-34) (Brown, 1991).

McCoy (2006) has images of *E. minusguttata sp. nov*. in life at plate 53 and images of *E. dorsalinea sp. nov*. in life at plates 49 and 50.

The three species *E. minusguttata sp. nov*., *E. dorsalinea sp. nov*. and *E. pseudocyanura* are separated from all other species within *Emoia sensu lato*, by the following unique suite of characters: SVL at matunty 45.0-58.8 mm; midbody scale rows 27-34; dorsal scale rows 53-60; thinned subdigital lamellae numbering 73-98 under the fourth toe; there is always at least a narrow, pale, paravertebral stripe, limited to head and anterior part of body and becoming broader posteriorly, which may go past the rear limbs in some species, there are rows of black dots or short bars on the tail in two of three species and the tail always has a very strong bluish tinge; venter (in life) is yellow to light green.

The three species are further diagnosed as follows: rostral forming relatively short to moderately long, nearly straight suture with frontonasal; supranasals triangular; prefrontals narrowly to rather widely separated; one pair of nuchals; anterior loreal shorter than and slightly higher than posterior, in contact with first and second, or more frequently, only second upper labials; six or seven upper labials, fifth (rarely sixth) enlarged and below eye; six or seven lower labials; scales smooth, paravertebral rows not or scarcely enlarged (Brown 1991).

Distribution: *E. dorsalinea sp. nov*. is known only from Bougainville Island (part of the territory of Papua New Guinea) and the small immediately adjacent island of Shortland Island to the south, in the territory of the Solomon Islands, where at present it appears to be common on both islands.

Etymology: In Latin "*dorsalinea*" literally means line on the dorsum.

EMOIA BOUGAINVILLIENSIS SP. NOV.

LSID urn:lsid:zoobank.org:act:F084D0C7-AC1C-4AB2-BBAF-FD6951DA9F0A

Holotype: A preserved specimen at the Louisiana State University Museum of Natural Science, USA, specimen number: LSUMZ Herps 93843, collected at Togarau Two Village, Central Bougainville, on the south-east slope of Mount Balbi, North Solomons Province, Papua New Guinea, Latitude 5.94 S., Longitude 155.04 E. This facility allows access to its holdings.

Paratypes: 1/ A preserved specimen at the Louisiana State University Museum of Natural Science, USA, specimen number: LSUMZ Herps 93844, collected at Togarau Two Village, Central Bougainville, on the south-east slope of Mount Balbi, North Solomons Provice, Papua New Guinea, Latitude 5.94 S., Longitude 155.04 E, and: 2/ 12 preserved specimens at the California Academy of Sciences, California, USA, Specimen numbers: Herpetology collection CAS 108905-16, collected from Turiboiru, Bougainville Island, Bougainville, in the territory of Papua New

Guinea, Latitude 6.73 S., Longitude 155.68 E.

Diagnosis: Until now *Emoia bougainvilliensis sp. nov*. has been treated as a population of *E. cyanura* (Lesson, 1826). It is however readily separated from that taxon by having more than 79 lamellae under the fourth finger of the (front) toe, versus less than that in all populations of *E. cyanura.*

E. bougainvilliensis sp. nov. has a distinctive yellowish-greenish upper surface to the anterior half of the tail, versus brown, grey or bluish in *E. cyanura.* In *E. cyanura* the dorso-lateral stripes are whitish and distinct, versus greenish-yellow, broad and fading on the lower edge in *E. bougainvilliensis sp. nov*. There is barring of the rear limbs toes in *Emoia bougainvilliensis sp. nov*. that is not seen in populations of *E. cyanura* found elsewhere.

All of *E. bougainvilliensis sp. nov*., *E. boreotis sp. nov*. (described in this paper) and *E. cyanura* are separated from all other species in *Emoia sensu lato* by the following combination of characters: Nasal bones not fused; palate beta-type; a pale narrow vertebral stripe (less than two scale rows in breadth) beginning at the tip of the snout; subdigital lamellae are thin and bladelike with 59-86 under the fourth finger of the fourth (front) toe; midbody scale rows 26-32; scale rows between parietals and base of tail 52-64; interparietal fused with frontoparietals; tail without extremely prominent black markings.

All of *E. bougainvilliensis sp. nov*., *E. boreotis sp. nov*. (described in this paper) and *E. cyanura* are further diagnosed by the following suite of characters: Snout-vent length (SVL) 38.9-56.5 mm for males and 40.5-54.8 mm for females; snout strongly tapered, its length 62-70% of head width and 32-42% of head length; head width 60-65% of head length and 14-17% of snout-vent length; eye 62-73% of snout length and 40-47% of head width; rostral forming moderately long, nearly straight suture with frontonasal; supranasals narrow-elongate to narrowly triangular; prefrontals narrowly to widely separated (rarely in contact); one pair of nuchals; anterior loreal somewhat shorter than, to nearly as long as and slightly higher than, posterior loreal. in contact with first and second, second, or second and third upper labials and with supranasal; usually six or seven upper labials, fifth (occasionally sixth) enlarged and below eye; six or seven lower labials; scales smooth; midbody scale rows 26-32, not more than 30 except for populations in Fiji and Vanuatu; dorsal scale rows 52-64. rarely more than 60; length of extended hindlimb 90-110% of axilla-groin distance and 43-52% of SVL; lamellae under first toe 16-21.

Distribution: Believed to be confinded to Bougainville and nearby small islands.

Etymology: Named in reflection of where the species occurs.

EMOIA BOREOTIS SP. NOV.

LSID urn:lsid:zoobank.org:act:620A9FD8-11CB-4B46-8FE6-77ED31D4175A

Holotype: A preserved specimen at the Californian Academy of Sciences, San Francisco, California, USA, specimen number: CAS 184020, collected from Guam. This facility allows access to its holdings.

Paratype: A preserved specimen at the Californian Academy of Sciences, San Francisco, California, USA, specimen number: CAS183942, collected from Kosrae.

Diagnosis: The species *Emoia boreotis sp. nov*. has until now been treated as a divergent population of *E. cyanura* (Lesson, 1826). However Bruna *et al*. (1996b) provided genetic evidence to show that so-called *E. cyanura* from the islands of Guam and Kosrae are in fact of a different, albeit closely related species.

The species *Emoia boreotis sp. nov*. is separated from *E. cyanura* and the related *Emoia bougainvilliensis sp. nov*. by the presence of significantly faded upper labials and obvious peppering on the lower flanks of the original tail.

All of *E. boreotis sp. nov*., *E. bougainvilliensis sp. nov*. (described previously in this paper) and *E. cyanura* are separated from all other species in *Emoia sensu lato* by the following combination of characters: Nasal bones not fused; palate beta-type; a pale narrow vertebral stripe (less than two scale rows in breadth) beginning at the tip of the snout; subdigital lamellae are thin and bladelike with 59-86 under the fourth finger of the fourth (front) toe; midbody scale rows 26-32; scale rows between parietals and base of tail 52-64; interparietal fused with frontoparietals; tail without extremely prominent black markings.

All of *E. boreotis sp. nov*., *E. bougainvilliensis sp. nov*. (described in this paper) and *E. cyanura* are further diagnosed by the following suite of characters: Snout-vent length (SVL) 38.9-56.5 mm for males and 40.5-54.8 mm for females; snout strongly tapered, its length 62-70% of head width and 32-42% of head length; head width 60-65% of head length and 14-17% of snout-vent length; eye 62-73% of snout length and 40-47% of head width; rostral forming moderately long, nearly straight suture with frontonasal; supranasals narrow-elongate to narrowly triangular; prefrontals narrowly to widely separated (rarely in contact); one pair of nuchals; anterior loreal somewhat shorter than, to nearly as long as and slightly higher than, posterior loreal. in contact with first and second, second, or second and third upper labials and with supranasal; usually six or seven upper labials, fifth (occasionally sixth) enlarged and below eye; six or seven lower labials; scales smooth; midbody scale rows 25-32, not more than 30 except for populations in Fiji and Vanuatu; dorsal scale rows 52-64. rarely more than 60; length of extended hindlimb 90-110% of axilla-groin distance and 43-52% of SVL; lamellae under first toe 16-21.

Distribution: Known only from the islands of Guam and Kosrae in the north-west Pacific Ocean.

Etymology: In Latin the word *boreotis* means “northern” and this reflects the relative distribution of this species as compared to other members of the species group, which are generally found to the south.

EMOIA AQUACAUDA SP. NOV.

LSID urn:lsid:zoobank.org:act:AD2141B6-2FE4-4B96-A166-C65793ACA395

Holotype: A preserved specimen at the University of Kansas Natural History Museum and Biodiversity Institute, Lawrence, Kansas, USA, specimen number: KU 307191 collected from Poroi, Ranongga Island, (New Georgia Group), Solomon Islands, Latitude 8.08 S., Longitude 156.60 E. The University of Kansas Natural History Museum and Biodiversity Institute, Lawrence, Kansas, USA allows access to its holdings.

Paratype: A preserved specimen at the University of Kansas Natural History Museum and Biodiversity Institute, Lawrence, Kansas, USA, specimen number: KU 307192 collected from Poroi, Ranongga Island, (New Georgia Group), Solomon Islands, Latitude 8.08 S., Longitude 156.60 E.

Diagnosis: The species *Emoia aquacauda sp. nov*. has until now been treated as a population of *Emoia impar* (Werner, 1898). It is most easily separated from that taxon by colouration, having blackish brown between the dorsolateral stripes as opposed to coppery brown, as well as limbs that are almost jet black as opposed to being medium brown with black etching at the lower end of each scale.

The tail of *Emoia aquacauda sp. nov*. is a rich aqua blue colour with black peppering on the anterior end of the dorsal surface, occasionally merging to form a line, versus none in *E. impar.*

Both *Emoia aquacauda sp. nov*. and *E. impar*. are separated from all other species in *Emoia sensu lato* by the following suite of characters: Less than 65 mm snout-vent length in adults; tail slender; limbs long; tips of toes of the hindfoot extent to or beyond the axilla; there is a supranasal scale above the nasal scale on each side; there is a distinctive mid-dorsal stripe and pair of dorsolateral stripes, white, orangeish-white, brownish-white or yellowish-white in colour, but at a glance appearing white or a thick creamy-white colour; tail is always strongly bluish in colour and mainly immaculate; 40-53 lamellae beneath the fourth finger; 57-82 lamellae under the fourth toe of the rear foot; 52-62 rows of scales between the parietals and the base of the tail; 26-33 midbody rows; no ipiphyseal (pineal) eye or pigmented spot on top of the head; anterior loreal higher than long; one or more of the mid-dorsal scale rows are either fully or partially fused, usually forming a single row of enlarged mid-dorsal scales; belly and underside of thighs are dusky or peppered.

Distribution: This member of a wider species complex appears to be restricted to the New Georgia group of islands in the Solomon Islands.

Etymology: Aqua the colour is appropriate for the tail as this is the colour, being a light blue.

The word "cauda" in Latin refers to the tail, so the entire name for the species means aqua coloured tail. The name *Emoia caeruleocauda* (De Vis, 1892) is already preoccupied by a reasonably closely related species-level taxon, although it is treated as of a different genus in this paper.

EMOA YUSEFMOHAMUDI SP. NOV.

LSID urn:lsid:zoobank.org:act:8CFB7CD4-4EDC-4CA6-A74B-50C5C677C024

Holotype: A preserved specimen at The California Academy of Sciences, San Francisco, California, USA, specimen number CAS HERP153233, collected from Malaupaina Island, Makira Province, Solomon Islands, Latitude 10.25 S., Longitude 161.97 E. This facility allows access to its holdings.

Paratypes: Two preserved specimens at The California Academy of Sciences, San Francisco, California, USA, specimen numbers CAS HERP153234 and CAS HERP153235, collected from Malaupaina Island, Makira Province, Solomon Islands, Latitude 10.25 S., Longitude 161.97 E.

Diagnosis: Following Brown (1991), the taxon, *Emoa whitneyi* (Burt, 1930) is treated as being synonymous with the nominate form of *Emoa nigra* (Jacquinot and Guichenot, 1853). Brown (1991) wrote: "I have examined the type of *E. whitneyi*, and in scale counts, color and weak keels on dorsal scales it is typical of juveniles of *E. nigra* populations from some of the Solomon Islands."
This would be expected on the basis of a type locality of the Shortland Islands.

Within the genus *Emoa* Girard, 1857, type species *Emoa nigra*, the type species is readily separated from others in the complex by the following suite of characters: strong red-coloured iris, weakly keeled anterior scales on the body, a dorsal pattern that includes a definite light demarcation along the dorsolateral line and a tail pattern forming obvious longitudinal stripes, with that on the flanks being black. Any spots present on the upper flanks are yellow.

The species *E. yusufmohamudi sp. nov*. from Malaupaina Island in the Olu Malu Islands, Makira province, Solomon Islands is readily separated from *E. nigra* and others in the genus by the iris being a yellow-brown colour as opposed to red. Adults are jet black all over the dorsal surface and flanks and lack markings on the body or legs or tail, the latter being a uniform black along the entire length. Exceptional to this, is the snout, which while dark, is metal grey in colour at the tip. Dorsal scales are effectively smooth.

The species *E. davidaltmani sp. nov.* from Rennell Island in the Solomon Islands is similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by the presence of well-defined brown and black cross-bands on the fingers of the toes and feet, as well as labials that are evenly coloured versus uneven in *E. yusufmohamudi sp. nov.*. Dorsals are slightly keeled. Snout tip is blackish-grey in colour.

The species *E. stephengoldsteini sp. nov*. from the Santa Cruz Islands in the Solomon Islands is also similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by dark etching of some scales under the chin and a snout tip that is dark brown in colour.

The species *E. rodneysommerichi sp. nov*. from Koro Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: An irregularly marked tail giving a somewhat broken banded appearance, scattered white flecks or spots on the upper labials and occasionally others on the neck, or rarely upper back and flanks, slightly keeled dorsal scales and a dark iris.

The species *E. robertekssteini sp. nov*. from Taveuni Island and nearby Vanua Levu Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: distinctly orange-brown iris, generally blackish-brown in colour, with minimal spots, flecks or markings and most present are scattered light-brown scales on the lower flanks. The limbs are characterised by well spaced orange spots in defined lines on a dark brown background. The top of the head is blackish and the labials are brown and lacking white spots or flecks. The dorsal scales are slightly keeled. In common with *E. rodneysommerichi sp. nov*. this species also has an irregularly marked tail giving a somewhat broken banded appearance.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone among the five similar genera just listed, in that adults have a dorsum that is more-or-less uniform dark brown to black or grey from snout onto the tail.

Distribution: Malaupaina Island, Makira Province, Solomon Islands and immediately adjacent small islands.

Etymology: Named in honour of Yusef Mohamud, a lawyer based in Melbourne, Victoria, Australia for services to wildlife conservation including assisting Snakebusters: Australia's best reptiles in dealing with lawless thieves seeking to undermine the valuable wildlife conservation work of the team at Snakebusters. He also works with Kimani Adil Boden, another lawyer based in Melbourne, Victoria, Australia. See the full etymology for Kimani Adil Boden in Hoser (2018a).

EMOA DAVIDALTMANI SP. NOV.

LSID urn:lsid:zoobank.org:act:134C2E50-6381-4BDD-93E7-DA26BD683CBC

Holotype: A preserved specimen at The California Academy of Sciences, San Francisco, California, USA, specimen number CAS HERP 72010, collected from Rennel Island, Central Province, Solomon Islands, Latitude 11.66 S., Longitude 160.31 E. This facility allows access to its holdings.

Paratypes: Three preserved specimens at The California Academy of Sciences, San Francisco, California, USA, specimen numbers CAS HERP 72011-3, collected from Rennel Island, Central Province, Solomon Islands, Latitude 11.66 S., Longitude 160.31 E.

Diagnosis: Following Brown (1991), the taxon, *Emoa whitneyi* (Burt, 1930) is treated as being synonymous with the nominate form of *Emoa nigra* (Jacquinot and Guichenot, 1853). Brown (1991) wrote: "I have examined the type of *E. whitneyi*, and in scale counts, color and weak keels on dorsal scales it is typical of juveniles of *E. nigra* populations from some of the Solomon Islands."
This would be expected on the basis of a type locality of the Shortland Islands.

Within the genus *Emoa* Girard, 1857, type species *Emoa nigra*, the type species is readily separated from others in the complex by the following suite of characters: strong red-coloured iris, weakly keeled anterior scales on the body, a dorsal pattern that includes a definite light demarcation along the dorsolateral line and a tail pattern forming obvious longitudinal stripes, with that on the flanks being black. Any spots present on the upper flanks are yellow.

The species *E. yusufmohamudi sp. nov*. from Malaupaina Island in the Olu Malu Islands, Makira province, Solomon Islands is readily separated from *E. nigra* and others in the genus by the iris being a yellow-brown colour as opposed to red. Adults are jet black all over the dorsal surface and flanks and lack markings on the body or legs or tail, the latter being a uniform black along the entire length. Exceptional to this, is the snout, which while dark, is metal grey in colour at the tip. Dorsal scales are effectively smooth.

The species *E. davidaltmani sp. nov*. from Rennell Island in the Solomon Islands is similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by the presence of well-defined brown and black cross-bands on the fingers of the toes and feet, as well as labials that are evenly coloured versus uneven in *E. yusufmohamudi sp. nov.*. Dorsals are slightly keeled. Snout tip is blackish-grey in colour.

The species *E. stephengoldsteini sp. nov*. from the Santa Cruz

Islands in the Solomon Islands is also similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by dark etching of some scales under the chin and a snout tip that is dark brown in colour.

The species *E. rodneysommerichi sp. nov.* from Koro Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: An irregularly marked tail giving a somewhat broken banded appearance, scattered white flecks or spots on the upper labials and occasionally others on the neck, or rarely upper back and flanks, slightly keeled dorsal scales and a dark iris.

The species *E. robertekssteini sp. nov.* from Taveuni Island and nearby Vanua Levu Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: distinctly orange-brown iris, generally blackish-brown in colour, with minimal spots, flecks or markings and most present are scattered light-brown scales on the lower flanks. The limbs are characterised by well spaced orange spots in defined lines on a dark brown background. The top of the head is blackish and the labials are brown and lacking white spots or flecks. The dorsal scales are slightly keeled. In common with *E. rodneysommerichi sp. nov.* this species also has an irregularly marked tail giving a somewhat broken banded appearance.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone among the five similar genera just listed, in that adults have a dorsum that is more-or-less uniform dark brown to black or grey from snout onto the tail.

Distribution: Rennel Island, Central Province, Solomon Islands and immediately adjacent small islands.

Etymology: Named in honour of David Altman of Bondi, New South Wales, Australia in recognition of his assistances to this author in herpetological fieldwork on Death Adders *Acanthophis antarcticus* (Shaw and Nodder, 1802) at West Head, Kurringai Chase, New South Wales, Australia in the 1970's and 1980's.

EMOA STEPHENGOLDSTEINI SP. NOV.

LSID urn:lsid:zoobank.org:act:9EC6E380-BFF7-4A9F-B409-D937651D5BC7

Holotype: A preserved specimen at The American Museum of Natural History, New York, USA, specimen number AMNH 42086, collected from Santa Cruz Island (AKA Nendo Island), Solomon Islands, Latitude 10.72 S., Longitude 165.92 E. This facility allows access to its holdings.

Paratypes: Seven preserved specimens at The American Museum of Natural History, New York, USA, specimen numbers AMNH 42087 and AMNH 42107-12, collected from Santa Cruz Island (AKA Nendo Island), Solomon Islands, Latitude 10.72 S., Longitude 165.92 E.

Diagnosis: Following Brown (1991), the taxon, *Emoa whitneyi* (Burt, 1930) is treated as being synonymous with the nominate form of *Emoa nigra* (Jacquinot and Guichenot, 1853). Brown (1991) wrote: "I have examined the type of *E. whitneyi*, and in scale counts, color and weak keels on dorsal scales it is typical of juveniles of *E. nigra* populations from some of the Solomon Islands."
This would be expected on the basis of a type locality of the Shortland Islands.

Within the genus *Emoa* Girard, 1857, type species *Emoa nigra*, the type species is readily separated from others in the complex by the following suite of characters: strong red-coloured iris, weakly keeled anterior scales on the body, a dorsal pattern that includes a definite light demarcation along the dorsolateral line and a tail pattern forming obvious longitudinal stripes, with that on the flanks being black. Any spots present on the upper flanks are yellow.

The species *E. yusufmohamudi sp. nov.* from Malaupaina Island in the Olu Malu Islands, Makira province, Solomon Islands is readily separated from *E. nigra* and others in the genus by the iris being a yellow-brown colour as opposed to red. Adults are jet black all over the dorsal surface and flanks and lack markings on the body or legs or tail, the latter being a uniform black along the entire length. Exceptional to this, is the snout, which while dark, is metal grey in colour at the tip. Dorsal scales are effectively smooth.

The species *E. davidaltmani sp. nov.* from Rennell Island in the Solomon Islands is similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by the presence of well-defined brown and black cross-bands on the fingers of the toes and feet, as well as labials that are evenly coloured versus uneven in *E. yusufmohamudi sp. nov.*. Dorsals are slightly keeled. Snout tip is blackish-grey in colour.

The species *E. stephengoldsteini sp. nov.* from the Santa Cruz Islands in the Solomon Islands is also similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by dark etching of some scales under the chin and a snout tip that is dark brown in colour.

The species *E. rodneysommerichi sp. nov.* from Koro Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: An irregularly marked tail giving a somewhat broken banded appearance, scattered white flecks or spots on the upper labials and occasionally others on the neck, or rarely upper back and flanks, slightly keeled dorsal scales and a dark iris.

The species *E. robertekssteini sp. nov.* from Taveuni Island and nearby Vanua Levu Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: distinctly orange-brown iris, generally blackish-brown in colour, with minimal spots, flecks or markings and most present are scattered light-brown scales on the lower flanks. The limbs are characterised by well spaced orange spots in defined lines on a dark brown background. The top of the head is blackish and the labials are brown and lacking white spots or flecks. The dorsal scales are slightly keeled. In common with *E. rodneysommerichi sp. nov.* this species also has an irregularly marked tail giving a somewhat broken banded appearance.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone among the five similar genera just listed, in that adults have a dorsum that is more-or-less uniform dark brown to black or grey from snout onto the tail.

Distribution: Santa Cruz (AKA Nendo) Island, Solomon Islands and immediately adjacent small islands.

Etymology: Named in honour of Stephen Goldstein of Hornsby, New South Wales, Australia, for services to herpetology throughout the 1970's and 1980's including with important fieldwork conducted by this author in New South Wales.

EMOA RODNEYSOMMERICHI SP. NOV.

LSID urn:lsid:zoobank.org:act:524ED31A-D313-42A2-A6F8-A25C33E35AFF

Holotype: A preserved specimen at the US National Museum, better known as the Smithsonian National Museum of Natural History, Washington, DC, USA, specimen number USNM 230073, collected from Koro Island, Fiji, Latitude 17.20 S., Longitude 179.26 E. This facility allows access to its holdings.

Paratypes: Seven preserved specimens at the US National Museum, better known as the Smithsonian National Museum of Natural History, Washington, DC, USA, specimen numbers USNM 230074-81, collected from Koro Island, Fiji, Latitude 17.20 S., Longitude 179.26 E.

Diagnosis: Following Brown (1991), the taxon, *Emoa whitneyi* (Burt, 1930) is treated as being synonymous with the nominate form of *Emoa nigra* (Jacquinot and Guichenot, 1853). Brown (1991) wrote: "I have examined the type of *E. whitneyi*, and in scale counts, color and weak keels on dorsal scales it is typical of juveniles of *E. nigra* populations from some of the Solomon Islands."
This would be expected on the basis of a type locality of the Shortland Islands.

Within the genus *Emoa* Girard, 1857, type species *Emoa nigra*, the type species is readily separated from others in the complex by the following suite of characters: strong red-coloured iris, weakly keeled anterior scales on the body, a dorsal pattern that includes a definite light demarcation along the dorsolateral line and a tail pattern forming obvious longitudinal stripes, with that on the flanks being black. Any spots present on the upper flanks are yellow.

The species *E. yusufmohamudi sp. nov*. from Malaupaina Island in the Olu Malu Islands, Makira province, Solomon Islands is readily separated from *E. nigra* and others in the genus by the iris being a yellow-brown colour as opposed to red. Adults are jet black all over the dorsal surface and flanks and lack markings on the body or legs or tail, the latter being a uniform black along the entire length. Exceptional to this, is the snout, which while dark, is metal grey in colour at the tip. Dorsal scales are effectively smooth.

The species *E. davidaltmani sp. nov.* from Rennell Island in the Solomon Islands is similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by the presence of well-defined brown and black cross-bands on the fingers of the toes and feet, as well as labials that are evenly coloured versus uneven in *E. yusufmohamudi sp. nov.*. Dorsals are slightly keeled. Snout tip is blackish-grey in colour.

The species *E. stephengoldsteini sp. nov*. from the Santa Cruz Islands in the Solomon Islands is also similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by dark etching of some scales under the chin and a snout tip that is dark brown in colour.

The species *E. rodneysommerichi sp. nov*. from Koro Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: An irregularly marked tail giving a somewhat broken banded appearance, scattered white flecks or spots on the upper labials and occasionally others on the neck, or rarely upper back and flanks, slightly keeled dorsal scales and a dark iris.

The species *E. robertekssteini sp. nov*. from Taveuni Island and nearby Vanua Levu Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: distinctly orange-brown iris, generally blackish-brown in colour, with minimal spots, flecks or markings and most present are scattered light-brown scales on the lower flanks. The limbs are characterised by well spaced orange spots in defined lines on a dark brown background. The top of the head is blackish and the labials are brown and lacking white spots or flecks. The dorsal scales are slightly keeled. In common with *E. rodneysommerichi sp. nov*. this species also has an irregularly marked tail giving a somewhat broken banded appearance.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone among the five similar genera just listed, in that adults have a dorsum that is more-or-less uniform dark brown to black or grey from snout onto the tail.

Distribution: Restricted to Koro Island, Fiji.

Etymology: Named in honour of Rodney Sommerich, formerly of Castle Cove (Sydney) New South Wales, Australia, for services to herpetology throughout the 1970's and 1980's including with important fieldwork conducted by this author in New South Wales and (along with his suffering parents) supplying important food reserves for myself and associates in relevant bush camping trips as well as on other important occasions.

EMOA ROBERTEKSTEINI SP. NOV.

LSID urn:lsid:zoobank.org:act:457A786A-2A63-463E-B61B-9063C7CE9833

Holotype: A preserved specimen at the US National Museum, better known as the Smithsonian National Museum of Natural History, Washington, DC, USA, specimen number USNM 499927, collected from 1 km NE of Vuna Point, Taveuni Island, Fiji.

This facility allows access to its holdings.

Paratypes: Two preserved specimens at the US National Museum, better known as the Smithsonian National Museum of Natural History, Washington, DC, USA, specimen numbers USNM 333406, 499928, 499925, collected from Taveuni Island, Fiji.

Diagnosis: Following Brown (1991), the taxon, *Emoa whitneyi* (Burt, 1930) is treated as being synonymous with the nominate form of *Emoa nigra* (Jacquinot and Guichenot, 1853). Brown (1991) wrote: "I have examined the type of *E. whitneyi*, and in scale counts, color and weak keels on dorsal scales it is typical of juveniles of *E. nigra* populations from some of the Solomon Islands."

This would be expected on the basis of a type locality of the Shortland Islands.

Within the genus *Emoa* Girard, 1857, type species *Emoa nigra*, the type species is readily separated from others in the complex by the following suite of characters: strong red-coloured iris, weakly keeled anterior scales on the body, a dorsal pattern that includes a definite light demarcation along the dorsolateral line and a tail pattern forming obvious longitudinal stripes, with that on the flanks being black. Any spots present on the upper flanks are yellow.

The species *E. yusufmohamudi sp. nov*. from Malaupaina Island in the Olu Malu Islands, Makira province, Solomon Islands is readily separated from *E. nigra* and others in the genus by the iris being a yellow-brown colour as opposed to red. Adults are jet black all over the dorsal surface and flanks and lack markings on the body or legs or tail, the latter being a uniform black along the entire length. Exceptional to this, is the snout, which while dark, is metal grey in colour at the tip. Dorsal scales are effectively smooth.

The species *E. davidaltmani sp. nov*. from Rennell Island in the Solomon Islands is similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by the presence of well-defined brown and black cross-bands on the fingers of the toes and feet, as well as labials that are evenly coloured versus uneven in *E. yusufmohamudi sp. nov.*. Dorsals are slightly keeled. Snout tip is blackish-grey in colour.

The species *E. stephengoldsteini sp. nov*. from the Santa Cruz Islands in the Solomon Islands is also similar in most respects to *E. yusufmohamudi sp. nov.*, but separated from that taxon by dark etching of some scales under the chin and a snout tip that is dark brown in colour.

The species *E. rodneysommerichi sp. nov*. from Koro Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: An irregularly marked tail giving a somewhat broken banded appearance, scattered white flecks or spots on the upper labials and occasionally others on the neck, or rarely upper back and flanks, slightly keeled dorsal scales and a dark iris.

The species *E. robertekssteini sp. nov*. from Taveuni Island and nearby Vanua Levu Island, Fiji is separated from all other species in the genus *Emoa* by the following suite of characters: distinctly orange-brown iris, generally blackish-brown in colour, with minimal spots, flecks or markings and most present are scattered light-brown scales on the lower flanks. The limbs are characterised by well spaced orange spots in defined lines on a dark brown background. The top of the head is blackish and the labials are brown and lacking white spots or flecks. The dorsal scales are slightly keeled. In common with *E. rodneysommerichi sp. nov*. this species also has an irregularly marked tail giving a somewhat broken banded appearance.

The genus *Emoa* Girard, 1857, (type species *Emoa nigra*) is separated from all other species within *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.* and *Griseolaterus gen. nov.* by dorsal body colour. Specimens in this genus are alone among the five similar genera just listed, in that adults have a dorsum that is more-or-less uniform dark brown to black or grey from snout onto the tail.

Distribution: Taveuni Island and nearby Vanua Levu Island, Fiji as well as small adjacent islands.

Etymology: Named in honour of Robert Ekstein of Roseville, Bondi and Belrose (Sydney), New South Wales, Australia for services to herpetology spanning some decades in numerous capacities.

NOTANEMOIA GEORGEMARIOLISI SP. NOV.

LSID urn:lsid:zoobank.org:act:F551A343-34B5-4BC6-916C-CDF4C4DB157B

Holotype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, USA, Specimen number: Herp R-15014, collected from Vunisea on Kadavu (Island), Fiji, identified as "*Emoia samoense*". The Museum of Comparative Zoology, Harvard University allows access to its holdings.

Paratypes. The following 11 specimens at the Museum of Comparative Zoology, Harvard University, USA, specimen numbers: Herp R-16930, Herp R-16932, Herp R-16934, Herp R-16938, Herp R-16939, Herp R-16940, Herp R-16931, Herp R-16933, Herp R-16935, Herp R-16936, Herp R-16937 all collected from Dravuni Island, Fiji (just north of the main Kadavu Island) (mislabelled as Dravini).

Diagnosis: The species *Notanemoia georgemariolisi sp. nov.*, *N. karlagambellae sp. nov.*, *N. neilsonnemanni sp. nov*. and *N. cathysonnemannae sp. nov*. have all until now been treated as populations of the species *N. concolor* (Duméril, 1851) and would until now have keyed out as this species using the keys of Brown (1991) or Zug (1991).

However the genetic evidence of Austin and Zug (1999), Zug (1991), Fisher *et al.* (2017) and glacial sea-level minimums between the two most divergent populations for which molecular evidence is unavailable (but is for other similarly distributed Fijian reptiles on the same islands), but for which morphological evidence is available, comfirms that there are at least five separate species in the species complex, all of which are described herein, four for the first time as newly named species.

The type form *N. concolor* (Duméril, 1851) is that from the main Fiji island of Viti Levu and immediately adjacent smaller islands such as Ovalau, that are separated by very shallow seas that were land bridges in geologically recent glacial sea depth maxima.

The specimens from Kadavu (AKA Kandavu), are herein assigned to the species *Notanemoia georgemariolisi sp. nov.*, those from the island of Gau are herein assigned to the species *N. karlagambellae sp. nov.*, those from Taveuni Island, Vanua Levu and outliers to the north of the strait between these islands and Viti Levu / Taveuni are assigned to the species *N. cathysonnemannae sp. nov.*, while those from Matuku and potentially other small islands to the north are assigned to the species *N. neilsonnemanni sp. nov.*.
The species *N. concolor* is herein restricted to Vita Levu and nearby Ovalau and includes the synonymous name *N. resplendens* (Peters. 1877).

Diagnostic features separating the five relevant taxa are effectively outlined in Zug (1991) and the most important ones are abridged and given here as the formal diagnosis for all five species in terms of separating them from one another.

N. concolor (Duméril, 1851) is separated from the other four species by the following unique suite of characters: 57-58 dorsal rows, 29-30 mid-body rows, 36-37 lamellae on finger 4 and 49-51 lamellae on toe 4.

N. georgemariolisi sp. nov., is separated from the other four species by the following unique suite of characters: 59-60 dorsal rows, 31-32 mid-body rows, 41-43 lamellae on finger 4 and 57-59 lamellae on toe 4.

N. karlagambellae sp. nov. is separated from the other four species by the following unique suite of characters: 58-59 dorsal rows, 30-31 mid-body rows, 44-45 lamellae on finger 4 and 62-63 lamellae on toe 4.

N. cathysonnemannae sp. nov. is separated from the other four species by the following unique suite of characters: 56-58 dorsal rows, 20-29 mid-body rows, 34-36 lamellae on finger 4 and 47-48 lamellae on toe 4.

N. neilsonnemanni sp. nov. is separated from the other four species by the following unique suite of characters: 58-59 dorsal rows, 30-31 mid-body rows, 42-44 lamellae on finger 4 and 59-61 lamellae on toe 4.

All five species (previously treated as *N. concolor*) are readily separated from all other *Emoia sensu lato* species, including all species in the genus *Notanemoia gen. nov.* as defined elsewhere in this paper by the following suite of characters: Scales on the body are of a moderate size; adults of slender build and in excess of 55 mm snout-vent length; dorsally with green to greenish tan head and body; back and head are never silvery-grey, never have a mid-dorsal stripe and the tail is never blue or green; 27-33 midbody scale rows; less than 90 scales from head to base of tail; 43-65 lamellae beneath the fourth toe of the hind foot.

Distribution: *N. georgemariolisi sp. nov*. occurs in Kadavu (AKA Kandavu) and immediately adjacent small islands to the north east, within Fiji, but separated by the Kadavu Passage from Viti Levu.

Etymology: Named in honour of George Mariolis of Burwood, Victoria, former body-building champion and former of owner of Definition Fitness Centre in East Doncaster, Victoria and now a highly sought-after personal (fitness) trainer at several venues, for services to the health and well-being of many Australians over many decades.
The genus *Georgemarioliscolotes* Hoser, 2018 was also named in honour of George Mariolis, however the etymology statement was inadvertently omitted from the final proof of that paper (Hoser 2018b) as published and this etymology also applies to that paper.

NOTANEMOIA KARLAGAMBELLAE SP. NOV.

LSID urn:lsid:zoobank.org:act:FF12AF48-D547-496A-BD84-20C6EDDE0DA0

Holotype: A preserved specimen in the collection of Nature Fiji (Dick Watling), specimen number: F-526, in association with the University of South Pacific Herpetology Collection, Suva, Fiji (SUVA), collected from the island of Gau, Fiji Islands. Their specimens are made available to scientists.

Paratypes: Six other preserved specimens in the collection of Nature Fiji (Dick Watling), specimen number: F543 and F572-576, in association with the University of South Pacific Herpetology Collection, Suva, Fiji (SUVA).

Note: The holotype and paratypes are the specimens examined and recorded by Zug (1991) and Brown (1991).

Diagnosis: The species *Notanemoia georgemariolisi sp. nov.*, *N. karlagambellae sp. nov.*, *N. neilsonnemanni sp. nov*. and *N. cathysonnemannae sp. nov*. have all until now been treated as populations of the species *N. concolor* (Duméril, 1851) and would until now have keyed out as this species using the keys of Brown (1991) or Zug (1991).

All can be separated from one another by morphological differences as outlined herein.

The specimens from Kadavu (AKA Kandavu), are herein assigned to the species *Notanemoia georgemariolisi sp. nov.*, those from the island of Gau are herein assigned to the species *N. karlagambellae sp. nov.*, those from Taveuni Island, Vanua Levu and outliers to the north of the strait between these islands and Viti Levu / Ovalau are assigned to the species *N. cathysonnemannae sp. nov.*, while those from Matuku and potentially other small islands to the north are assigned to the species *N. neilsonnemanni sp. nov.*.
The species *N. concolor* is herein restricted to Vita Levu and nearby Ovalau and includes the synonymous name *N. resplendens* (Peters. 1877).

Diagnostic features separating the five taxa are outlined in Zug (1991) and the most important ones are abridged and given here as the formal diagnosis for all five species in terms of separating them from one another.

N. karlagambellae sp. nov. is separated from the other four species by the following unique suite of characters: 58-59 dorsal rows, 30-31 mid-body rows, 44-45 lamellae on finger 4 and 62-63 lamellae on toe 4.

N. concolor (Duméril, 1851) is separated from the other four species by the following unique suite of characters: 57-58 dorsal rows, 29-30 mid-body rows, 36-37 lamellae on finger 4 and 49-51 lamellae on toe 4.

N. georgemariolisi sp. nov., is separated from the other four species by the following unique suite of characters: 59-60 dorsal rows, 31-32 mid-body rows, 41-43 lamellae on finger 4 and 57-59 lamellae on toe 4.

N. cathysonnemannae sp. nov. is separated from the other four species by the following unique suite of characters: 56-58 dorsal rows, 20-29 mid-body rows, 34-36 lamellae on finger 4 and 47-48 lamellae on toe 4.

N. neilsonnemanni sp. nov. is separated from the other four species by the following unique suite of characters: 58-59 dorsal rows, 30-31 mid-body rows, 42-44 lamellae on finger 4 and 59-61 lamellae on toe 4.

All five species (previously treated as *N. concolor*) are readily separated from all other *Emoia sensu lato* species, including all species in the genus *Notanemoia gen. nov.* as defined elsewhere in this paper by the following suite of characters: Scales on the body are of a moderate size; adults of slender build and in excess of 55 mm snout-vent length; dorsally with green to greenish tan head and body; back and head are never silvery-grey, never have a mid-dorsal stripe and the tail is never blue or green; 27-33 midbody scale rows; less than 90 scales from head to base of tail; 43-65 lamellae beneath the fourth toe of the hind foot.

Distribution: *N. karlagambellae sp. nov.* occurs on the island of Gau, Fiji and potentially no other place, although it may occur on one or two nearby islands to the immediate north.
All are separated from Viti Levu, by deep sea passages not breached during ice-age sea level drops.

Etymology: Named in honour of Karla Gambell of Burwood, Victoria, wife of George Mariolis and also a former body-building champion and former of owner of Definition Fitness Centre in East Doncaster, Victoria and also now a highly sought-after personal (fitness) trainer at several venues, for services to the health and well-being of many Australians over many decades.

Comment: The island of Gau, Fiji, as well as Nairai and Koro to the north almost certainly have yet further unrecognized herpetological diversity due to their relative islation, even in times of sea level minimum during recent glacial maxima. Habitat destruction in the form of land clearing and introduced pests threaten much of this biodiversity and it needs to be catalogued and properly managed to prevent extinctions as soon as possible.

NOTANEMOIA CATHYSONNEMANNAE SP. NOV.

LSID urn:lsid:zoobank.org:act:B4199E15-93A1-4D72-9D36-207D49E8179F

Holotype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, USA, Specimen number: Herps MCZ 48, collected from Taveuni, Fiji. The Museum of Comparative Zoology, Harvard University allows access to its holdings.

Diagnosis: The species *Notanemoia georgemariolisi sp. nov.*, *N. karlagambellae sp. nov.*, *N. neilsonnemanni sp. nov.* and *N. cathysonnemannae sp. nov.* have all until now been treated as populations of the species *N. concolor* (Duméril, 1851) and would until now have keyed out as this species using the keys of Brown (1991) or Zug (1991).

All can be separated from one another by morphological differences as outlined herein.

The specimens from Kadavu (AKA Kandavu), are herein assigned to the species *Notanemoia georgemariolisi sp. nov.*, those from the island of Gau are herein assigned to the species *N. karlagambellae sp. nov.*, those from Taveuni Island, Vanua Levu and outliers to the north of the strait between these islands and Viti Levu / Taveuni are assigned to the species *N. cathysonnemannae sp. nov.*, while those from Matuku and potentially other small islands to the north are assigned to the species *N. neilsonnemanni sp. nov.*.
The species *N. concolor* is herein restricted to Vita Levu and nearby Ovalau and includes the synonymous name *N. resplendens* (Peters. 1877).

Diagnostic features separating the five taxa are outlined in Zug (1991) and the most important ones are abridged and given here as the formal diagnosis for all five species in terms of separating them from one another.

N. cathysonnemannae sp. nov. is separated from the other four species by the following unique suite of characters: 56-58 dorsal rows, 20-29 mid-body rows, 34-36 lamellae on finger 4 and 47-48 lamellae on toe 4.

N. concolor (Duméril, 1851) is separated from the other four species by the following unique suite of characters: 57-58 dorsal rows, 29-30 mid-body rows, 36-37 lamellae on finger 4 and 49-51 lamellae on toe 4.

N. georgemariolisi sp. nov., is separated from the other four species by the following unique suite of characters: 59-60 dorsal rows, 31-32 mid-body rows, 41-43 lamellae on finger 4 and 57-59 lamellae on toe 4.

N. karlagambellae sp. nov. is separated from the other four species by the following unique suite of characters: 58-59 dorsal rows, 30-31 mid-body rows, 44-45 lamellae on finger 4 and 62-63 lamellae on toe 4.

N. neilsonnemanni sp. nov. is separated from the other four species by the following unique suite of characters: 58-59 dorsal rows, 30-31 mid-body rows, 42-44 lamellae on finger 4 and 59-61 lamellae on toe 4.

All five species (previously treated as *N. concolor*) are readily separated from all other *Emoia sensu lato* species, including all species in the genus *Notanemoia gen. nov.* as defined elsewhere in this paper by the following suite of characters: Scales on the body are of a moderate size; adults of slender build and in excess of 55 mm snout-vent length; dorsally with green to greenish tan head and body; back and head are never silvery-grey, never have a mid-dorsal stripe and the tail is never blue or green; 27-33 midbody scale rows; less than 90 scales from head to base of tail; 43-65 lamellae beneath the fourth toe of the hind foot.

Distribution: *N. cathysonnemannae sp. nov.* with a type locality of Taveuni Island, is belived to occur also on Vanua Levu, Yadua and potentially tiny outliers to the north of the strait between these islands and Viti Levu / Ovalau further south.

Etymology: Named in honour of Cathy Sonnemann, wife of Neil Sonnemann, a herpetological icon in Australia, in recognition of her services assisting to Neil Sonnemann's important work in herpetology.
Neil Sonnemann is best known as a world-leader in captive breeding numerous kinds of Australian reptiles, in particular pythons and geckos.
Some of the immaculate reptiles used in Snakebusters: Australia's best reptile shows for the only hands on reptile shows in Australia that let people hold the animals came from the Sonnemann breeding facility.

NOTANEMOIA NEILSONNEMANNI SP. NOV.

LSID urn:lsid:zoobank.org:act:3B4D3FA4-ABD2-4900-8FF5-4F40EB3618F7

Holotype: A preserved specimen at the American Museum of Natural History, New York, USA, specimen number: AMNH Herpetology 41706, collected from Matuku, Fiji.

The American Museum of Natural History, New York, USA allows access to its holdings.

Paratypes: Six preserved specimens at the Smithsonian United States National Museum (USNM), Washington, DC, USA, specimen numbers: USNM Herps 230221-26, collected from Matuku, Fiji.

Diagnosis: The species *Notanemoia georgemariolisi sp. nov.*, *N. karlagambellae sp. nov.*, *N. neilsonnemanni sp. nov.* and *N. cathysonnemannae sp. nov.* have all until now been treated as populations of the species *N. concolor* (Duméril, 1851) and would until now have keyed out as this species using the keys of Brown (1991) or Zug (1991).

All can be separated from one another by morphological differences as outlined herein.

The specimens from Kadavu (AKA Kandavu), are herein assigned to the species *Notanemoia georgemariolisi sp. nov.*; those from the island of Gau are herein assigned to the species *N. karlagambellae sp. nov.*; those from Taveuni Island, Vanua Levu and immediately adjacent outliers to the north of the strait between these islands and Viti Levu / Taveuni (to the south) are assigned to the species *N. cathysonnemannae sp. nov.*, while those from Matuku and potentially other small islands to the north in the Lau Group are assigned to the species *N. neilsonnemanni sp. nov.*.

The species *N. concolor* is herein restricted to Vita Levu and nearby Ovalau and includes the synonymous name *N. resplendens* (Peters. 1877).

Diagnostic features separating the five taxa are outlined in Zug (1991) and the most important ones are abridged and given here as the formal diagnosis for all five species in terms of separating them from one another.

N. neilsonnemanni sp. nov. is separated from the other four species by the following unique suite of characters: 58-59 dorsal rows, 30-31 mid-body rows, 42-44 lamellae on finger 4 and 59-61 lamellae on toe 4.

N. cathysonnemannae sp. nov. is separated from the other four species by the following unique suite of characters: 56-58 dorsal rows, 20-29 mid-body rows, 34-36 lamellae on finger 4 and 47-48 lamellae on toe 4.

N. concolor (Duméril, 1851) is separated from the other four species by the following unique suite of characters: 57-58 dorsal rows, 29-30 mid-body rows, 36-37 lamellae on finger 4 and 49-51 lamellae on toe 4.

N. georgemariolisi sp. nov., is separated from the other four species by the following unique suite of characters: 59-60 dorsal rows, 31-32 mid-body rows, 41-43 lamellae on finger 4 and 57-59 lamellae on toe 4.

N. karlagambellae sp. nov. is separated from the other four species by the following unique suite of characters: 58-59 dorsal rows, 30-31 mid-body rows, 44-45 lamellae on finger 4 and 62-63 lamellae on toe 4.

All five species (previously treated as *N. concolor*) are readily separated from all other *Emoia sensu lato* species, including all species in the genus *Notanemoia gen. nov.* as defined elsewhere in this paper by the following suite of characters: Scales on the body are of a moderate size; adults of slender build and in excess of 55 mm snout-vent length; dorsally with green to greenish tan head and body; back and head are never silvery-grey, never have a mid-dorsal stripe and the tail is never blue or green; 27-33 midbody scale rows; less than 90 scales from head to base of tail; 43-65 lamellae beneath the fourth toe of the hind foot.

Distribution: *N. neilonnemannae sp. nov.* with a type locality of Matuku, Fiji, is only known from there but may also be found on tiny islands to the north in the Lau group of islands.

Etymology: Named in honour of Neil Sonnemann, of husband and wife team "Sonnemann's Snakes". Neil Sonnemann is a herpetological icon in Australia, and this species is named in his honour.

Neil Sonnemann is best known as a world-leader in captive breeding numerous kinds of Australian reptiles, in particular pythons and geckos, although his achievements and work in herpetology goes way beyond this and has been largely out of public view.

Some of the immaculate reptiles used in Snakebusters: Australia's best reptile shows for the only hands on reptile shows in Australia that let people hold the animals came from the Sonnemann breeding facility. Many tens of thousands of people who would previously have hated snakes have had the benefit of holding Sonnemann's snakes at Snakebusters reptile shows and been converted to the cause of wildlife conservation.

AINTEMOIA DANNYGOODWINI SP. NOV.

LSID urn:lsid:zoobank.org:act:26DD36CB-DDA5-4C37-8FEB-75F9DC4BDDE4

Holotype: A preserved specimen at the US National Museum USNM, aka Smithsonian at Washington, DC, USA, herpetology collection, specimen number: 322474 from Vanua Levu, Fiji. This facility allows access to its holdings.

Paratype: A preserved specimen at the Museum of Natural History (UK), aka British Museum of Natural History, London, United Kingdom, specimen number: BMNH 1938.8.2.11 collected from Tavenui, Fiji.

Diagnosis: The species *Aintemoia dannygoodwini sp. nov.*, *A. latishadarwinae sp. nov.* and *A. parkeri* (Brown, Pernetta and Watling, 1980) have until now all been treated as separate island populations of the same species, until now called *Emoia parkeri* Brown, Pernetta and Watling, 1980.

There are at least three separate populations of all of which are both genetically and morphologically divergent from one another, separated by deep water barriers and therefore given the status herein as separate but similar species.

All would until now have been keyed out or identified as "*Emoia parkeri* Brown, Pernetta and Watling, 1980", which is the same diagnosis as for the subgenus *Paraemoia subgen. nov.*.

The subgenus *Paraemoia subgen. nov.* (type species *Emoia parkeri* Brown, Pernetta and Watling, 1980) within the genus *Aintemoia gen. nov.* is separated from all other species within the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33.

Nominate *Aintemoia parkeri* is herein restricted to Viti Levu Island, Fiji. *A. dannygoodwini sp. nov.* occurs on Vanua Levu and Tavenui islands, Fiji. *A. latishadarwinae sp. nov.* is found on Kadavu Island, Fiji and potentially islets immediately to the north-east.

The three species, *A dannygoodwini sp. nov.*, *A. parkeri* and *A. latishadarwinae sp. nov.* are most readily separated from one another by differences in colouration.

A. parkeri is characterised and separated from both other species by a black stripe commencing in front of the eye, running under it and then as thick unbroken line past the top of the ear and along the flank past the front leg after which it breaks and becomes broken by the brown colouration that dominates the dorsal surface and rear flanks. By contrast *A. latishadarwinae sp. nov.* is of similar dorsal colouration to *A. parkeri* but the same black stripe on *A. latishadarwinae sp. nov.* commences only from the back of the eye (not in front of it) and has one or more well-defined breaks in it before the front leg. The species *A. dannygoodwini sp. nov.* is also similar to both other species (*A. parkeri* and *A. latishadarwinae sp. nov.*), in this case with the black stripe starting from the front of the eye, being similar to that of *A. parkeri*, but is separated from both other species by a generally lighter dorsal colouration (medium, versus dark brown on top) and whitish upper labials, versus yellowish in *A. latishadarwinae sp. nov.* and brownish in *A. parkeri.*

Distribution: *A. dannygoodwini sp. nov.* is restricted to the islands of Vanua Levu and Tavenui, Fiji.

Etymology: Named in honour of Danny Goodwin of Inverloch, Victoria, Australia, in recognition of many years of important work in Australian herpetology, in the main part being assisting better known scientists in their research projects, publications and the like and commonly doing the harder work that avoids official recognition or even recognition from peers.

AINTEMOIA LATISHADARWINAE SP. NOV.

LSID urn:lsid:zoobank.org:act:533F3068-595F-4724-A720-6352CF168181

Holotype: A preserved specimen at the California Academy of Sciences, San Francisco, California, USA, specimen number: CAS HERP 147570, collected from 3 km South of Richmond High School, Kadavu, Fiji. This facility allows access to its holdings.

Paratypes: Three more preserved specimens at the California Academy of Sciences, San Francisco, California, USA, specimen number: CAS HERP 147571-3, also collected from Kadavu, Fiji.

Diagnosis: The species *Aintemoia latishadarwinae sp. nov.*, *A. dannygoodwini sp. nov.* and *A. parkeri* (Brown, Pernetta and Watling, 1980) have until now all been treated as separate island populations of the same species, until now called *Emoia parkeri* Brown, Pernetta and Watling, 1980.

There are at least three separate populations of all of which are both genetically and morphologically divergent from one another, separated by deep water barriers and therefore given the status herein as separate but similar species.

All would until now have been keyed out or identified as "*Emoia parkeri* Brown, Pernetta and Watling, 1980", which is the same diagnosis as for the subgenus *Paraemoia subgen. nov.*.

The subgenus *Paraemoia subgen. nov.* (type species *Emoia parkeri* Brown, Pernetta and Watling, 1980) within the genus *Aintemoia gen. nov.* is separated from all other species within the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Dorsum not uniformly dark; dorsal ground color of head and body in shades of olive, tan or medium to light brown and iridescent; if ground color of trunk brown, sides with darker bars, spots or stripes; ground color of head and body tan, brown or olive, lateral pattern of sparse markings to boldly marked; trunk with dark dorsolateral and lateral stripes and greenish bronze vertebral stripe, number of middorsal scales from nape to base of tail 72 or fewer; interparietal and frontoparietal scales separate; number of scales around midbody 26-33.

Nominate *Aintemoia parkeri* is herein restricted to Viti Levu Island, Fiji. *A. dannygoodwini sp. nov.* occurs on Vanua Levu and Tavenui islands, Fiji. *A. latishadarwinae sp. nov.* is found on Kadavu Island, Fiji and potentially islets immediately to the north-east.

The three species, *A dannygoodwini sp. nov.*, *A. parkeri* and *A. latishadarwinae sp. nov.* are most readily separated from one another by differences in colouration.

A. parkeri is characterised and separated from both other species by a black stripe commencing in front of the eye, running under it and then as thick unbroken line past the top of the ear and along the flank past the front leg after which it breaks and becomes broken by the brown colouration that dominates the dorsal surface and rear flanks. By contrast *A. latishadarwinae sp. nov.* is of similar dorsal colouration to *A. parkeri* but the same black stripe on *A. latishadarwinae sp. nov.* commences only from the back of the eye (not in front of it) and has one or more well-defined breaks in it before the front leg. The species *A. dannygoodwini sp. nov.* is also similar to both other species (*A. parkeri* and *A. latishadarwinae sp. nov.*), in this case with the black stripe starting from the front of the eye, being similar to that of *A. parkeri*, but is separated from both other species by a generally lighter dorsal colouration (medium, versus dark brown on top) and whitish upper labials, versus yellowish in *A. latishadarwinae sp. nov.* and brownish in *A. parkeri.*

Distribution: *A. latishadarwinae sp. nov.* is restricted to the island of Kadavu, Fiji and potentially immediately adjacent islets to the north east.

Etymology: Named in honour of Latisha Darwin manager of the Brush Ski Lodge, Mount Hotham, Victoria, for some years preceding 2018, in recognition for her services to the downhill snow skiing and snowboarding industry, including actively diverting young Australians and foreigners away from their mobile phones and computers and actually engaging in outdoor sport, exercise and appreciation of their natural environment.

CAERULEOCAUDASCINCUS STEVEBENNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:58319D6C-8AE5-466E-BC2B-C8248D2472BC

Holotype: A preserved specimen at the United States National Museum (now National Museum of Natural History; Smithsonian Institution; Washington, DC), USA, specimen number: USNM 333793, collected at 3km east of Somosomo at 600 metres elevation, Taveuni, Fiji.

The National Museum of Natural History; Smithsonian Institution; Washington, DC, USA, allows access to its holdings.

Paratypes: 13 preserved specimens at the United States National Museum (now National Museum of Natural History; Smithsonian Institution; Washington, DC), USA, specimen numbers: USNM 333794-333806, collected at Taveuni, Fiji.

Diagnosis: *Caeruleocaudascincus stevebennetti sp. nov.* known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9 supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov.* this is not the case for *C. caeruleocauda.*

Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda.*

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. williambennetti sp. nov. from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The species *C. danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov.*.

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from the Fiji Island of Taveuni and potentially Vitu Levu.

Etymology: Named in honour of Steve Bennett of Narre Warren, Victoria, Australia for services to herpetology and wildlife conservation in general, including through logistical assistances to Snakebusters: Australia's best reptiles shows and as a personal fitness trainer for members of our team.

CAERULEOCAUDASCINCUS LUCYBENNETTAE SP. NOV.

LSID urn:lsid:zoobank.org:act:58EB4678-DC35-490A-9039-26EA5D9109A7

Holotype: A preserved specimen at the United States National Museum (now National Museum of Natural History; Smithsonian Institution; Washington, DC), USA, specimen number: USNM 333943, collected at Efate, Vanuatu.

The National Museum of Natural History; Smithsonian Institution; Washington, DC, USA, allows access to its holdings.

Paratypes: 28 preserved specimens at the United States National Museum (now National Museum of Natural History; Smithsonian Institution; Washington, DC), USA, specimen numbers: USNM 333941, 333944-49, 333959-62, 333953-66, 333968, 333970, 333972-73 collected at Efate, Vanuatu.

Diagnosis: *Caeruleocaudascincus lucybennettae sp. nov.* known only from Efate, Vanuatu and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. stevebennetti sp. nov. known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows

parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov.* this is not the case for *C. caeruleocauda.* Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda.*

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. williambennetti sp. nov. from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The species *C. danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov..*

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from Efate, Vanuatu and immediately adjacent islands.

Etymology: Named in honour of Lucy Bennett, wife of Steve Bennett of Narre Warren, Victoria, Australia for her services to herpetology and wildlife conservation in general, including through logistical assistances to Snakebusters: Australia's best reptiles shows and moving bulky materials used to maintain our scientific research facility.

CAERULEOCAUDASCINCUS CLIVEBENNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:B33EA1E5-3D32-4363-BD6B-1C92240B7C88

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number: R69554 collected at Kira Kira, San Cristobal, Solomon Islands, Latitude 10.50 S., Longitude 161.93 E. The government-owned Australian Museum in Sydney, New South Wales, Australia allows access to its holdings.

Paratypes: 57 preserved specimens all from San Cristobal, Solomon Islands, specimen numbers, AMS R69555-56, R80155-58 and R93496 all at the Australian Museum in Sydney, New South

Wales, Australia, specimen numbers, CAS 72228-29 at the California Academy of Sciences, San Francisco, California, USA and specimen numbers MCZ 14552-60, 14562-71, 14573-76 and14595-619 all at the Museum of Comparative Zoology, Harvard University in Cambridge, Massachusetts, USA.

Diagnosis: *Caeruleocaudascincus clivebennetti sp. nov.* known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. stevebennetti sp. nov. known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov.* this is not the case for *C. caeruleocauda.* Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda.*

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. williambennetti sp. nov. from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The species *C. danielbennetti sp. nov*. is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C.*

drubennetti sp. nov.). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov*..

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from San Cristobal, Solomon Islands and immediately adjacent smaller islands.

Etymology: Named in honour of the late Clive Bennett of Kempsey, New South Wales, Australia, formerly a wildlife officer with the New South Wales National Parks and Wildlife Service (NPWS/NSW) for his services to wildlife conservation in Australia by way of exposing serious endemic corruption within his government bureaucracy and the associated business at Taronga Park Zoo in Mosman, New South Wales, Australia.

CAERULEOCAUDASCINCUS CRAIGBENNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:EF0F7F2B-8A15-4D0A-97E2-2B3067D4678E

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number: R11466 collected at Buin, South Bouganville, Latitude 6.83 S., Longitude 155.73 E. The government-owned Australian Museum in Sydney, New South Wales, Australia allows access to its holdings.

Paratypes: 87 preserved specimens all from Bougainville, specimen numbers, AMS R11467, R18812, R420I2 and R55986-87 all at the Australian Museum in Sydney, New South Wales, Australia, specimen numbers, CAS 94006. 107410-15, 108380-421, 108982, 108984-87 and 110166-200 all at the California Academy of Sciences, San Francisco, California, USA.

Diagnosis: *Caeruleocaudascincus stevebennetti sp. nov.* known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov*.) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov*. this is not the case for *C. caeruleocauda*. Adult C. craigbennetti sp. nov. are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda.*

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. williambennetti sp. nov. from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered

chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species C. *drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The species *C. danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov.*.

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from Bougainville Island in the territory of Papua New Guinea.

Etymology: Named in honour of Craig Bennett of Sydney, New South Wales, Australia who in his youth, while living at St. Ives assisted this author in fieldwork studying Death Adders Acanthophis antarcticus (Shaw and Nodder, 1802) in the 1970's and 1980's and who in later life has become a well-known show-biz commentator on daytime television on Network Ten Australia.

CAERULEOCAUDASCINCUS BRETTBARNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:4A17FFB0-824E-4B56-9D76-1F6DD6A3B92E

Holotype: A preserved specimen at the Field Museum of Natural History, Chicago, Illinois, USA, specimen number: FMNH 41317 collected at New Georgia, Solomon Islands, Latitude 8.13 S., Longitude 157.52 E. This facility allows access to its holdings.

Paratype: Two preserved specimens at the Field Museum of Natural History, Chicago, Illinois, USA, specimen number: FMNH 41317 collected at Kolombangara Island in the New Georgia group in the Solomon Islands, Latitude 8.02 S., Longidude 157.05 E.

Diagnosis: *Caeruleocaudascincus stevebennetti sp. nov.* known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue

in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov*. but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov.* this is not the case for *C. caeruleocauda*. Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda.*

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. williambennetti sp. nov. from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov*. and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The species *C. danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov.*.

The species *C. danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov.*.

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from the new Georgia group of islands in the Solomon Islands.

Etymology: Named in honour of Brett Barnett of Ardeer in Victoria, Australia for services to herpetology spanning some decades including in particular his excellent logistical support for activities by the Victorian Herpetological Society (VHS), including the organisation of and running of reptile expos on an annual basis, including in terms of security, noting that the ongoing threats of disruptions, thefts of reptiles and other forms of attack of wildlife displays by people seeking to undermine them for their own commercial self-interest is a serious problem in Australia in the period post-dating about 2006 to present (2019).

CAERULEOCAUDASCINCUS WILLIAMBENNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:7EFB2D83-B1F1-4D32-81C9-6B9482BB8D43

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R28906 collected at Talasea, New Britain, Latitude 5.30 S., Longitude 150.05 E. This government-owned facility allows access to its holdings.

Paratype: Six preserved specimens at the Australian Museum in Sydney, New South Wales, Australia, specimen numbers R28930-31 and R28962-65 collected at Talasea, New Britain, Latitude 5.30 S., Longitude 150.05 E.

Diagnosis: *Caeruleocaudascincus williambennetti sp. nov.* from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. stevebennetti sp. nov. known only from the Fiji Islands, is readily separated from all other species in the genus

Caeruleocaudascincus gen. nov. as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov.* this is not the case for *C. caeruleocauda*. Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda*.

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The species *C. danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov.*.

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from the Bismark islands of New Britain and New Ireland and immediately adjacent small islands.

Etymology: Named in honour of the late William (Bill) Bennett of Saint Clair in western Sydney, New South Wales, later of Young in

New South Wales, Australia for services to herpetology and wildlife conservation in general, including through logistical assistances to this author when conducting fieldwork in remote areas, including in the form of emergency car repairs and the like in the 1970's and 1980's.

CAERULEOCAUDASCINCUS KAMAHLBENNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:14D35B4D-8381-4FDF-A781-0F8E68674668

Holotype: A preserved specimen at the at the Museum of Comparative Zoology, Harvard University in Cambridge, Massachusetts, USA., specimen number MCZ 144390 collected at Mussau Island in the St. Matthias Group in the New Ireland Province of Papua New Guinea, Latitude 1.41 S., Longitude 149.61 E. This facility allows inspection of its holdings.

Paratype: A preserved specimen at the at the Museum of Comparative Zoology, Harvard University in Cambridge, Massachusetts, USA., specimen number MCZ 156186 collected at Mussau Island in the St. Matthias Group in the New Ireland Province of Papua New Guinea, Latitude 1.41 S., Longitude 149.61 E.

Diagnosis: *Caeruleocaudascincus williambennetti sp. nov.* from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. stevebennetti sp. nov. known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov.* this is not the case for *C. caeruleocauda.* Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda.*

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by

colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The species *C. danielbennetti sp. nov*. is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov*. also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov.*.

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from Mussau Island in the St. Matthias Group of Islands, New Ireland Province in Papua New Guinea.

Etymology: Named in honour of Kamahl Bennett of St. Clair, New South Wales, Australia, son of the late William (Bill) Bennett of Saint Clair in western Sydney, New South Wales, later of Young in New South Wales, Australia also for services to herpetology and wildlife conservation in general, including through logistical assistances to this author when conducting fieldwork in remote areas, assisting in photographic assignments and the like.

CAERULEOCAUDASCINCUS DRUBENNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:969C68D5-F98A-4FBE-BC12-C3FA46D5BCAD

Holotype: A preserved specimen at the at the Museum of Comparative Zoology, Harvard University in Cambridge, Massachusetts, USA., specimen number R-139526, collected at Emeti on the Bamu River, Western Province, Papua New Guinea, Latitude 7.87 S., Longitude 143.25 E.

This facility allows inspection of its holdings.

Paratype: Two preserved specimens at the at the Museum of Comparative Zoology, Harvard University in Cambridge, Massachusetts, USA., specimen numbers R-139527-28, collected at Emeti on the Bamu River, Western Province, Papua New Guinea, Latitude 7.87 S., Longitude 143.25 E.

Diagnosis: *Caeruleocaudascincus williambennetti sp. nov.* from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. stevebennetti sp. nov. known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs

from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov*. this is not the case for *C. caeruleocauda.* Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in C. caeruleocauda.

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The species *C. danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov*.). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov.*.

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from southern Papua New Guinea in the region of the Gulf and Western provinces.

Etymology: Named in honour of Dru Bennett of St. Clair, New South Wales, Australia, son of the late William (Bill) Bennett of Saint Clair in western Sydney, New South Wales, later of Young in New South Wales, Australia also for services to herpetology and wildlife conservation in general, including through logistical assistances to this author when conducting fieldwork in remote areas, organising specimens for inspection and study and the like in the 1970's and 1980's.

CAERULEOCAUDASCINCUS JAIBENNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:8D301157-D468-4330-891A-9DBCE71D531D

Holotype: A preserved specimen at the at the Field Museum of Natural History, 1400 S Lake Shore Dr, Chicago, Illinois, 60605, USA., specimen number FMNH 63692, collected at Kechil Island off the north coast of Borneo, Sabah, Malaysia. This facility allows access to its holdings.

Paratype: A preserved specimen at the at the Field Museum of Natural History, 1400 S Lake Shore Dr, Chicago, Illinois, 60605, USA., specimen number FMNH 63693, collected at Kechil Island off the north coast of Borneo, Sabah, Malaysia.

Diagnosis: *Caeruleocaudascincus jaibennetti sp. nov.* from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

C. williambennetti sp. nov. from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. stevebennetti sp. nov. known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25

percent becoming a distinct brown in colour in both sexes.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov.* this is not the case for *C. caeruleocauda.* Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda.*

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

The species *C. danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see above) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov..*

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Known only from the north of Borneo and the Phillippines, including adjacent islands.

Etymology: Named in honour of Jai Bennett of St. Clair, New South Wales, Australia, son of the late William (Bill) Bennett of Saint Clair in western Sydney, New South Wales, later of Young in New South Wales, Australia also for services to herpetology and wildlife conservation in general, including through logistical assistances to this author when conducting fieldwork in remote areas in the 1970's and 1980's, as well as in the early 1980's protecting the breeding and research facility at 170 Lawson Street, Redfern, New South Wales, Australia from attacks and thefts.

CAERULEOCAUDASCINCUS DANIELBENNETTI SP. NOV.

LSID urn:lsid:zoobank.org:act:271F9DA1-08DA-451D-AF56-0796C5077D04

Holotype: A preserved specimen at the Museum of Natural History, London, UK, specimen number

1980.940-941, collected from Pasir Pandjang, East of Tamuranko, Sulawesi, Indonesia. The Museum of Natural History, London, UK allows access to its holdings.

Paratype: A preserved specimen at the Museum of Natural History, London, UK, specimen number
1985.1316 collected from Toraut, Dumoga-Bone National Park, Sulawesi, Indonesia at 300 metres elevation.

Diagnosis: The species *Caeruleocaudascincus danielbennetti sp. nov.* is similar in most respects to *C. drubennetti sp. nov.* (see detail below) but is separated from that taxon by having 29 or more mid-body scale rows (versus 27 or more in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* also has some peppering on the white upper labials, (not seen in *C. drubennetti sp. nov.*). *C. danielbennetti sp. nov.* has more dark pigment at the rear of each of the head-shields than anterior, versus fairly evenly distributed in *C. danielbennetti sp. nov..*

Caeruleocaudascincus williambennetti sp. nov. from the Bismark Archipelago is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following unique combination of characters: 37-43 lamellae on the fourth rear toe, 50-58 scale rows parietals to tail, 31-35 mid body rows (an average number much higher than for all other species in the genus), well defined immaculate yellowish stripes on the dorsal surface and flanks, which are otherwise an immaculate chocolate brownish black, legs scaly in pattern and not striped and immaculate white lower labials.

C. kamahlbenneti sp. nov. from St. Matthias is similar in most respects to *C. williambennetti sp. nov.* as defined herein, but is separated from that species by 44-54 lamellae on the fourth rear toe (versus 37-43) and 53-64 scale rows parietals to tail (versus 50-58). The combined suite of characters thus separates these two species from all others in the genus.

C. stevebennetti sp. nov. known only from the Fiji Islands, is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 8-10, supracilliaries, 7-12 scales on the eyelid, 6-8 infralabials, 56-60 dorsals, 31-36 mid-body rows, 25-28 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 33-41 lamellae on the fourth rear toe, 56-59 scale rows parietals to tail.

C. lucybennettae sp. nov. known only from Efate, Vanuatu, and immediately adjacent islands is readily separated from all other species in the genus *Caeruleocaudascincus gen. nov.* as defined herein by the following unique combination of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a deep sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. clivebennetti sp. nov. known only from San Cristobal Island and other nearby islands in the Solomons, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. craigbennetti sp. nov.* from Bougainville by adult males lacking any obvious mid-dorsal stripe and no well-defined white demarcation on the lower flanks and adult females also without well-defined white demarcation on the lower flanks.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. craigbennetti sp. nov. from Bougainville, is separated from all of *C. stevebennetti sp. nov.*, *C. lucybennettae sp. nov.* and *C. clivebennetti sp. nov.*, by adult males being characterised by a well-defined light coloured mid-dorsal stripe of about one scale's width, usually with little or no blue on the tail and females with a well-defined dorsal pattern of stripes and including a well-defined white line demarcating darker zones on the lower flanks. This demarcation line is light orangeish white. Females are further defined by having a well defined orange stripe running down the upper surface of all four limbs and distinctive banding on the toes of all four feet.

C. brettbarnetti sp. nov. from the New Georgia group of Islands in the Western Province of Solomon Islands are similar in most respects to *C. craigbennetti sp. nov.* but separated from that taxon by the presence of significant peppering of grey on the rear lower labials in males (versus immaculate in *C. craigbennetti sp. nov.*) and the presence of well defined dark blackish-blue etchings at the rear of each scale on the mid section of the dorsal surface of the tail giving barred appearance. These bars expand in width so that the tip of the tail is almost blackish in appearance.

It is also defined by the following suite of characters: 7-9, supracilliaries, 8-11 scales on the eyelid, 5-6 infralabials, 52-58 dorsals, 29-33 mid-body rows, 21-26 lamellae on the fourth front toe (the first proximal lamella counted is the first scale wider than long in contact with a large lateral/dorsal digit scale on at least one side), 32-38 lamellae on the fourth rear toe, 51-60 scale rows parietals to tail, the tail blue is a sky blue (as opposed to aqua blue in the other species in the genus) and with the last 15-25 percent becoming a distinct brown in colour in both sexes.

C. caeruleocauda De Vis, 1892 is similar in most respects to *C. craigbennetti sp. nov.* but whereas a black mid-dorsal stripe runs from just behind the pelvis down about half the tail of *C. craigbennetti sp. nov.* this is not the case for *C. caeruleocauda.* Adult *C. craigbennetti sp. nov.* are characterised by a mainly pale aqua blue tail, versus strong and generally immaculate aqua in *C. caeruleocauda.*

C. caeruleocauda De Vis, 1892 has 40-49 lamellae on the fourth toe of the hind foot and 52-57 scale rows parietals to tail.

C. werneri Vogt, 1912 from the Mariana Islands, is separated from all other species in the genus *Caeruleocaudascincus gen. nov.* by the following suite of characters: 36-45 lamellae on the fourth toe of the hind foot; 52-59 scale rows parietals to tail; the colour consists of mid dorsal and dosolateral stripes being light brown and broken by darker scales in a peppered manner, stripes on th flanks are very indistinct and the rest of the upper body is a peppered chocolate brown on a blackish background, but by any view, far from immaculate. Limbs and feet lack any obvious stripes or makings, save for a few indistinct spots or specks on the upper hind limbs. The blue on the tail is often broken with brown and there is no obvious dark stripe running down the midline of the anterior part of the tail. The front of the head is mottled light brown in colour becoming whiteish at the top of the snout.

C. drubennetti sp. nov. from the Gulf province of southern New Guinea and nearby areas is readily separated from all others in the genus by 8-10 supraciliaries, 9-13 scales on the eyelid, 6-7 infralabials, 53-59 dorsals, 27-33 mid body rows, 21-28 lamellae on the fourth finger of the toe and 30-39 lamellae on the fourth finger of the foot, 53-59 scale rows parietals to tail, and body stripes becoming blue anterior to the tail, versus posterior to the tail in *C. triviale* (Schütz, 1929) which is otherwise similar and would identify as the same species in terms of separation from the rest.

In both species *C. drubennetti sp. nov.* and *C. triviale* the toes are banded black and yellow, the dorsal pattern of stripes on a dark background is immaculate and the rear end of the tail is usually a deep aqua colour. The dorsolateral black stripe running from behind the pelvic girdle is only short and invariably at best runs no more than 20 per cent of the tail length.

C. jaibennetti sp. nov. from north of Borneo and the Phillippines is readily separated from the other species in the genus by colouration including a general absence of any black line running down the anterior part of the upper part of the tail and the lower flanks having distinctive upward incursions of white from the belly up the lower flanks. The tail is bright aqua blue at the anterior end, becoming sky blue towards the rear; the front of the snout becomes yellowish and the upper rear legs have distinctive yellow spots. *C. jaibennetti sp. nov.* is further characterised by having 51-59 scale rows parietals to tail and 31-43 lamellae on the fourth finger of the foot.

The genus *Caeruleocaudascincus gen. nov.* has until now been treated as being part of *Emoia* Gray, 1845 and includes the so-called superspecies known until now as *Emoia caeruleocauda* De Vis, 1892. In line with the findings of others, this taxon as recognized to date is treated as a composite of several species. All are readily separated from *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11, Dorsal scale rows between parietals and base of tail 39-87; midbody scale rows 22-44. Parietal eye present. Anterior loreal distinctly shorter and higher. Palate beta-type. Nasal bones not fused. Subdigital fouth toe lamellae rounded; 33-54 (rarely more than 48 except for

populations in the Admiralty and St. Matthias islands); color pattern: dorsally black with pale, narrow vertebral stripe (golden in life) from tip of snout to near base of tail but not merging into blue of tail, pale dorsolateral stripes; or more brownish with stripes faint or absent (modified from Brown 1991).

Distribution: Sulawesi and immediately adjacent offshore islands.

Etymology: Named in honour of Daniel Bennett a UK-based monitor (Varanidae) enthusiast, in recognition of his excellent texts on monitor lizards including Bennett (1998).

VENTRIPALLIDUSSCINCUS GRAYSONOCONNORI SP. NOV.

LSID urn:lsid:zoobank.org:act:619962A1-2F2B-4A78-B9CA-187F81D1D336

Holotype: A preserved specimen in the California Academy of Sciences, San Francisco, USA, reptile collection, specimen number: CAS 156058 collected at Gizo Island in the New Georgia Group of the Solomon Islands, Latitude 8.08 S., Longitude 156.81 E.

The California Academy of Sciences, San Francisco, USA allows access to its holdings.

Paratypes: Three preserved specimens in the California Academy of Sciences, San Francisco, USA, reptile collection, specimen numbers: CAS 156059, 156060 and 156061 collected at Gizo Island in the New Georgia Group of the Solomon Islands, Latitude 8.08 S., Longitude 156.81 E.

Diagnosis: *Ventripallidusscincus graysonoconnori sp. nov.* has until now been treated as an island population of *V. schmidti* Brown, 1953. *V. graysonoconnori sp. nov*. is however readily separated from *V. schmidti* by the colouration of the tail, in which it is noticeably arranged into paired spots. *V. graysonoconnori sp. nov.* also is distinguished from *V. schmidti* by having significant flecking on the lower back and both fore and rear limbs.

Both *V. graysonoconnori sp. nov.* and *V. schmidti* are separated from all other species of *Emoia sensu lato* and the other genera formally described in this paper by the following unique suite of characters: Premaxillary teeth 11; Parietal eye present. Anterior loreal distinctly shorter and higher. Nasal bones not fused; palate beta-type; scale rows between parietals and base of tail 49-64; Interparietal fused with frontoparietals. Pale, narrow middorsal stripe absent from head and usually from body (if present on body, grayish tan to golden light brown in colour, not less than two scale rows in breadth and not well-defined on the upper edge). Midbody scale rows 30-36; number of thin, bladelike fourth toe lamellae is 69-83; ground color of middorsal region (two full-scale rows and two half-scale rows) grayish tan to golden light brown, which merges anteriorly with the bronze-brown of the neck and head. The narrow, pale dorsolateral stripes begin in the supraciliary region; upper lateral surfaces dark brown to blackish with scattered pale scales. The tail is grey to blue-green and with darker markings which in *Ventripallidusscincus graysonoconnori sp. nov.* forms a pattern of paired spots (modified from Brown 1991).

Distribution: *V. graysonoconnori sp. nov.* is known only from Gizo in the Solomons. *V. schmidti* occurs elsewhere in the New Georgia group of islands to the east and south-est of Gizo.

Etymology: Named in honour of Grayson O'Connor, of Box Hill, Victoria, Australia owner of the Bush Channel for services to wildlife conservation through his active promotion of wild regions and outdoor camping activities in his various movies including via the Youtube Channel (bushchannel), which features material from various parts of the world, in particular biodiverse parts of tropical south-east Asia.

ANTEMOIA MICHAELGUIHENOFI SP. NOV.

LSID urn:lsid:zoobank.org:act:6E2C427B-A251-49F0-9016-2E02050DAF20

Holotype: A preserved specimen at the American Museum of Natural History, New York, USA, specimen number: AMNH Herpetology R-29015, collected from Aiwa, in the Lau group of islands, Fiji.

Paratypes: 8 preserved specimens at the American Museum of Natural History, New York, USA, specimen numbers: AMNH Herpetology R-29017-29022 and 29031-32 collected from Aiwa, in the Lau group of islands, Fiji.

Diagnosis: *Aintemoia michaelguiheneufi sp. nov*. and *A. rosssadlieri sp. nov.* have until now been regarded as outlier populations of *Emoia trossula* Brown and Gibbons, 1986, herein placed in the genus *Aintemoia gen. nov.*.

Aintemoia michaelguiheneufi sp. nov. is from the island of Aiwa in the Lau Group of islands, Fiji and may be restricted to this island, although only further fieldwork in the island group will establish the extent of distribution.

A. rosssadlieri sp. nov. is from the island of Kadavu, Fiji.

Aintemoia michaelguiheneufi sp. nov. is readily separated from both *A. rosssadlieri sp. nov.* and *A. trossula* Brown and Gibbons, 1986 by the following suite of characters: less than 34 lamellae on the fourth finger, versus more than 35 in the other two species; less than 48 lamellae on the fourth (rear) toe, versus 49-51 in *A. rosssadlieri sp. nov*. and more than 52 in *A. trossula*.

A. michaelguiheneufi sp. nov. is further separated from both other species by having a belly that is heavily flecked with black, versus moderate peppering in *A. rosssadlieri sp. nov*. and limited flecking in *A. trossula.*

A. rosssadlieri sp. nov. differs from both *A. trossula* and *A. michaelguiheneufi sp. nov*. by having a dorsal pattern including intense dark somewhat broken crossbands and including white streaks on the dorsum, versus a semidistinct dorsal pattern in the other two species including crossbands on the dorsum not being obvious.

The species *A. rosssadlieri sp. nov.*, *A. trossula*, *A. michaelguiheneufi sp. nov*. and *A. mokolahi* (Zug, Ineich, Preggill and Hamilton, 2012) from Tonga, can be separated from all other species in the genus *Aintemoia gen. nov.* by the following suite of characters: Fourth toe lamellae 34-60; dorsal scale rows between parietals and base of tail 52-72; rostral forming moderate, slightly concave suture with frontonasal; supranasals slightly broader anteriorly, in contact with anterior loreal; prefrontals narrowly separated to moderately in contact; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad and narrow; prefrontals narrowly separated to broadly in contact; one pair of nuchals; anterior loreal slightly shorter than, to nearly as long as, posterior and slightly higher, in contact with first and second, second, or first, second and third upper labials; ground color of dorsum not brown to blackish; SVL at maturity 66-108 mm; number of lamellae under fourth toe 43-55; midbody scale rows 32-40 (rarely less than 34); color feature of dorsum usually brownish marked by a few to numerous whitish dashes.

The morphologically similar *A. mokolahi*, the only other species likely to be confused with *A. rosssadlieri sp. nov.*, *A. trossula*, and *A. michaelguiheneufi sp. nov.* is separated from the other three species by the unique combination of: A well-defined black band running across the dorsum roughly between the front legs, combined with 35 fourth finger lamellae and 48 fourth toe lamellae.

Aintemoia gen. nov. is separated from other species in *Emoia sensu lato* in the formal description in this paper.

Distribution: *A. michaelguiheneufi sp. nov.* is known only from the type locality.

Etymology: Named in honour of Michael Guihenof of Park Road, Park Orchards in recognition of the immense work he has done to support the ongoing infrastructure at the reptile conservation and breeding facilty at Snakebusters; Australia's best reptiles shows.

ANTEMOIA ROSSSADLIERI SP. NOV.

LSID urn:lsid:zoobank.org:act:C0DC82DC-F96B-436D-AFE6-59FCDDB7A7F6

Holotype: A preserved specimen at the Smithsonian United States National Museum (USNM), Washington, DC, USA, specimen number USNM 267939, collected from Kadavu, Fiji. The Smithsonian United States National Museum (USNM), Washington, DC, USA, allows access to its holdings.

Paratype: A preserved specimen at the California Academy of Science (CAS), San Francisco, California, USA, specimen number: 158978, collected from Kadavu, Fiji.

Diagnosis: *Aintemoia rosssadlieri sp. nov.* and *A.*

michaelguiheneufi sp. nov. have until now been regarded as outlier populations of *Emoia trossula* Brown and Gibbons, 1986, herein placed in the genus *Aintemoia gen. nov.*.

A. rosssadlieri sp. nov. is from the island of Kadavu, Fiji and believed to restricted to this place.

Aintemoia michaelguiheneufi sp. nov. is from the island of Aiwa in the Lau Group of islands, Fiji and may be restricted to this island, although only further fieldwork in the island group will establish the extent of distribution.

Aintemoia michaelguiheneufi sp. nov. is readily separated from both *A. rosssadlieri sp. nov.* and *A. trossula* Brown and Gibbons, 1986 by the following suite of characters: less than 34 lamellae on the fourth finger, versus more than 35 in the other two species; less than 48 lamellae on the fourth (rear) toe, versus 49-51 in *A. rosssadlieri sp. nov*. and more than 52 in *A. trossula*.

A. michaelguiheneufi sp. nov. is further separated from both other species by having a belly that is heavily flecked with black, versus moderate peppering in *A. rosssadlieri sp. nov*. and limited flecking in *A. trossula*.

A. rosssadlieri sp. nov. differs from both *A. trossula* and *A. michaelguiheneufi sp. nov*. by having a dorsal pattern including intense dark somewhat broken crossbands and including white streaks on the dorsum, versus a semidistinct dorsal pattern in the other two species including crossbands on the dorsum not being obvious. This is in addition to the differences outlined previously between the three relevant species.

The species *A. rosssadlieri sp. nov.*, *A. trossula*, *A. michaelguiheneufi sp. nov.* and *A. mokolahi* (Zug, Ineich, Preggill and Hamilton, 2012) from Tonga, can be separated from all other species in the genus *Aintemoia gen. nov.* by the following suite of characters: Fourth toe lamellae 34-60; dorsal scale rows between parietals and base of tail 52-72; rostral forming moderate, slightly concave suture with frontonasal; supranasals slightly broader anteriorly, in contact with anterior loreal; prefrontals narrowly separated to moderately in contact; interparietal distinct (rarely fused or partly fused with frontoparietals); interparietal long, longer than broad and narrow; prefrontals narrowly separated to broadly in contact; one pair of nuchals; anterior loreal slightly shorter than, to nearly as long as, posterior and slightly higher, in contact with first and second, second, or first, second and third upper labials; ground color of dorsum not brown to blackish; SVL at maturity 66-108 mm; number of lamellae under fourth toe 43-55; midbody scale rows 32-40 (rarely less than 34); color feature of dorsum usually brownish marked by a few to numerous whitish dashes.

The morphologically similar *A. mokolahi*, the only other species likely to be confused with *A. rosssadlieri sp. nov.*, *A. trossula*, and *A. michaelguiheneufi sp. nov*. is separated from the other three species by the unique combination of: A well-defined black band running across the dorsum roughly between the front legs combined with 35 fourth finger lamellae and 48 fourth toe lamellae.

Aintemoia gen. nov. is separated from other species in *Emoia sensu lato* in the formal description in this paper.

Distribution: *A. rosssadlieri sp. nov.* is known only from Kadavu Island, Fiji.

Etymology: Named in honour of Ross Sadlier, of Sydney, NSW, Australia, now retired, but who for many years was collection manager at the Australian Museum, Sydney, New South Wales, Australia, in recognition of his immense contribution to herpetology. I should note that the genus *Rosssadliercolotes* Hoser, 2018, as published by Hoser (2018b), was also named in honour of Ross Sadlier, but the etymology in the formal description somehow got chopped from the published final paper so this etymology applies there as well.

SILVAEMOIA ROBVALENTICI SP. NOV.

LSID urn:lsid:zoobank.org:act:338E9BE5-FF48-4B2B-B73D-C435D2D20887

Holotype: A preserved specimen at the Museum of Vertebrate Zoology, University of California, Berkeley, California, USA. specimen number: MVZ Amphibian and reptile specimen 44962, collected from Munda, New Georgia, Western Province, Solomon Islands, Latitude 8.29 S., Longitude 157.62 E.

This facility allows access to its holdings.

Diagnosis: The species *Silvaemoia robvalentici sp. nov*. has until now been treated as a population of *Emoia flavigularis* Schmidt, 1932 herein transferred to the genus *Silvaemoia gen. nov*. due to the significant morphological and genetic differences between the relevant species.

Silvaemoia robvalentici sp. nov. is separated from S. *flavigularis* (Schmidt, 1932) by the absence of white flecks on the lower flanks and yellow under the throat as opposed to greenish-yellow.

Both species S. *flavigularis* (Schmidt, 1932) and *S. robvalentici sp. nov*. consist the entirety of the genus *Silvaemoia gen. nov.*.

The genus *Silvaemoia gen. nov*. can be separated from the genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 by the following suite of characters: Fourth toe lamellae 34-60; dorsal scale rows between parietals and base of tail 52-72; interparietal fused with frontoparietals; prefrontals usually in contact; dorsal color brown with scattered dark or vague transverse lines posteriorly; lateral surfaces slightly darker; undersurface of head and neck yellowish or yellowish-greenish.

The genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* and *Emoa* Girard, 1857 are separated from species in the genus *Emoia* Gray, 1845, in which they were formerly included, by the following suite of characters: SVL at maturity of 45-122 mm; snout tapered and slightly to moderately depressed; scales smooth; midbody scale rows 26-42; dorsal scale rows 51-84; subdigital lamellae rounded to moderately thinned, fourth toe lamellae 32-81; frontoparietals fused; interparietal nearly always distinct, ranging from long and narrow to small; nasal bones separate; parietal eye present; palate alpha type; dorsal ground color ranges from greenish or greenish tan to light or rarely dark brown, usually with darker markings on dorsal and upper lateral surfaces and sometimes pale spots or dashes.

This is an effective diagnosis also for the so-called *Emoia samoensis* group.

Emoia sensu lato including the newly described genera *Notanemoia gen. nov.*, *Cannotbeemoia gen. nov.*, *Aintemoia gen. nov.*, *Silvaemoia gen. nov.*, *Griseolaterus gen. nov.* as well as *Emoa* Girard, 1857 are separated from all other skink genera by the following suite of characters: supranasals present; window in movable lower eyelid; frontoparietals fused; limbs well developed, pentadactyl.

These four characters are shared by all species of thegenera. However, one or both of the derived characters (window in moveable lower eyelid and frontoparietals fused) also characterize some species of *Lipinia* Gray, 1845 and *Leiolopisma* Duméril and Bibron, 1839 being Lygasomine genera lacking supranasals.

Several additional characters are common to all species of *Emoia sensu lato*. but they are not diagnostic because they are also found in most species of several other genera of skinks. These include: (1) rostral broader than high; (2) frontal as long as or longer than broad and in contact with two anterior supraoculars; (3) four large supraoculars; (4) parietals large and in contact; (5) ear prominent, usually with small lobules anteriorly, but always much smaller than eye; (6) rank of adpressed toes from the shortest to the longest: first, second or fifth, third, fourth; (7) tail slender and much longer than body (modified from Brown, 1991).

Distribution: Known only from the New Georgia group of islands in the Solomon Islands.

Etymology: Named in honour of Robert Valentic of Donnybrook, (Melbourne), Victoria, Australia in recognition of some decades of valuable contributions to herpetology in Australia and elsewhere, including through his excellent photos seen in numerous reptile books and similar publications.

SHIREENHOSERSCINCUS SHIREENHOSERAE SP. NOV.

LSID urn:lsid:zoobank.org:act:79DFA8FC-F5D2-4691-86DD-263F7EFD367A

Holotype: A preserved specimen at the Field Museum of Natural

History at Chicago, Illinois, USA collected at Kapit District, Borneo, specimen number: FMNH Amphibians and Reptiles 138544, listed as "*Sphenomorphus stellatus*". A photo of the holotype was published by Bacon (1967).

The Field Museum of Natural History at Chicago, Illinois, USA allows access to its holdings.

Diagnosis: The species *Lygosoma stellatum* Boulenger, 1900 since moved to the genus *Spenomorphus* and now placed in the genus *Shireenhoserscincus gen. nov.*, was originally described from a holotype specimen from Peninsula Malaysia. A morphologically similar lizard from Vietnam was formally described as *Lygosoma annamiticum* Boettger, 1901, but later synonymised with *Lygosoma stellatum* Boulenger, 1900 by subsequent authors.

Morphologically similar lizards, were later found in Thailand, Cambodia and Borneo and were assigned to the same species ("*Sphenomorphus stellatus* Boulenger, 1900") by the relevant authors, these being Bacon (1963), Taylor (1967) and Stuart and Emmett (2006).

This was in the face of evidence they published of significant differences between the relevant forms.

This same evidence in combination is herein relied upon to separate four relevant but closely related species, all of which are diagnosed and separated from one another herein. In the previously cited papers, there is significantly more diagnostic information than is presented here, however I have deliberately distilled it to focus on the simplest and main ways that each can be readily separated from the other, rather than dealing with potentially overlapping and inconsistent characters.

The diagnosis for all four species as genus *Shireenhoserscincus gen. nov.* is given below.

In terms of separating each species with relative ease, the following applies.

Shireenhoserscincus stellatus (Boulenger, 1900) from Peninsula Malaysia is separated from the other three species by the following unique combination of characters: 24 midbody rows, a dorsal pattern including rows of small spots and flecks, but not prominently merging along the midline; without an immaculate venter, 20-23 fourth toe lamellae and in life a bluish or bluish-grey iris.

S. shireenhoserae sp. nov. from east Borneo is separated from the other three species by the following unique combination of characters: 24 midbody rows, a dorsal pattern not including rows of spots; an immaculate venter and 19 fourth toe lamellae.

S. daranini sp. nov. from east Thailand and nearby southern Cambodia is separated from the other three species by the following unique combination of characters: 22 midbody rows, a dorsal pattern including rows of spots; without an immaculate venter and 18 fourth toe lamellae.

S. annamiticum (Boettger, 1901) from Vietnam is separated from the other three species by the following unique combination of characters: 24 midbody rows and 20-22 fourth toe lamellae, a dorsal pattern including rows of spots, tending to merge; an immaculate venter and in life a reddish or reddish-brown iris.

Each species within the genus appears confined to a given mountain region, however within these constraints there is a strong degree of latitude in terms of elevation. Each species is separated from one another by apparently unsuitable flat zones, the constraint most likely being in the form of competing species and/or predators, rather than the physical habitat itself.

Shireenhoserscincus gen. nov. as a genus includes the putative species *Lygosoma stellatum* Boulenger, 1900 (split four ways above) and in effect includes that putative species only as recognized to date by authors who have reviewed the species complex, including most importantly Taylor (1963), Bacon (1967) and more recently Stuart and Emmett (2006).
That putative species is herein split four ways (see above), using two existing names and formally naming two other species for the first time.

The genus *Sphenomorphus sensu lato* Strauch 1887 is a paraphyletic assemblage of species diagnosed as follows: lacking supranasal scales, has a deeply sunk tympanum, five digits on both limbs, fewer than 30 subdigital lamellae on the fourth toe, two rows of supradigital scales on the fourth toe, inner preanal scales overlapping the outer preanal scales and lower eyelids composed of multiple small scales (Lim 1998; Taylor 1963).

This diagnosis also applies to *Shireenhoserscincus gen. nov.*.

Shireenhoserscincus gen. nov. is however separated from *Sphenomorphus* and therefore diagnosed by having an external ear opening present; 22-24 mid-body scale rows; two median rows of dorsal scales that are distinctly widened as opposed to the other dorsal scale; an absence of white edges to the free margins of the upper and lower eyelids; adpressed limbs overlapping; convex rostral; a pair of enlarged preanal scales; bronze-brown coloration above, with scattered, light-colored spots; black spots forming vertebral and dorsolateral longitudinal stripes on body; black spots on upper and lower lips; and tail lighter in coloration than body, with narrow, transverse, black bands not connecting ventrally.

The four species, now comprising the total in this newly named genus are readily separated from one another by the comparative diagnostic characters published in Table 1, at the top of page 28 of Bacon (1967), under the headings "South Viet Nam", "Thailand", "Borneo" and "Malaya", the first and fourth of these coresponding to two previously named species and the other two columns corresponding to the two species named in this paper.

Distribution: So far only known from the type locality, but presumably elsewhere on the island of Borneo, in particular the hillier northern sector.

Etymology: As for the genus (see page 15 in this paper).

SHIREENHOSERSCINCUS DARANINI SP. NOV.

LSID urn:lsid:zoobank.org:act:959812A8-0170-4D94-9931-D25B9A783D7C

Holotype: A preserved female specimen at the Zoological Collection of the Chulalongkorn University, Bangkok, Thailand, specimen number: 35439, collected at Khao Sebab, near Chanthaburi, Chanthaburi Province, Thailand.

The Chulalongkorn University, Bangkok, Thailand, allows access to its holdings.

Paratype: A preserved specimen at the Field Museum of Natural History, Chicago, Illinois, USA, specimen number: FMNH Amphibians and Reptiles 267739, collected from the Cardamom Mountains area in Cambodia.

Diagnosis: The species *Lygosoma stellatum* Boulenger, 1900 since moved to the genus *Spenomorphus* and now placed in the genus *Shireenhoserscincus gen. nov.*, was originally described from a holotype specimen from Peninsula Malaysia. A morphologically similar lizard from Vietnam was formally described as *Lygosoma annamiticum* Boettger, 1901, but later synonymised with *Lygosoma stellatum* Boulenger, 1900 by subsequent authors.

Morphologically similar lizards, were later found in Thailand, Cambodia and Borneo and were assigned to the same species ("*Sphenomorphus stellatus* Boulenger, 1900") by the relevant authors, these being Bacon (1963), Taylor (1967) and Stuart and Emmett (2006).

This was in the face of evidence they published of significant differences between the relevant forms.

This same evidence in combination is herein relied upon to separate four relevant but closely related species, all of which are diagnosed and separated from one another herin. In the previously cited papers, there is significantly more diagnostic information than is presented here, however I have deliberately distilled it to focus on the simplest and main ways that each can be readily separated from the other, rather than dealing with potentially overlapping and inconsistent characters.

The diagnosis for all four species as genus *Shireenhoserscincus gen. nov.* is given below.

In terms of separating each species with relative ease, the following applies.

S. daranini sp. nov. from east Thailand and nearby southern Cambodia is separated from the other three species by the

following unique combination of characters: 22 midbody rows, a dorsal pattern including rows of spots; without an immaculate venter and 18 fourth toe lamellae.

Shireenhoserscincus stellatus (Boulenger, 1900) from Peninsula Malaysia is separated from the other three species by the following unique combination of characters: 24 midbody rows, a dorsal pattern including rows of small spots and flecks, but not prominently merging along the midline; without an immaculate venter, 20-23 fourth toe lamellae and in life a bluish or bluish-grey iris.

S. shireenhoserae sp. nov. from east Borneo is separated from the other three species by the following unique combination of characters: 24 midbody rows, a dorsal pattern not including rows of spots; an immaculate venter and 19 fourth toe lamellae.

S. annamiticum (Boettger, 1901) from Vietnam is separated from the other three species by the following unique combination of characters: 24 midbody rows and 20-22 fourth toe lamellae, a dorsal pattern including rows of spots, tending to merge; an immaculate venter and in life a reddish or reddish-brown iris.

Each species within the genus appears confined to a given mountain region, however within these constraints there is a strong degree of latitude in terms of elevation. Each species is separated from one another by apparently unsuitable flat zones, the constraint most likely being in the form of competing species and/or predators, rather than the physical habitat itself.

Shireenhoserscincus gen. nov. as a genus includes the putative species *Lygosoma stellatum* Boulenger, 1900 (split four ways above) and in effect includes that putative species only as recognized to date by authors who have reviewed the species complex, including most importantly Taylor (1963), Bacon (1967) and more recently Stuart and Emmett (2006).
That putative species is herein split four ways (see above), using two existing names and formally naming two other species for the first time.

The genus *Sphenomorphus sensu lato* Strauch 1887 is a paraphyletic assemblage of species diagnosed as follows: lacking supranasal scales, has a deeply sunk tympanum, five digits on both limbs, fewer than 30 subdigital lamellae on the fourth toe, two rows of supradigital scales on the fourth toe, inner preanal scales overlapping the outer preanal scales and lower eyelids composed of multiple small scales (Lim 1998; Taylor 1963).

This diagnosis also applies to *Shireenhoserscincus gen. nov.*.

Shireenhoserscincus gen. nov. is however separated from *Sphenomorphus* and therefore diagnosed by having an external ear opening present; 22-24 mid-body scale rows; two median rows of dorsal scales that are distinctly widened as opposed to the other dorsal scale; an absence of white edges to the free margins of the upper and lower eyelids; adpressed limbs overlapping; convex rostral; a pair of enlarged preanal scales; bronze-brown coloration above, with scattered, light-colored spots; black spots forming vertebral and dorsolateral longitudinal stripes on body; black spots on upper and lower lips; and tail lighter in coloration than body, with narrow, transverse, black bands not connecting ventrally.

The four species, now comprising the total in this newly named genus are readily separated from one another by the comparative diagnostic characters published in Table 1, at the top of page 28 of Bacon (1967), under the headings “South Viet Nam”, “Thailand”, “Borneo” and “Malaya”, the first and fourth of these coresponding to two previously named species and the other two columns corresponding to the two species named in this paper.

Distribution: Known only from hiller parts of eastern Thailand and nearby southern Cambodia.

Etymology: Named in honour of Dara Nin, of Ringwood, Melbourne, Victoria, Australia, of native Cambodian parents, but born in New Zealand and has never set foot in Asia as of 2018, and aged in his 20’s, the species being named in recognition of his monumental work over a decade with Snakebusters; Melbourne Reptile Shows and Reptile Parties, working to educate people and conserve wildlife with the ony hands on wildlife shows in Australia that actually let people hold the animals.

REFERENCES CITED

Adler, G. H., Austin, C. C. and Dudley, R. 1995. Dispersal and speciation of skinks among archipelagos in the tropical Pacific Ocean. *Evolutionary Ecology* 9:529-541.

Allison, A. and Greer, A. E. 1986. Egg shells with pustulate surface structures: basis for a new genus of New Guinea skinks (Lacertilia: Scincidae). *Journal of Herpetology* 20(1):116-119.

Angel, F. 1935. Liste de reptiles récoltés par la Mission Aubert de la Rüe aux Nouvelles Hèbrides ou dans les iles voisines. *Bull. Mus. Hist. Nat.*, Paris, France:(2)7:54-56.

Auffenberg, W. 1980. The herpetofauna of Komodo, with notes on adjacent areas. *Bulletin of the Florida State Museum* 25(2):39-156.

Austin, C. C. and Zug, G. R. 1999. Molecular and morphological evolution in the south-central Pacific skink *Emoia tongana* (Reptilia: Squamata): uniformity and human-mediated dispersal. *Australian Journal of Zoology* 47:425-437.

Bacon, J. P. 1967. Systematic status of three scincid lizards (genus *Sphenomorphus*) from Borneo. *Fieldiana: Zoology* 51:63-76.

Baker, J. R. 1928. The non-marine vertebrate fauna of the New Hebrides. *Ann. Mag. Nat. Hist.* (10)2:294-302.

Baker, N. 2016. Mangrove Skink *Emoia atrocostata* on a rocky beach at Sedili, Johor, Peninsular Malaysia. *SEAVR*:125-126.

Barbour, T. 1912. A Contribution to the Zoogeography of the East Indian Islands. *Memoirs of the Museum of Comparative Zoology* 44(1):1-203.

Bauer, A. M. 1994. On the identity of *Euprepes samoensis moluccensis* Peters, 1864. *Journal of Herpetology* 28(2):257-258.

Bauer, A. M. and Sadlier, R. A. (eds.) 2000. *The herpetofauna of New Caledonia*. Contributions to Herpetology, 17, Society for Study Amphibians and Reptiles, Ithaca, New York.

Bauer, A. M. and Vindum, J. V. 1990. A checklist and key to the herpetofauna of New Caledonia, with remarks on biogeography. *Proc. Cal. Acad. Sci.* 47(2):17-45.

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.

Bennett, D. 1998. *Monitor Lizards: Natural History, Biology and Husbandry*. Chimaira Bucnhandelsgesellschaft, Germany:352 pp.

Blanchard, F. N. 1923. The amphibians and reptiles of Dickinson County, Iowa. Iowa. *Studies in Natural History* 10(2):19-26.

Bobrov, V. V. and Semenov D. V. 2008. *Lizards of Vietnam*. Moscow:236 pp.

Boettger, O. 1895. Liste der Amphibien und Batrachier des Insel Halmaheira nach den Sammlungen Prof. Dr. W. Kükenthal’s. *Zool. Anz.* 18:116-121, 129-138.

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

Boulenger, G. A. 1887. Report on a zoological collection made by the officers of H.M.S. Flying Fish at Christmas Island, Indian Ocean. *Proc. zool. Soc. London* 1887:516-517.

Boulenger, G. A. 1887. *Catalogue of the Lizards in the British Museum (Nat. Hist.) III. Lacertidae, Gerrhosauridae, Scincidae, Anelytropsidae, Dibamidae, Chamaeleontidae*. London:575pp.

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.

Boulenger, G. A. 1897a. On the reptiles of Rotuma Island, Polynesia. *Ann. Mag. Nat. Hist.* (6)20:306-307.

Boulenger, G. A. 1897b. Descriptions of new lizards and frogs from Mount Victoria, Owen Stanley Range, New Guinea, collected by Mr A. S. Anthony. *Ann. Mag. Nat. Hist.* (6)19:6-13.

Boulenger, G. A. 1900. Description of new batrachians and reptiles from Larut Hills, Perak. *Ann. Mag. Nat. Hist.* (6)7:186-193.

Boulenger, G. A. 1914. An annotated list of the batrachians and reptiles collected by the British Ornithologists’ Union Expedition and the Wollaston Expedition in Dutch New Guinea. *Trans. Zool. Soc. London* 20(5):247-275.

Bourret, R. 1937. Notes herpetologiques sur l’Indochine francaise.

XII. Les lezards de la collection du Laboratoire des Sciences Naturelles de l'Universite. Descriptions de cinq especes nouvelles. XIII. Serpents... *Bull. Gén. Instr. Pub. Hanoi* (May 1937):1-39.

Brabanov, A. and Milto, K. 2017. An annotated type catalogue of the anguid, dibamid, scincid and varanid lizards in the Department of Herpetology, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia (Reptilia: Sauria: Anguidae, Dibamidae, Scincidae and Varanidae). *Zootaxa* (online) 4244(1):65-78.

Brongersma, L. D. 1931. Eine neue Rasse von *Lygosoma kuekenthali. Zool. Anz*. 96:335-336.

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

Brown, W. C. 1953. Results of the Archbold Expeditions. No. 69. A review of New Guinea lizards allied to *Emoia baudini* and *Emoia physicae* (Scincidae). *American Museum Novitates* (1627):1-25.

Brown, W. C. 1954. Notes on several lizards of the genus *Emoia*, with descriptions of new species from the Solomon Islands. *Fieldiana: Zoology* 34:263-276.

Brown, W. C. 1983. A new species of *Emoia* Reptilia, Sauria, (Scincidae) from New Britain. *Steenstrupia* 8(17):317-324.

Brown, W. C. 1991. Lizards of the Genus *Emoia* (Scincidae) with Observations on Their Evolution and Biogeography. *Memoirs of the California Academy of Sciences* 15:104 pp.

Brown, W. C. and Alcala, A. C. 1980. Philippine Lizards of the family Scincidae. *Silliman Univ. Nat. Sci.,* Dumaguete City, Mon., Ser. 2:i-xi+1-246.

Brown, W. C. and Allison, A. 1986. A new lizard of the genus *Emoia* (Scincidae) from Morobe Province, Papua New Guinea. *Occasional Papers of the Bernice P. Bishop Museum* 26:47-51.

Brown, W. C. and Falanruw, M. V. C. 1972. A new lizard of the genus *Emoia* (Scincidae) from the Marianas Islands. *Proc. Cal. Acad. Sci.* 39(9):105-110.

Brown W. C. and Gibbons, J. R. H. 1986. Species of the *Emoia samoensis* group of lizards (Scincidae) in the Fiji Islands, with descriptions of two new species. *Proceedings of the California Academy of Sciences*, 44:41-53.

Brown, W. C. and Marshall, J. T. 1953. New scincoid lizards from the Marshall Islands, with notes on their distribution. *Copeia* 1953(4):201-207.

Brown, W. C. and Parker, F. 1985. Three new lizards of the genus *Emoia* (Scincidae) from southern New Guinea. *Breviora* (480):1-12.

Brown, W. C., Pernetta, J .C. and Watling, D. 1980. A new lizard of the genus *Emoia* (Scincidae) from the Fiji islands. *Proc. Biol. Soc. Washington* 93(2):350-356.

Bruna, E. M., Fisher, R. N. and Case, T. J. 1996a. New evidence of habitat segregation between two cryptic species of Pacific skinks (*Emoia cyanura* and *E. impar*). *Copeia* 1996(4):998-1005.

Bruna, E. M., Fisher, R. N. and Case, T. J. 1996b. Morphological and genetic evolution appear decoupled in Pacific skinks (Squamata: Scincidae: *Emoia*). *Proc. R. Soc. Lond.* B 263:681-688.

Buden, D. W. 2007. Reptiles of Satawan Atoll and the Mortlock Islands, Chuuk State, Federated States of Micronesia. *Pacific Science* 61(3):407-414.

Buden, D. W. 2008. The reptiles of Nauru. *Paci?c Science* 62(4):499-507.

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

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

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

Clause, A. G., Thomas-Moko, N., Rasalato, S. and Fisher, R. N. 2018. All Is Not Lost: Herpetofaunal "Extinctions" in the Fiji Islands. *Pacific Science* 72(3):321-328.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia*, 7th ed. CSIRO Publishing, xxx+1033 pp.

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

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. 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, pp. 367-384.

Crombie, R. I. and Pregill, G. K. 1999. A Checklist of the Herpetofauna of the Palau Islands (Republic of Belau), Oceania. *Herpetological Monographs* 13:29-80.

Daan, S. and Hillenius, D. 1966. Catalogue of the type specimens of amphibians and reptiles in the Zoological Museum, Amsterdam. *Beaufortia* 13:117-144.

Darevsky, l. S. 1964a. New species of scincoid lizards from the islands of Lesser Sundas Archipelago, East Indonesia [in Russian]. [Translated from Russian for the National Science Foundation Office of Science Information Services, ed. James A. Peters]. *Zool. J.* (Moscow) 43(1):80-88.

Darevsky, l. S. 1964b. Die Reptilien der Inseln Komodo, Padar und Rintja im Kleinen Sunda-Archipel, Indonesien. *Senckenbergiana biologica* 43(3/5):563-576.

Das, I. 2004. *Lizards of Borneo*. Natural History Publications, Kota Kinabalu, Borneo.

de Rooij, N. 1915. *The Reptiles of the Indo-Australian Archipelago. I. Lacertilia, Chelonia, Emydosauria.* Leiden (E. J. Brill):xiv+384 pp.

De Jong, J. K. 1927. Reptiles from Dutch New Guinea. *Nova Guinea* 15(3):296-318.

De Vis, C. W. 1890. Reptiles from New Guinea. *Proc. Linn. Soc. New South Wales* (2)5:497-500.

De Vis, C. W. 1892. Zoology of British New Guinea. Part 1. Vertebrata. *Ann. Queensland Mus.*, 2:1-24:3-12.

Dryden, G. L. and Taylor, E. H. 1969. Reptiles from the Mariana and Caroline Islands. *Univ. Kansas Sci. Bull.* 48(8):269-279.

Dunn, E. R. 1927. Results of the Douglas Burden Expedition to the Island of Komodo. III.- Lizards from the East Indies. *American Museum Novitates* (288):1-13.

Duméril, A. M. C. and Bibron, G. 1839. *Erpétologie Générale on Histoire Naturelle Complète des Reptiles*. Vol.5. Roret/Fain et Thunot, Paris:871 pp.

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:224 pp.

Fischer, J. G. 1886. Herpetologische Notizen. *Abh. Geb. Naturw. Hamb*. 9:51-67(1-19).

Fisher, R. and Ineich, I. 2012. Cryptic extinction of a common Pacific lizard *Emoia impar* (Squamata, Scincidae) from the Hawaiian Islands. *Oryx* 46(2):187-195.

Fisher, R. N., Niukula, J., Waitling, D. and Harlow, P. S. 2017. A new species of iguana *Brachylophus* Cuvier 1829 (Sauria: Iguania: Iguanidae) from Gau Island, Fiji Islands. *Zootaxa* (online), 4273(3):407-422.

Fitzinger, L. J. F. J. 1843. *Systema Reptilium*. Braumüller et Seidel, Vindobonae.:1-106.

Gaulke, M. 1999. Die Herpetofauna von Calauit Island (Calamianes-Inseln, Provinz Palawan, Philippinen) (Amphibia et Reptilia). *Faun. Abh. Staatl. Mus. Tierk.* Dresden 21(19).

Gaulke, M. 2011. *The herpetofauna of Panay Island, Philippines*. Edition Chimaira:390 pp.

Gaulke, M. and Alcala, A. C. 2009. Notes on the distributional range of the skink *Emoia ruficauda* (Reptilia: Scincidae) on Mindanao Island, the Philippines. *Salamandra* 45(1):57-60.

Garman, S. 1899. Concerning a species of lizard from Clipperton Island. *Proc. New England zool. Club* 1:59-62.

Garman, S. 1901. Some reptiles and batrachians from Australasia.

Bull. Mus. Comp. Zool. Harvard 39:1-14.

Gibson-Hill, C. A. 1947. The terrestrial reptiles [of the Christmas Islands]. *Bull. Raffles Mus.* 18:81-86.

Gill, B. J. 1993. The Land Reptiles of Western Samoa. *Journal of the Royal Society Of New Zealand* 23(2):79-89.

Gill, B. J., Rinke, D. R. and Zug, G. R. 1994. *Emoia adspersa* (Lacertilia: Scincidae): Confirmed in Tonga. *Records of the Auckland Institute and Museum* 31:215-217.

Girard, C. F. 1858a. Descriptions of some new Reptiles, collected by the US. Exploring Expedition under the command of Capt. Charles Wilkes, U.S.N. Fourth Part. *Proc. Acad. Nat. Sci Philadelphia* 1857: 95-199.

Girard, C. F. 1858b. United States Exploring Expedition during the Years 1838, 1839, 1840, 1841, 1842, Under the command of Charles Wilkes, U.S.N. Vol. 20. Herpetology. C. Sherman and Son, Philadelphia, xv+492 pp.

Goldberg, S. R. and Grismer, L. L. 2017. Notizen zur Fortpflanzung des Mangrovenskinks, *Emoia atrocostata* (Squamata: Scincidae), auf der Malaiischen Halbinsel. *Sauria* 39(1):54-57.

Goldberg, S. R. and Kraus, F. 2008. Notes on reproduction in five species of *Emoia* (Squamata: Scincidae) from Papua New Guinea. *Salamandra* 44(1):54-58.

Goris, R. C. and Maeda, N. 2004. *Guide to the Amphibians and Reptiles of Japan*. Krieger, Malabar, 285 pp.

Gray, J. E. 1845. *Catalogue of the specimens of lizards in the collection of the British Museum.* Trustees of die British Museum/ Edward Newman, London:xxvii+289 pp.

Greer, A. E. 1974. The generic relationships of the scincid lizard genus *Leiolopisma* and its relatives. *Australian Journal of Zoology* 31:1-67.

Grismer, L. L. 2011a. *Lizards of Peninsular Malaysia, Singapore and their adjacent archipelagos*. Edition Chimaira, Frankfurt:728 pp.

Grismer, L. L. 2011b. *Amphibians and reptiles of the Seribuat Archipelago*. Edition Chimaira, Frankfurt:239 pp.

Grismer, L. L., Wood, P. L. Jr. and Grismer, J. L. 2009. A New Insular Species of Skink of The Genus *Sphenomorphus* Strauch 1887 (Squamata: Scincidae) from Pulau Perhentian Besar, Terengganu, Peninsular Malaysia. *Tropical Life Sciences Research*, 20(1):51-69.

Grismer, L. L., Chan, K. O., Grismer, J. L. Wood, P. L. Jnr. and Norhayati, A. 2010. A checklist of the herpetofauna of the Banjaran Bintang, Peninsular Malaysia. *Russian Journal of Herpetology* 17(2):147-160.

Grismer, L. L., Wood, P. L. Jnr., Anuar, S., Muin, M. A., Quah, M. A., McGuire, J. A., Brown, R. M., Tri, N. V. and Thai, P. H. 2013. Integrative taxonomy uncovers high levels of cryptic species diversity in *Hemiphyllodactylus* Bleeker, 1860 (Squamata: Gekkonidae) and the description of a new species from Peninsular Malaysia. *Zoological Journal of the Linnean Society* 169:849-880.

Grossmann, W. and Tillack, F. 2005. Pulau Tioman - Perle im Südchinesischen Meer, Teil 2. *Reptilia* (Münster), 10(51):56-64.

Guillaume, C., Ineich, I., and Boissinot, S. 1994. Allozyme evidence for specific status of the two French Polynesian skink species in the genus *Emoia* (Reptilia: Lacertilia). *Copeia* 1994(4):1042-1047.

Günther, A. C. L. G. 1874. A contribution to the Fauna of Savage Island. *Proc. Zool. Soc. London* 1874:295-297.

Hamilton, A. M. 2008. Species boundaries, biogeography, and intra-archipelago genetic variation with *Emoia samoensis* species group in the Vanuatu archipelago and Oceania. PhD thesis, Lousiana State University, Baton Rouge:188 pp.

Hamilton, A. M., Zug, G. R. and Austin, C. C. 2010. Biogeographic anomaly or human introduction: a cryptogenic population of tree skink (Reptilia: Squamata) from the Cook Islands, Oceania. *Biological Journal of the Linnean Society* 100:318-328.

Heatwole, H. 1975. Biogeography of reptiles on some of the islands and cays of Eastern Papua-New Guinea. *Atoll Research Bulletin* (180):1-41.

Hendrickson, J. R. 1966. Observations on the fauna of Pulau Tioman and Pulau Tulai. 5. The Reptiles. *Bull. Nat. Mus. Singapore* 34:53-71.

Henle, K. 1990. Beobachtungen an Reptilien auf den Gesellschaftsinseln. *Salamandra* 26(1):45-49.

Higgins, H. 1943. A Few Reptiles from Western Samoa. *Copeia* 1943(1):59.

Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, 2088, Australia:238 pp.

Hoser, R. T. 1991. *Endangered Animals of Australia*. Pierson Publishing, Mosman, NSW, 2088, Australia:240 pp.

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

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

Hoser, R. T. 2010. Sam the scam: Sam the koala is an imposter. *Australasian Journal of Herpetology* 8:1-64.

Hoser, R. T. 2012. Divisions of the Asian Colubrid snake genera *Xenochrophis*, *Dendrelaphis* and *Boiga* (Serpentes: Colubridae). *Australasian Journal of Herpetology* 12:65-76.

Hoser, R. T. 2017. The inevitable break-up of the Australian legless lizard genera *Delma* Gray, 1831 and *Aprasia* Gray, 1839, formal descriptions of 13 well-defined Pygopodid species, as well as a further improvement in Pygopodid taxonomy and nomenclature. *Australasian Journal of Herpetology* 35:3-32.

Hoser, R. T. 2018a. Six new species of Dwarf Goanna, *Worrellisaurus* Wells and Wellington, 1984 from Australia. *Australasian Journal of Herpetology* 37:24-37.

Hoser, R. T. 2018b. 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.

How, R. A., Durrant, B., Smith, L. A. and Saleh, N. 1998. *Emoia* (Reptilia: Scincidae) from the Banda Arc islands of eastern Indonesia: variation in morphology and description of a new species. *Records of the Western Australian Museum* 19:131-139.

Ineich, I. 1987. Description d'une nouvelle espece du genre *Emoia* (Sauria, Scincidae) en Polynesie francaise. *Bulletin Du Museum National D'Histoire Naturelle Section A Zoologie Biologie Et Ecologie Animales*, 9(2):491-494.

Ineich, I. 2009. The terrestrial herpetofauna of Torres and Banks Groups (northern Vanuatu), with report of a new species for Vanuatu. *Zootaxa* (online) 2198:1-15.

Ineich, I. 2011. Amphibians and reptiles. In: Bouchet, P., Le Guyader, H. and Pascal, O. (eds), *The Natural History of Santo*. pp. 187-236. MNHN, Paris; Ird, Marseille; PNI, Paris. 572 pp.

Ineich I. and Zug, G. R. 1991. Nomenclatural status of *Emoia cyanura* (Lacertilia scincidae) populations in the central pacific. *Copeia* 1991(4):1132-1136.

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

Jacquinot, H. and Guichenot, A. 1853. Reptiles et poissons. In: Hombron and Jacquinot, Zoologie 3, in: Dumont d'Urville, Voyage au Pole Sud et dans l'Oranie sur les corvettes "l'Astrolabe" et "la

Zélée", ... Gide and J. Baudry, Paris:56 pp.

Kiester, A. R. 1982. A new forest skink from Ponape. *Breviora* (468):1-10.

Klein, E. R., Harris, R. B., Fisher, R. N. and Reeder, T. W. 2016. Biogeographical history and coalescent species delimitation of Pacific island skinks (Squamata: Scincidae: *Emoia cyanura* species group). *Journal of Biogeography*.doi: 10.1111/jbi.12772

Koch, A. 2011. The Amphibians and Reptiles of Sulawesi: Underestimated Diversity in a Dynamic Environment. In: Zachos, F. E. and Habel, J. C. (eds.), *Biodiversity Hotspots*. Springer, Berlin, pp. 383-404.

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

Kopstein, P. F. 1926. Reptilien von den Molukken und den benachbarten Inseln. *Zoologische Mededelingen* 1:71-112.

Kramer, E. 1979. Typenkatalog der Echsen im Naturhistorischen Museum Basel (BM), Stand 1978. *Revue Suisse de Zoologie* 86(1):159-166.

Kraus, F. 2018. A New Species of *Emoia* (Squamata: Scincidae) from Papua New Guinea. *Journal of Herpetology* 52(4):430-436.

Lesson, R. P. 1826. *Reptile plates 3 and 4. In: Atlas de Zoologie, Voyage autour de monde, exécuté (part.) ordre du Roi, sur la Corvette de sa Majesté, La Coquille, pendant les années 1822-1825*. Arthus Bertrand, Paris.

Lesson, R. P. 1830. Description de quelques reptiles nouveaux ou peu connus. In: M. L. I. Duperrey, Voyage Autour du Monde Execute par Ordre du Roi, sur la Corvette de La Majeste, La Coquille, exécuté Pendant les Annees 1822, 1823, 1824 et 1825. 2. *Zoologie* 2(1). Arthur Bertrand, Paris:1-65.

Liu-Yu, M. C. 1970. Studies on Taiwan lizards. *Biol. Bull. Taiwan Normal Univ.* 5:51-93.

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

Longman, H. A. 1916. Snakes and lizards from Queensland and the Northern Territory. *Memoirs of the Queensland Museum* 5:46-51.

Manthey, U. and Grossmann, W. 1997. *Amphibien und Reptilien Südostasiens*. Natur und Tier Verlag (Münster):512 pp.

Macleay, W. 1877. The lizards of the Chevert Expedition. *Proceedings of the Linnean Society of New South Wales*, 2:60-69, 97-104.

McCoid, M. J., Rodda, G. H. and Fritts, T. H. 1995. Distribution and abundance of *Emoia slevini* (Scincidae) in the Marianna Islands. *Herpetological Review* 26(2):70, 72.

McCoy, M. 2006. *Reptiles of the Solomon Islands*. Pensoft, Sofia, Moscow, USSR:147 pp.

McCoy, M. and Webber, P. 1984. Two new species of scincid lizards from Santa Cruz and Duff Islands, Solomon Islands. *Copeia* 1984(3):571-578.

McGregor, R. C. 1904. Notes on Hawaiian Reptiles from the Island of Maui. *Proc. US Natl. Mus.* 28(1383):115-118.

Mckeown, S. 1996. *A Field Guide to Reptiles and Amphibians in the Hawaiian Islands*. Diamond Head Publishing, Inc., Los Osos, CA, USA.

Medway, L. 1974. A new skink (Reptilia: Scincidae: genus *Emoia*) from the New Hebrides, with comments on the status of *Emoia samoaensis loyaltiensis* (ROUX). *Bull. Brit. Mus. Nat. Hist.*, London, 27:53-57.

Medway, L. and Marshall, A. G. 1975. Terrestrial vertebrates of the New Hebrides: origin and distribution. *Roy. Soc. of London, Philosophical Trans.* (Ser. B) 272:423-465.

Meiri, S., Bauer, A. M., Allison, A., Castro-Herrera, F., Chirio, L., Colli, G., Das, I., Doan, T. M., Glaw, F., Grismer, L. L., Hoogmoed, M., Kraus, F., LeBreton, M., Meirte, D., Nagy, Z. T., Nogueira, C. D. C., Oliver, P., Pauwels, O. S. G., Pincheira-Donoso, D., Shea, G., Sindaco, R., Tallowin, O. J. S., Torres-Carvajal, O., Trape, J., Uetz, P., Wagner, P., Wang, Y., Ziegler, T. and Roll, U. 2017. Extinct, obscure or imaginary: the lizard species with the smallest ranges. *Diversity and Distributions* 24(2): 262-273.

Ota, H. 2000. Current status of the threatened amphibians and reptiles of Japan. *Popul. Ecol.* 42:5-9.

Mertens, R. 1922. Verzeichnis der Typen in der herpetologischen Sammlung des Senckenbergischen Museums. *Senckenbergiana* 4:162-183.

Mertens, R. 1927. Neue Amphibien und Reptilien aus dem Indo-Australischen Archipel, gesammelt während der Sunda-Expedition Rensch. *Senckenbergiana* 9:234-242.

Mertens, R. 1930. Die Amphibien und Reptilien der Inseln Bali, Lombok, Sumbawa und Flores. *Senck. Naturf. Gesell.,* Frankfurt am Main, Abhandl. 42(3):117-344.

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

Mittleman, M. B. 1952. A generic synopsis of the Lizards of the Subfamily Lygosominae. *Smithson. misc. Collns*, 117:1-35.

Morley, C. G. and Winder, L. 2015. Vulnerability of Skinks to Predation by Introduced Mongoose in the Fiji Islands. *Pacific Science* 69(3):313-317.

Morrison, C. 2003. *A Field Guide to the Herpetofauna of Fiji.* Institute of Applied Sciences, University of the South Pacific, Suva, Fiji:121 pp.

Mys, B. 1988. The zoogeography of the scincid lizards from North Papua New Guinea (Reptilia: Scincidae). I. The distribution of the species. *Bull. Inst. Roy. Sci. Nat. Belgique* (Biologie) 58:127-183.

Oliver, P. M., Blom, M. P. K., Cogger, H. G., Fisher, R. N., Richmond, J. Q. and Woinarski, J. C. Z. 2018. Insular biogeographic origins and high phylogenetic distinctiveness for a recently depleted lizard fauna from Christmas Island, Australia. *Biol. Lett.* 14:20170696.

Parker, H. W. 1925. Notes on lizards from the South Pacific Islands. *Ann. Mag. nat. Hist.* (9)15:298-300.

Parker, H. W. 1936. A collection of reptiles and amphibians from the mountains of British New Guinea. *Ann. Mag. nat. Hist.* (10)17:66-93.

Peters, J. A. (Editor). 1966. New species of scincid lizards from the Islands of the Lesser Sunda Archipelago (East Indonesia) by I. S. Darevskii. *Smithsonian Herp. Inf. Serv.* (7):1-8.

Peters, W. C. H. 1864. Über einige neue Säugethiere (*Mormops*, *Macrotus*, *Vesperus*, *Molossus*, *Capromys*), Amphibien (*Plathydactylus*, *Otocryptis*, *Euprepes*, *Ungalia*, *Dromicus*, *Tropidonotus*, *Xenodon*, *Hylodes*), und Fische (*Sillago*, *Sebastes*, *Channa*, *Myctophum*, *Carassius*, *Barbus*), *Mber. k. preuss. Akad. Wiss.* Berlin [1864]:381-399.

Peters, W. C. H. 1871. Uber neue Reptilien aus Ostafrika und Sarawak (Borneo), vorzüglich aus der Sammlung des Hrn. Marquis J. Doria zu Genua. *Mber. k. preuss. Akad. Wiss.*, Berlin [1871]:566-581.

Peters, W. C. H. 1874a. Über neue Reptilien (*Peropus*, *Agama*, *Euprepes*, *Lygosoma*, *Typhlops*, *Heterolepis*) der herpetologischen Sammlung des Berliner zoologischen Museums. *M. Ber. k. preuss. Akad. Wiss. Berl*in, 1874:159-164.

Peters, W. C. H. 1874b. Über einige neue Reptilien (*Lacerta*, *Eremias*, *Diploglossus*, *Euprepes*, *Lygosoma*, *Sepsina*, *Ablepharus*, *Simotes*, *Onychocephalus*). *Monatsber. königl. Akad. Wiss.* Berlin. 1874 (Juni):368-377.

Peters, W. C. H. 1878. Herpetologische Notizen. I. Uber die von Spix in Brasilien gesammelten Eidechsen des Königlichen NaturalienKabinets zu München. *Monatsber. Preuss. Akad. Wiss.* Berlin 1877:407-415.

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

Procter, J. B. 1923. On new and rare reptiles and batrachians from the Australian region. *Proc. Zool. Soc.* London 1923:1069-1077.

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.

Read, J. L. 1998. Reptiles and amphibians of the Kau Wildlife Area near Madang: a valuable conservation resource. *Science in New Guinea* 23(3):145-152.

Rehman, H. U., Hideo, N. and Kei, K. 2013. Geological Origin of the Volcanic Islands of the Caroline Group in the Federated States of Micronesia, Western Pacific. *South Pacific Studies* 33(2)101-118.

Resetar, A. R. and Voris, H. K. 1997. Herpetology at the Field Museum of Natural History, Chicago: the first one hundred years. in: *Collection Building in Ichthyology and Herpetology*, ASIH 1997, pp.495-506.

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

Rodda, G. H., Yackel Adams, A. A., Campbell, E. W. and Fritts, T. H. 2015. General Herpetological Collecting is Size-Biased for Five Pacific Lizards. *Journal of Herpetology* 49(4):507-512.

Rodda, G. H., Dean-Bradley, K., Campbell, E. W., Fritts, T. H., Lardner, B., Yackel Adams, A. A. and Reed, R. N. 2015. Stability of Detectability over 17 Years at a Single Site and other Lizard Detection Comparisons from Guam. *Journal of Herpetology* 49(4):513-521.

Reed, R. N., Rodda, G. H. and Hinkle, T. J. 2007. *Emoia atrocostata* (Littoral Skink). *Herpetological Review* 38:100.

Roux, J. 1913. Les reptiles de de la Nouvelle-Calédonie et des îles Loyalty. In: Nova Caledonia, Recherches scientifiques en Nouvelle Calédonie et aux Iles Loyalty. *Zoologie*. (vol. 1, L. 2). Sarasin, F. and Roux, J. (eds.). C. W. Kreidel's Verlag, Wiesbaden, pp. 79-160.

Sadlier, R. A. and Bauer, A. M. 1997. The terrestrial herpetofauna of the Loyalty Islands. *Pacific Science* 51(1):76-90.

Sang, N. V., Cuc, H. T. and Nguyen, Q. T. 2009. *Herpetofauna of Vietnam*. Chimaira, Frankfurt:768 pp.

Sauvage, H. E. 1879. Notice sur quelques reptiles nouveaux ou peu connus de la Nouvelle-Guinee. [*Elania annulata*]. *Bull. Soc. philom.* Paris (7)3:47-61.

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

Schmidt, K. P. and Burt, C. E. 1930. Herpetological results of the Whitney South Sea Expedition V. Description of *Emoia sanfordi*, a new lizard from islands of the Western pacific (Scincidae). *American Museum Novitates* (436):1-3.

Schüz, E. 1929. Verzeichnis der Typen des Staatlichen Museums ftir Tierkunde in Dresden.

1. Teil. Fische, Amphibien und Reptilien. *Abh. Ber. Mus. Tierk. Volkerk.* Dresden 17:1-13.

Schwaner, T. D. and Ineich, I. 1998. *Emoia cyanura* and *E. impar* (Lacertilia, Scincidae) are partially syntopic in American Samoa. *Copeia* 1998(1):247-249.

Setiadi, M. I. and Hamidy, A. 2006. *Jenis-Jenis Herpetofauna di Pulau Halmahera*. Kerjasama antara Pusat Studi Biodiversitas dan Konservasi Universitas Indonesia dan Museum Zoologicum Bogoriense, Puslit Biologi Lembaga Ilmu Pengetahuan Indonesia.

Shea, G. M. 2016. *Emoia ahli* (Vogt, 1932), a synonym of *Emoia battersbyi* (Procter, 1923) (Squamata: Scincidae). *Amphibia-Reptilia*, 37(3):315-319.

Siler, C. D. and Brown, R. M. 2010. Phylogeny-based Species Delimitation in Philippine Slender Skinks (Reptilia: Squamata: Scincidae: *Brachymeles*): Taxonomic Revision of Pentadactyl Species Groups and Description of Three New Species. *Herpetological Monographs* 24(1):1-54.

Stuart, B. L. and Emmett, D. A. 2006. A Collection of Amphibians and Reptiles from the Cardamom Mountains, Southwestern Cambodia. *Fieldiana Zool.* N.S. (109):1-27.

Smith, M. A. 1935. *The fauna of British India, including Ceylon and Burma. Reptiles and Amphibia*, Vol. II. Sauria. Taylor and Francis, London:440 pp.

Smith, M. A. 1937. A review of the genus *Lygosoma* (Scincidae: Reptilia) and its allies. *Records of the Indian Mus.* 39(3):213-234.

Steindachner, F. 1870. Herpetologische Notizen (II). Reptilien gesammelt Während einer Reise in Sengambien. *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften in Wien*, 62:326-348.

Stejneger, L. 1899. The land reptiles of the Hawaiian Islands. *Proc. US Natl. Mus.* 21:783-813.

Sternfeld, R. 1918. Zur Tiergeographie Papuasiens und der pazifischen Inselwelt. *Abh. senckenb. naturf. Ges*. (Frankfurt) 36:375-436.

Sy, E. Y. and Buday, J. 2014. Geographic Distribution: *Emoia ruficauda* (red-tailed swamp skink). *Herpetological Review* 45(3):462.

Tanner, V. W. 1950. Pacific islands herpetology. No. III, Moroai Island. *Great Basin Naturalist* 10:1-30.

Taylor, E. H. 1915. New species of Philippine lizards. *Philip. J. Sci.* 10:89-109.

Taylor, E. H. 1922. *The lizards of the Philippine Islands*. Department of Agriculture and Natural Resources, Bureau of Science, Government of the Philippine Islands, Manila, Publication no. 17:269 pp.

Taylor, E. H. 1963. The lizards of Thailand. *Univ. Kansas Sci. Bull.* 44: 687-1077.

ter Borg, J. 2005. Mariene herpetologie en enkele andere herpetologische waarnemingen op en rond Bali, Lombok en Komodo (Indonesië). *Lacerta* 63(6):242-256.

ter Borg, J. 2007. Reptielen van Bali, een aanvulling. *Lacerta* 65(1):42.

Truong, Q. N., Schmitz, A., Nguyen, T. T., Orlov, N. L., Böhme, W. and Ziegler, T. 2011. Review of the Genus *Sphenomorphus* Fitzinger, 1843 (Squamata: Sauria: Scincidae) in Vietnam, with Description of a New Species from Northern Vietnam and Southern China and the First Record of *Sphenomorphus mimicus* Taylor, 1962 from Vietnam. *Journal of Herpetology*, 45(2):145-154.

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

Vogt, T. 1912. Beitrag zur Reptilien- und Amphibienfauna der Stidseeinseln. Ges. *Naturforsch. Freunde Berl.* 1912(1):1-13.

Vogt, T. 1932. Beitrag zur Reptilienfauna der ehemaligen Kolonie Deutsch-Neuguinea. Sitzungsber. Gesell. *Naturf. Freunde* Berlin 5-7:281-294.

Waite, E. R. 1903. Notes on the zoology of Paanopa or Ocean Island and Nauru or Plasant Island, Gilbert: The reptiles. *Rec. Austral. Mus.* 5(1):1-15.

Wanger, T. C., Motzke, I., Saleh, S. and Iskandar, D. T. 2011. The amphibians and reptiles of the Lore Lindu National Park area, Central Sulawesi, Indonesia. *Salamandra* 47(1):17-29.

Werner, F. 1898. Vorläufige Mitteilung über die von Herrn Prof. F. Dahl im Bismarck-Archipel gesammelten Reptilien und Batrachier. *Zool. Anz.* 21:552-556.

Werner, F. 1899. Beiträge zur Herpetologie der pacifischen Inselwelt und von Kleinasien. I. Bemerkungen über einige Reptilien aus Neu-Guinea und Polynesien. II. Über einige Reptilien und Batrachier aus Kleinasien. *Zool. Anz.* 22:371-375, 375-378.

Whiting, A. S., Bauer, A. M. and Sites, J. W. Jr. 2003. Phylogenetic relationships and limb loss in sub-Saharan African scincine lizards (Squamata: Scincidae). *Molecular Phylogenetics and Evolution* 29(3):582-598.

Wilson, S. and Swan, G. 2010. *A complete guide to reptiles of Australia*, 3rd ed. New Holland, Chatswood, NSW, Australia:558 pp.

Zug, G. R. 1991. *The Lizards of Fiji: Natural History and Systematics*. Bishop Museum Press, Honolulu, Hawaii, USA:148

pp.

Zug, G. R. 2012. A new species of treeskink (Squamata: Scincidae: *Emoia samoensis* species group) from Rotuma, south-central Pacific. *Proceedings of the Biological Society of Washington* 125(1):74-84.

Zug, G. R. 2013. *Reptiles and Amphibians of the Pacific Islands.* University of California Press, Berkeley:306 pp.

Zug, G. R. and Gill, B. J. 1997. Morphological variation of *Emoia murphyi* (Lacertilia: Scincidae) on islands of the southwest Pacific. *J. Royal Soc. New Zealand* 27(2):235-242.

Zug, G. R. and Ineich, I. 1995. A new skink (*Emoia*: Lacertilia: Reptilia) from the forest of Fiji. *Proceedings of the Biological Society of Washington* 108(3):395-400.

Zug, G. R. and Ineich, I. 1997. Striped skinks in Oceania: the status of *Emoia caeruleocauda* in Fiji. *Pacific Science* 51:183-188.

Zug, G. R., Springer, V. G., Williams, J. T. and Johnson, G. D. 1989. The vertebrates of Rotuma and surrounding waters. *Atoll Research Bulletin* [Oct. 1988] 316:1-25.

Zug, G. R., Hamilton, A. M. and Austin, C. C. 2011. A new *Emoia samoensis* group lizard (Squamata: Scincidae) from the Cook Islands, South-central Pacific. *Zootaxa* (online) 2765:47-57.

Zug, G. R., Ineich, I., Pregill, G. and Hamilton. A. M. 2012. Lizards of Tonga and a description of a new Tongan treeskink (Squamata: Scincidae: *Emoia samoensis* Group). *Pacific Science* 66(2):225-237.

CONFLICTS OF INTEREST - NONE.

TAX INVOICE

Kwik Kopy Printing Box Hill
3/1031 Whitehorse Road
Box Hill VIC 3128
t: 039 899 0833 | f: 039 899 0536
ABN: 65 740 679 782

Kwik Kopy Corporate Design & Print Solutions

CONTACT
Australasian Journal of Herpetology

No.26512

INVOICE DETAILS
Issue Date: 15/08/2018
Ship Via:

QUANTITY.	DESCRIPTION	VALUE Ex. GST
50	Australasian Journal of Herpetology Issue 39 - 64 page document printed black and white on 128gsm gloss and 250gsm gloss cover in colour	$272.27
50	Australasian Journal of Herpetology Issue 40 - 64 page document printed black and white on 128gsm gloss and 250gsm gloss cover in colour	$272.27

RECEIVED BY:

DATE:

Terms: Please refer to terms & conditions of trade You can deposit directly into our bank account. E. & O.E All claims and returned goods are to be accompanied by this invoice, and made within 7 days of receipt of goods

SUBTOTAL	$544.54
GST	$54.45
TOTAL	$598.99
AMOUNT DUE	$598.99

CUSTOMER: Australasian Journal of Herp
INVOICE No.: 26512
INVOICE Tot.: $598.99

Something for everyone.

REMITTANCE ADVICE: RETURN WITH PAYMENT

Suechess Pty Ltd | Bank: Westpac | BSB: 033 172 | Acc: 334 219

Method: VISA MASTERCARD CASH CHEQUE OTHER*

Amount: $

Card No.:

Name:

Date:

Expires:

CCV:

*see terms of trading for conditions of payment by other methods

Australasian Journal of Herpetology **40:50-55.**
Published 10 July 2019.

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

A new species of Tree Kangaroo, Genus *Dendrolagus* Müller, 1840 from Tembagapura, Mimika, Irian Jaya, Indonesia.

LSID urn:lsid:zoobank.org:pub:80A052AC-4B41-455D-93BF-40C5C0BD6F35

RAYMOND T. HOSER

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
Received 29 March 2018, Accepted 14 May 2019, Published 10 July 2019.

ABSTRACT

An ongoing audit of vertebrate fauna in Australasia has revealed an unnamed species of Tree Kangaroo *Dendrolagus* Müller, 1840 from Tembagapura, Mimika, Irian Jaya, Indonesia. The purpose of this paper is to formally name the taxon.

D. hoserae sp. nov. is not common and due to its specialized habitat requirements including relatively cold, high altitude habitat of limited land area, it is particularly vulnerable to extinction due to an ongoing increase in human population and activity in the area. Less immediate threats such as global warming, introduced competing species and pathogens may also cause the ultimate extinction of this little-known taxon.

A subspecies of *D. ursinus* (Temminck, 1836) is also formally named for the first time.

Keywords: taxonomy; nomenclature; tree kangaroo; Irian Jaya; New Guinea; Indonesia; *Dendrolagus*; *dorianus*; *stellarum*; *mayri*; *ursinus*; new species; *hoserae*; new subspecies; *arfakensis.*

INTRODUCTION

As referred to in the abstract, an ongoing audit of vertebrate fauna in Australasia has revealed an unnamed species of Tree Kangaroo *Dendrolagus* Müller, 1840 from Tembagapura, Mimika, Irian Jaya, Indonesia.

While the main focus of interest in the ongoing audit of vertebrates has been reptiles, obviously unnamed forms in other vertebrate classes have also been targeted for formal recognition as a failure to do so places them at direct risk of extinction as shown in Hoser (2019a, 2019b).

Therefore, the purpose of this paper is to formally name the taxon. It appears to be most closely related to *D. stellarum* Flannery and Seri, 1990, in turn a part of the *D. dorianus* Ramsay, 1883 species group.

The previously unnamed taxon subject of this paper has also been speculated as being a population of the little known *Dendrolagus mayri* Rothschild and Dollman, 1933, known from mountains further west.

However as part of the investigation preceding the publication of this paper, the relevant taxon was checked against all previously named forms, synonyms and "races" and none were found to match it. Therefore it was unnamed and in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), has been formally named below.

The same applied to a regionally distinct allopatric population of *D. ursinus* (Temminck, 1836), also formally named for the first time.

MATERIALS, METHODS AND RESULTS

In the course of publishing numerous papers formally naming new species of snakes and lizards from the island of New Guinea, I have had to consult relevant literature on the relevant groups of reptiles to check for synonyms in need of resurrection, testing hypothesis for isolation of population and causes of it and to try to detect biogeographical barriers likely to cause allopatric speciation in a place that is biologically still relatively unknown.

It is therefore impossible to treat reptiles in isolation to other similarly affected vertebrates and this includes mammals.

Since 2003, I've been aware of at least one form of Tree Kangaroo in Irian Jaya that appeared to be unnamed as detailed by Bowyer *et al.* (2003).

This population, treated as a western population of *D. stellarum* Flannery and Seri, 1990, was known only from the high mountains near Tembagapura, Mimika, Irian Jaya, Indonesia.

This remained the case as of 2018, when Eldridge *et al.* (2018) also referred to the form as a variant of *D. stellarum*.

On the internet, various authors have speculated that the taxon may be one of the following:

1/ The little known *D. mayri* Rothschild and Dollman, 1933,

2/ A local (western) of *D. stellarum*,as posted by Flannery *et al.* from Flannery *et al.* (1996), or

3/ As merely a variant of the better known *D. dorianus* Ramsay, 1883.

Eldridge *et al.* (2018), wrote: "Since genetic data from *D. d.*

mayri was not available it remains unknown if the Tembagapura specimens represent a new and undescribed tree-kangaroo taxon or are an eastern population of the poorly known *D. d. mayri*, which occurs a further 300 km to the west.

However in light of the preceding, investigting the matter of the identity of this taxon was very simple.

Molecular evidence of Bowyer *et al.* (2003) and Eldridge *et al.* (2018) confirmed that the taxon was neither of *D. stellarum* or *D. dorianus sensu stricto*. The taxon did appear to be marginally more closely related to *D. stellarum* than *D. dorianus*, but all had a similar divergence timeline, in spite of widely divergent distributions in a linear manner along the central cordillera of New Guinea. This indicated that the forces isolating the three species were much the same across the range of the species (and others in the *D. dorianus* group).

Clearly the relevant species are restricted to high altitude habitat and the restriction has been caused by a likely combination of competing species at lower altitudes, climate change (warming at various intervals) and the effects of specialization causing the restrictive factors to magnify over the following 2 to 3 million years.

With it completely settled that the apparently unnamed taxon is not either of *D. stellarum* or *D. dorianus*, including named subspecies and available synonyms (all from the Papuan side of the range of the taxon), the only question left to resolve is whether or not this apparently unnamed form was in fact a population of the little-known *D. mayri*.

There is no doubt that the absence of tested DNA samples of *D. mayri* and the possibility that this far western population of so called *D. stellarum* is in fact *D. mayri* has led to caution among scientists in not formally naming this form.

However investigating the hypothesis that the Tembagapura, Mimika, Irian Jaya, Indonesia are not the same as *E. mayri* was not difficult at all.

Groves (1982) gave a detailed description of both *D. dorianus* of which *D. stellarum* would have been grouped and the little known *D. mayri*. They are in fact quite different and this means that there is no possibility at all that the Tembagapura specimens were of the species *D. mayri*.

This is also the only logical conclusion when reconciling available information on relevant biogeographical barriers.

E. mayri was until 2018 known only from the holotype collected at the Wondiwoi Range in the Wondiwoi Peninsula, Irian Jaya, in a high altitude (over 1,500 metre) zone.

It has in 2018 been photographed in the same location for the first time since the holotype was first captured.

While *E. mayri* and the species from Tembagapura, Mimika, Irian Jaya, Indonesia are both of the *E. dorianus* complex and similar in form and colouration, they are distributionally disjunct and separated by the low lying Wamma River and associated floodplains, also inhabited by competing species.

This means that there is no possibility that in recent times (meaning the last 2 million years) that either population would have had natural contact.

Hence this means that Tembagapura, Mimika, Irian Jaya, Indonesia *Dendrolagus* in the *D. dorianus* species group cannot be the same taxon as *E. mayri*. As it is also not the same as *D. stellarum*, it must therefore be unnamed and so is formally named for the first time in this paper.

The newly named taxon *D. hoserae sp. nov.* is not particularly common, although at the present time regularly seen by locals where it is known (Flannery *et al.* 1996) and due to its specialized habitat requirements including relatively cold, high altitude habitat of limited land area, it is particularly vulnerable to extinction.

This is due to an ongoing increase in human population and activity in the area. Less immediate, but perhaps harder to deal with threats such as global warming, introduced competing species and pathogens may also cause the decline and ultimate extinction of this little-known taxon.

The decline of all *Dendrolagus* in island New Guinea is well-known based on anecdotal evidence, due to hunting by increasing numbers of tribal people and land clearing for wood and agricultural practices. This pressure is likely to continue and increase as human populations and economic activity increases on the island. Hence the urgency in needing to have all relevant large and potentially vulnerable species documented and protected by law as soon as practicable.

A distinct allopatric population of *D. ursinus* (Temminck, 1836), from the Arfak Mountains, Irian Jaya, has consistent differences in colouration to the nominate form from near Triton Bay, Irian Jaya and appears to be separated by a substantial zone of unsuitable habitat also inhabited by a competing species in the form of *D. inustus* Müller, 1840. It is therefore formally named below as a subspecies on the basis that there is no available name for this taxon. The taxon *D. leucogenys* Matschie, 1916 also applies to the Triton Bay, Irian Jaya form of *D. ursinus*.

It is noted that based on foot morphology *D. ursinus* is significantly less mobile than the potentially competing species *D. inustus* Müller, 1840, known to occupy areas of lower altitude and to likely compete with it. Hence the distributional gap between populations is almost certainly archaic and warrants taxonomic subdivision of the two main populations of the species to at least subspecies level (in the bare minimum).

Literature relevant to the taxonomic conclusions made herein include the following:

Amrine-Madsen *et al.* (2003), Aplin *et al.* (1993, 1999, 2010), Beck (2017), Bowyer *et al.* (2003), Byrne *et al.* (2011), Colgan and Flannery (1993), De Vis (1887-1888), Eldridge and Coulson (2015), Eldridge *et al.* (2018), Flannery (1993, 1995), Flannery and Archer (1984), Flannery and Boeadi (1995), Flannery and Seri (1990a, 1990b), Flannery and Szalay (1982), Flannery *et al.* (1983, 1992, 1996), Förster and Rothschild (1907), Georges *et al.* (2014), Groves (1982, 2005), Heinsohn (2003), Helgen (2007a, 2007b), Helgen and Flannery (2004), Helgen *et al.* (2010), Hocknull *et al.* (2007), Hume *et al.* (1989), Husson (1955), Irestedt *et al.* (2009, 2015), Joseph *et al.* (2014), Kawei (1989), Kirsch *et al.* (1990, 1997), Laurie and Hill (1954), Malekian *et al.* (2010), Martin (2005), Matschie (1912, 1916a, 1916b), McGreevy *et al.* (2011), McGuigan *et al.* (2000), Meredith *et al.* (2008, 2009, 2010), Mitchell *et al.* (2014), Moyle *et al.* (2016), Müller (1840), Osborne and Christidis (2001), Parham *et al.* (2012), Potter *et al.* (2012), Pratt and Beehler (2014), Prideaux and Warburton (2008, 2009, 2010), Prideaux *et al.* (2007), Ramsay (1883), Rawlings and Donnellan (2003), Rothschild and Dollman (1933, 1936), Rothschild and Rothschild (1898), Rowe *et al.* (2011), Sanders and Lee (2007), Schneider *et al.* (1998), Schweizer *et al.* (2015), Taberlet *et al.* (1992), Tamura *et al.* (2011), Tate (1948), Thomas (1908), Todd *et al.* (2014), Toussaint *et al.* (2014), Troughton and Le Souef (1936a, 1936b), Turnbull *et al.* (2003), Unmack *et al.* (2013), van Ufford and Cloos (2005), Westerman *et al.* (2006, 2012), Wheeler *et al.* (2001), Windsor and Dagg (1971), Woodhead *et al.* (2016), Yang and Rannala (2006) and sources cited therein.

In terms of the following descriptions it should be noted that the spelling of the names assigned to the species or subspecies should not be changed unless mandatory under the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) or superseding documents.

DENROLAGUS HOSERAE SP. NOV.

LSID urn:lsid:zoobank.org:act:90C295AF-5065-4593-A2E3-B663E9995626

Holotype: A preserved specimen lodged at the Australian Museum, Sydney, New South Wales, Australia, specimen number M.30720.001 collected from near the summit of Gunung Ki on Kali Oragam, Tembagapura area, Mimika, Irian Jaya, Indonesia, Latitude 4.05 S., Longitude 137.07 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved female specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number AM30750.001, collected from a forest at Mile 61, Nogol Tawat Nin, Tembagapura area, Mimika, Irian Jaya, Indonesia.

Diagnosis: *Dendrolagus hoserae sp. nov.* has until now been treated as a western race of *D. stellarum* (Flannery and Seri, 1990), *D. dorianus* Ramsay, 1883 or alternatively an eastern form of *D. mayri* Rothschild and Dollman, 1933. However Bowyer *et al.* (2003) and Eldridge *et al.* (2018) found that this form diverged from nominate *D. stellarum* (its closest relative) more than 2.5 MYA warranting species-level diagnosis for this taxon.

D. hoserae sp. nov. is similar in most respects to *D. stellarum* as defined by Flannery and Seri (1990) and *D. mayri* as defined by Groves (1982) at page 185 and is clearly a member of the *D. dorianus* species group.

Dorsal fur colouration in *D. hoserae sp. nov.* is noticeably lighter than that of *D. stellarum*, this being the simplest way to tell the two taxa apart. *D. stellarum* is a dark greyish-brownish black in overall colour on top, with silver-tipped markings on its back, legs and arms that are distinctive. *D. hoserae sp. nov.* is a drab brown-grey to buffy-brown on top, sometimes speckled with lighter brown-grey tips all over and minimal contrast in colour on the limbs, save for slight lightening at the terminal ends. No dorsal stripe is visible and this is in contrast to *D. mayri*, which has a vaguely defined one. Hands and feet are dark.

E. mayri is further separated from all other members of the *D. dorianus* species group including *D. hoserae sp. nov.* and *D. stellarum* by the absence of any detectable whorl on the tail.

D. hoserae sp. nov. is also notable for having a slight lightening in fur colour on the upper forehead.

D. hoserae sp. nov. has a pale spot at the base of the tail versus indistinct in *D. stellarum* and absent in *D. mayri.*

The *D. dorianus* group of *Dendrolagus* Müller, 1840 are separated from all other species by the median dorsal hair-whorl being near the root of the tail, versus in centre of the back in the so-called *goodfellowi* group, or on or behind the shoulders in the so-called Australian/*ursinus*/*inustus* groups of species, dominated in New Guinea by species apparently more able to cross lowland areas.

As mentioned already, exceptional to this is that *E. mayri* is further separated from all other members of the *D. dorianus* species group including *D. hoserae sp. nov.* and *D. stellarum* by the absence of any detectable whorl on the tail.

The *D. dorianus* group are also separated from most other species by a well furred inner ear, a trait in common with *D. ursinus*, but not *D. inustus.*

Species within the *D. dorianus* species group have longer arms relative to the legs and a tibia shorter than the femur in other species of *Dendrolagus*, reflected by the fact that they move more on all fours (quadrupedally) than the other species.

They climb with alternating leg movements, clasping the stem with its long arms, elbows well beint (seen less often in other species) and sleeps lying down rather than sitting up, “tucked under” and often on the ground. They drink frequently and ruminate (modified from Groves 1982).

Distribution: *D. hoserae sp. nov*. are known only from the area immediately adjacent to the type locality, generally within an altitude range of 2,500 to 3,200 meters above sea level.

Conservation: See relevant comments in Hoser (1991, 2019a, 2019b) and sources cited therein.

Etymology: Named in honour of my wife, Shireen Hoser in recognition for her contributions to herpetology and wildlife conservation on a global scale, spanning some decades, including most of the “back office work” for Reptile Parties, Melbourne reptile shows and other wildlife conservation and education activities done by myself and our dedicated team of co-workers.

DENROLAGUS URSINUS ARFAKENSIS SP. NOV.

LSID urn:lsid:zoobank.org:act:F763EFCE-527C-4721-899B-2030D1670FD3

Holotype: A preserved specimen in the Australian Museum, Sydney, New South Wales, Australia, specimen number M.35030 collected from near the summit of summit of Gunung Gripo, near Mokwam, Arfak Mountains, Irian Jaya, Indonesia, Latitude 1.00 S., Longitude 132.00 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 M.17882.001 collected from the Arfak Mountains, Irian Jaya, Indonesia, Latitude 1.03 S., Longitude 133.93 E.

Diagnosis: *Dendrolagus ursinus arfakensis sp. nov*. is similar to the nominate form as defined by Groves (1982). It is however differentiated from that taxon by colouration pattern on the head.

D. ursinus ursinus has a face only marginally darker than the lower part of the head and neck, or nowhere near as dark as the colour of the well-defined blackish hood over the back of the head, ears and neck, which is well-defined and very prominent.

By contrast *D. ursinus arfakensis sp. nov*. has a generally dark nose and front of snout, lightening somewhat on the mid face before the hood, which in turn is not as well defined as in the nominate form. In the nominate form the line of the hood is well-defined and distinct, versus indistinct in *D. ursinus arfakensis sp. nov*..

Distribution: Restricted to the Arfak Mountains and immediately adjacent elevated regions on the birds-head region of Irian Jaya.

Conservation: See relevant comments in Hoser (1991, 2019a, 2019b) and sources cited therein.

Etymology: Named in reflection of the location where this subspecies occurs.

REFERENCES CITED

Amrine-Madsen, H., Scally, M., Westerman, M., Stanhope, M. J., Krajewski, C. and Springer,

M. S. 2003. Nuclear gene sequences provide evidence for the monophyly of australidelphian marsupials. *Mol. Phylogenet. Evol.* 28:186-196.

Aplin, K. P., Baverstock, P. R. and Donnellan, S. C. 1993. Albumin immunological evidence for the time and mode of origin of the New Guinean terrestrial mammal fauna. *Sci. New Guinea* 19:131-145.

Aplin, K. P., Pasveer, J. M. and Boles, W. E. 1999. Late Quaternary vertebrates from the Bird’s Head Peninsula, Irian Jaya, Indonesia, including descriptions of two previously unknown marsupial species. *Rec. Western Australian Museum, Suppl.* 57:351-387.

Aplin, K. P., Helgen, K. M. and Lunde, D. P. 2010. A review of *Peroryctes broadbenti*, the giant bandicoot of Papua New Guinea. *Am. Mus. Novit.* 3696:1-41.

Beck, R. M. D. 2017. The biogeographical history of non-marine mammaliaforms in the Sahul region. In: Ebach, M.C. (Ed), *Handbook of Australasian Biogeography.* CRC Press, New York.

Bower, J. C., Newell, G. R., Metcalfe, C. J. and Eldridge, M. B. D. 2003. Tree-kangaroos *Dendrolagus* in Australia: are *D. lumholtzi* and *D. bennettianus* sister taxa? *Australian Zoologist*, 32(2):207-213.

Byrne, M., Steane, D. A., Joseph, L., Yeates, D. K., Jordan, G. J., Crayn, D., Aplin, K., Cantrill, D. J., Cook, L. G., Crisp, M. D., Keogh, J. S., Melville, J., Moritz, C., Porch, N., Sniderman, J. M. K., Sunnucks, P. and Weston, P. H. 2011. Decline of a biome: evolution, contraction, fragmentation, extinction and invasion of the Australian mesic zone biota. *J. Biogeogr.* 38, 1635-1656.

Colgan, D. J. and Flannery, T. F. 1993. Electrophoretic and morphological analysis of the systematics of the *Phalanger orientalis* (Marsupialia) species complex in Papua New Guinea and the Solomon Islands. *Aust. J. Zool.* 41:355-378.

De Vis, C. W. 1887. Notice of a probable new species of

Dendrolagus. Proc. Royal Soc. Queensland 3:11-14.

De Vis, C. W., 1888. On a third species of Australian tree kangaroo. *Proc. Royal Soc. Queensland* 4:132-134.

Eldridge, M. D. B. and Coulson, G. M., 2015. Family Macropodidae (kangaroos and wallabies). In: Wilson, D. E. and Mittermeier, R. A. (Eds.), *Handbook of the mammals of the world*. Volume 5. Marsupials and monotremes. Lynx Editions, Barcelona, Spain:pp. 630-735.

Eldridge, M. D. B., Potter, S., Helgen, K. M., Sinaga, M. H., Aplin, K. P., Flannery, T. F. and Johnson, R. N. 2018. Phylogenetic analysis of the tree-kangaroos (*Dendrolagus*) reveals multiple divergent lineages within New Guinea. *Molecular Phylogenetics and Evolution*, 127:588-599 (online).

Flannery, T. F. 1993. Taxonomy of *Dendrolagus goodfellowi* (Macropodidae: Marsupialia) with description of a new subspecies. *Rec. Aust. Mus.* 45:33-42.

Flannery, T. F. 1995. *Mammals of New Guinea* (second edition). Reed Books, Sydney.

Flannery, T. F. and Archer, M. 1984. The macropodoids (Marsupialia) of the early Pliocene Bow Local Fauna, central eastern New South Wales. *Aust. Zool.* 21:357-383.

Flannery, T. F. and Boeadi, S. A. L. 1995. A new tree-kangaroo (*Dendrolagus*, Marsupialia) from Irian Jaya, Indonesia, with notes on ethnography and the evolution of tree-kangaroos. *Mammalia* 59:65-84.

Flannery, T. F. and Seri, L. 1990a. *Dendrolagus scottae n. sp.* (Marsupialia: Macropodidae) a new tree-kangaroo from Papua New Guinea. *Rec. Aust. Mus.* 42:237-245.

Flannery, T. F. and Seri, L. 1990b. The mammals of the southern West Sepik Province, Papua New Guinea: their distribution, abundance, human use and zoogeography. *Rec. Aust. Mus.* 42:173-208.

Flannery, T. F. and Szalay, F. S. 1982. *Bohra paulae*, a new giant fossil tree kangaroo (Marsupialia, Macropodida) from New South Wales, Australia. *Aust. Mammal.* 5:83-94.

Flannery, T. F., Mountain, M. L. and Aplin, K. 1983. Quaternary kangaroos (Macropodidae: Marsupialia) from Nombe rock shelter, Papua New Guinea, with comments on the nature of megafaunal extinction in the New Guinea highlands. *Proc. Linnean Soc. NSW* 107:75-97.

Flannery, T. F., Turnbull, W. D., Rich, T. H. and Lundelius, E. L. 1992. The Macropodoidea (Marsupialia) of the early Pliocene Hamilton Local Fauna, Victoria, Australia. *Fieldiana Geology* 25, 1-43.

Flannery, T. F., Martin, R. and Boeadi S. A. L. 1996. *Tree-kangaroos. A curious natural history*. Reed Books, Melbourne.

Förster, F. and Rothschild, W. 1907. Description of a new tree-kangaroo. *Novitates Zoologicae* 4:506.

Georges, A., Zhang, X., Unmack, P. J., Reid, B. N., Le, M. and McCord, W. P. 2014. Contemporary genetic structure of an endemic freshwater turtle reflects Miocene orogenesis of New Guinea. *Biol. J. Linn. Soc.* 111:192-208.

Groves, C. P. 1982. The systematics of the tree kangaroo (*Dendrolagus*; Marsupialia, Macropodidae). *Aust. Mammal.* 5:157-186.

Groves, C. P. 2005. Order Diprotodontia. In: Wilson, D.E., Reeder, D.M. (Eds.), *Mammal Species of the World: A Taxonomic and Geographic Reference* (Third edition), Johns Hopkins University Press, Baltimore:pp. 43-70.

Heinsohn, T. E. 2003. Animal translocation: long-term human influences on the vertebrate zoogeography of Australasia (natural dispersal versus ethnophoresy). *Aust. Zool.* 32:351-376.

Helgen, K. M. 2007a. *A reassessment of taxonomic diversity and geographic patterning in the Melanesian mammal fauna*. PhD thesis, University of Adelaide, Australia:446 pp. (online)

Helgen, K. M. 2007b. A taxonomic and geographic overview of the mammals of Papua. In: Marshall, J. A. and Beehler, B. M. (Eds.). *The ecology of Papua*. Periplus Editions, Singapore:pp. 689-749.

Helgen, K. M. and Flannery, T. F. 2004. A new species of bandicoot, *Microperoryctes aplini*, from western New Guinea. *J. Zool Lond.* 264:117-124.

Helgen, K. M. and Helgen, L. E. 2009. Biodiversity and biogeography of the moss-mice of New Guinea: a taxonomic revision of *Pseudohydromys* (Rodentia: Murinae). *Bull. Amer. Mus. Nat. Hist.* 331:230-312.

Helgen, K. M., Leary, T. and Aplin, K. P. 2010. A review of *Microhydromys* (Rodentia: Murinae), with description of a new species from southern New Guinea. *Am. Mus.Novit.* 3676:1-24.

Hocknull, S. A., Zhao, J., Feng, Y. and Webb, G. E. 2007. Responses of Quaternary rainforest vertebrates to climate change in Australia. *Earth Planet. Sci. Lett.* 264:317-331.

Hoser, R. T. 1991. *Endangered Animals of Australia*. Pierson Publishing, Mosman, NSW, 2088, Australia:240 pp.

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.

Hume, I. D., Jarman, P. J., Renfree, M. B. and Temple-Smith, P. D. 1989. Macropodidae. In: Walton, D. W. and Richardson, B.J. (Eds.). *Fauna of Australia. 1B. Mammalia*. Australian Government Publishing Service, Canberra, pp. 679-715.

Husson, A. M. 1955. Notes on the mammals collected by the Swedish New Guinea expedition 1947-1949. *Nova Guinea* 6:283-306.

Irestedt, M., Jonsson, K. A., Fjeldsa, J., Christidis, L. and Ericson, P. G. P. 2009. An unexpectedly long history of sexual selection in birds-of-paradise. *BMC Evol. Biol.* 9:235.

Irestedt, M., Batalha-Filho, H., Roseelaar, C. S., Christidis, L. and Ericson, P. G. P. 2015. Contrasting phylogeographic signatures in two Australo-Papuan bowerbird species complexes (Aves: Ailuroedus). *Zool. Scr.* 45:365-379.

Joseph, L., Toon, A., Nyari, A. S., Longmore, N. W., Rowe, K. M. C., Haryoko, T., Trueman, J. and Gardner, J. L. 2014. A new synthesis of the molecular systematics and biogeography of honeyeaters (Passeriformes: Meliphagidae) highlights biogeographical and ecological complexity of a spectacular avian radiation. *Zool. Scr.* 43:235-248.

Kawei, M. H. 1989. Geographic variation in the tree kangaroo *Dendrolagus dorianus* (Marsupialia; Macropodidae). *Sci. New Guinea* 15:85-94.

Kirsch, J. A. W., Krajewski, C., Springer, M. S. and Archer, M. 1990. DNA-DNA hybridisation studies of carnivorous marsupials. II. Relationships among dasyurids (Marsupialia: Dasyuridae). *Aust. J. Zool.* 38:673-679.

Kirsch, J. A. W., Lapointe, F. J. and Springer, M. S. 1997. DNA-hybridisation studies of marsupials and their implications for metatherian classification. *Aust. J. Zool.* 45:211-280.

Laurie, E. M. O. and Hill, J. E. 1954. *List of land mammals of New Guinea, Celebes and adjacent islands 1758-1952.* British Museum (Natural History), London.

Malekian, M., Cooper, S. J. B. and Carthew, S. M. 2010. Phylogeography of the Australian sugar glider (*Petaurus breviceps*): evidence for a new divergent lineage in eastern Australia. *Aust. J. Zool.* 58:165-181.

Martin, R. W. 2005. *Tree-Kangaroos of Australia and New Guinea*. CSIRO Publishing, Melbourne.

Matschie, P. 1912. Zwei neue rassen des roten baumkänguru

aus Deutsch-Neuguinea. *Gesellschaft Naturforschender Freunde Zu Berlin Sitzungbericht* 1912:568-572.

Matschie, P. 1916a. Das Baumkänguru des Tami-Beckens in Neuguinea. *Gesellschaft Naturforschender Freunde Zu Berlin Sitzungbericht* 1916:162-163.

Matschie, P. 1916b. Die verbreitung der beuteltiere auf New Guinea mit einigen bemerkungen uber ihre einteilung in untergattungen. *Mitteilungen Zoologisches Museum*, Berlin 8:257-308.

McGreevy Jr, T. J., Dabek, L. and Husband, T. P. 2011. Tree kangaroo molecular systematic based on partial cytochrome b sequences: are Matschie's tree kangaroo (*Dendrolagus matschiei*) and Goodfellow's tree kangaroo (*D. goodfellowi buergersi*) sister taxa? *Aust. Mammal.* 34:18-28.

McGuigan, K., Zhu, D., Allen, G. R. and Moritz, C. 2000. Phylogenetic relationships and historical biogeography of melanotaeniid fishes in Australia and New Guinea. *Mar. Freshw. Res.* 51:713-723.

Meredith, R. W., Westerman, M. and Springer, M. S. 2008. A phylogeny and timescale for the living genera of kangaroos and kin (Macropodiformes: Marsupialia) based on nuclear DNA sequences. *Aust. J. Zool.* 56:395-410.

Meredith, R. W., Westerman, M. and Springer, M. S. 2009. A phylogeny of Diprotodontia (Marsupialia) based on sequences for five nuclear genes. *Mol. Phylogenet. Evol.* 51:554-571.

Meredith, R. W., Mendoza, M. A., Roberts, K. K., Westerman, M. and Springer, M. S. 2010. A

phylogeny and timescale for the evolution of Pseudocheiridae (Marsupialia: Diprotodontia) in Australia and New Guinea. *J. Mamm. Evol.* 17:75-99.

Mitchell, K. J., Pratt, R. C., Watson, L. N., Gibb, G. C., Llamas, B., Kasper, M., Edson, J., Hopwood, B., Male, D., Armstrong, K. N., Meyer, M., Hofreiter, M., Austin, J., Donnellan, S. C., Lee, M. S. Y., Phillips, M. J. and Cooper, A. 2014. Molecular phylogeny, biogeography and habitat preference evolution of marsupials. *Mol. Biol. Evol.* 31:2322-2330.

Moyle, R. G., Oliveros, C. H., Andersen, M. J., Hosner, P. A., Benz, B. W., Manthey, J. D., Travers, S. L., Brown, R. M. and Faircloth, B. C. 2016. Tectonic collision and uplift of Wallacea triggered the global songbird radiation. *Nat. Commun.* 7:12709.

Müller, S. 1840. Over de zoogdieren van den Indischen Archipel. In: Temminck, C.J., van der Hoek, J. (Editors), *Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen, door leden der Natuurkundige Commissie in Indië en andere schrijvers*. Luchtmans, Leiden:pp. 1-57.

Osborne, M. J. and Christidis, L. 2001. Molecular phylogentics of Australo-Papuan possums and gliders (Family Petauridae). *Mol. Phylogenet. Evol.* 20:211-224.

Parham, J. F., Donoghue, P. C. J., Bell, C. J., Calway, T. D., Head, J. J., Holroyd, P. A., Inoue, J., Imris, R. B., Joyce, W. G., Ksepka, D. T., Patané, J. S. L., Smith, N. D., Tarver, J. E., van Tuinen, M., Yang, Z., Angielczyk, K. D., Greenwood, J. M., Hipsley, C. A., Jacobs, L., Makovicky, P. J., Müller, J., Smith, K. T., Theodor, J. M., Warnock, R. C. M. and Benton, M. J. 2012. Best practices for justifying fossil calibrations. *Syst. Biol.* 61:346-359.

Potter, S., Cooper, S .J. B., Metcalfe, C. J., Taggart, D. A. and Eldridge, M. D. B. 2012. Phylogenetic relationships within *Petrogale* (Marsupialia: Macropodidae) and their biogeographic history within Australia. *Mol. Phylogenet. Evol.* 62:640-652.

Pratt, T. K. and Beehler, B. M. 2014. *Birds of New Guinea*, (Second edition). Princeton University Press, Princeton, NJ.USA.

Prideaux, G. J. and Warburton, N. M. 2008. A new Pleistocene tree-kangaroo (Diprotodontia: Macropodidae) from the Nullarbor Plain of south-central Australia. *J. Vertebr. Paleontol.* 28, 463-478.

Prideaux, G. J. and Warburton, N. M. 2009. *Bohra nullarbora sp. nov.*, a second new tree kangaroo (Marsupialia: Macropodidae) from the Pleistocene of the Nullarbor Plain, Western Australia. *Rec. Western Australian Museum* 25:165-179.

Prideaux, G. J. and Warburton, N. M. 2010. An osteology-based appraisal of the phylogeny and evolution of kangaroos and wallabies (Macropodidae: Marsupialia). *Zool. J. Linn. Soc.* 159:954-987.

Prideaux, G. J., Long, J. L., Ayliffe, L. K., Hellstrom, J. C., Pillans, B., Boles, W. E., Hutchinson, M. N., Roberts, R. G., Cupper, M. L., Arnold, L. J., Devine, P. D. and Warburton, N. M. 2007. An arid-adapted middle Pleistocene vertebrate fauna from south-central Australia. *Nature* 445:422-425.

Ramsay, E. P. 1883. Contributions to the zoology of New Guinea, Part VII. *Proc. Linnean Soc. NSW* 8:15-29.

Rawlings, L. H. and Donnellan, S. C. 2003. Phylogeographic analysis of the green python, *Morelia viridis*, reveals cryptic diversity. *Mol. Phylogenet. Evol.* 27:36-44.

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

Rothschild, W. and Dollman, G. 1933. A new tree-kangaroo from the Wondiwoi Mountains, Dutch New Guinea. *Proc. Zool. Soc. Lond.* 1933:540-541.

Rothschild, W. and Dollman, G. 1936. The genus *Dendrolagus*. *Trans. Zool. Soc. London* 21:477-548.

Rothschild, W. and Rothschild, N. C. 1898. Descriptions of three new kangaroos and notes on the skull of *Dendrolagus bennettianus* De Vis. *Novitates Zoologicae* 5:511-513.

Rowe, K. C., Singhal, S., Macmanes, M. D., Ayroles, J. F., Morelli, T. L., Rubidge, E. M., Bi, K. and Moritz, C. 2011. Museum genomics: low-cost and high-accuracy genetic data from historical specimens. *Mol. Ecol. Resour.* 11:1082-1092.

Sanders, K. L. and Lee, M. S. Y. 2007. Evaluating molecular clock calibrations using Bayesian analyses with soft and hard bounds. *Biol. Lett.* 3:275-279.

Schneider, C. J., Cunningham, M. and Moritz, C. 1998. Comparative phylogeography and the history of endemic vertebrates in the Wet Tropics rainforests of Australia. *Mol. Ecol.* 7:487-498.

Schweizer, M., Wright, T. F., Peñalba, J. V., Schirtzinger, E. E. and Joseph, L. 2015. Molecular phylogenetics suggests a New Guinean origin and frequent episodes of founder-event speciation in the nectarivorous lories and lorikeets (Aves: Psittaciformes). *Mol. Phylogenet. Evol.* 90:34-48.

Taberlet, P., Meyer, A. and Bouvet, J. 1992. Unusual mitochondrial DNA polymorphism in two local populations of blue tit (*Parus caerulens*). *Mol. Ecol.* 1:27-36.

Tamura, K., Peterson, D., Peterson, N., Stecher, G., Nei, M. and Kumar, S. 2011. MEGA5: Molecular evolutionary genetics analysis using maximum likelihood, evolutionary distance, and maximum parsimony methods. *Mol. Biol. Evol.* 28:2731-2739.

Tate, G. H. H. 1948. Results of the Archbold Expeditions. No. 59. Studies on the anatomy and phylogeny of the Macropodidae (Marsupialia). *Bull. Am. Museum Nat. History* 91:239-351.

Thomas, O. 1908. A new tree-kangaroo from British New Guinea. *Ann. Mag. Nat. History* 2:452-453.

Todd, E. V., Blair, D., Georges, A., Lukoschek, V. and Jerry, D. R. 2014. A biogeographical history and timeline for the evolution of Australian snapping turtles (Elseya:Chelidae) in Australia and New Guinea. *J. Biogeogr.* 41:905-918.

Toussaint, E. F. A., Hall, R., Monaghan, M. T., Sagata, K., Ibalim, S., Shaverdo, H. V., Vogler, A. P., Pons, J. and Balke, M. 2014. The towering orogeny of New Guinea as a trigger for arthropod megadiversity. *Nat. Commun.* 5:4001.

Troughton, E. L. G. and Le Souef, A. S. 1936a. A new tree-

kangaroo from south-eastern Papua. *Rec. Aust. Mus.* 19:388-390.

Troughton, E. L. G. and Le Souef, A. S. 1936b. Two new tree kangaroos from Papua, with notes on allied forms. *Aust. Zool.* 8:193-197.

Turnbull, W. D., Lundelius Jr., E. L. and Archer, M. 2003. Dasyurids, perameloids, phalangeroids, and vombatoids from the Early Pliocene Hamilton Fauna, Victoria, Australia. *Bull. Am. Mus. Nat. Hist.* 279:513-540.

Unmack, P. J., Allen, P. J. and Johnson, J. B. 2013. Phylogeny and biogeography of rainbowfishes (Melanotaeniidae) from Australia and New Guinea. *Mol. Phylogenet. Evol.* 67:15-27.

van Ufford, A. Q. and Cloos, M. 2005. Cenozoic tectonics of New Guinea. *Am. Assoc. Pet. Geol. Bull.* 89:119-140.

Westerman, M., Young, J., Donnellan, S., Woolley, P. A. and Krajewski, C. 2006. Molecular relationships of New Guinean three-striped dasyures, (Myoictis, Marsupialia: Dasyuridae). *J. Mamm. Evol.* 13:211-222.

Westerman, M., Kear, B. P., Aplin, K., Meredith, R. W., Emerling, C. and Springer, M. S. 2012. Phylogenetic relationships of living and recently extinct bandicoots based on nuclear and mitochondrial DNA sequences. *Mol. Phylogenet. Evol.* 62:97-108.

Wheeler, D., Hope, R., Cooper, S. J. B., Dolman, G., Webb, G. C., Bottema, C. D. K., Gooley, A. A., Goodman, M., and Holland, R. A. B., 2001. An orphaned mammalian [beta]-globin gene of ancient evolutionary origin. *Proc. Natl. Acad. Sci USA* 98:1101-1106.

Windsor, D. E. and Dagg, A. I. 1971. The gaits of the Macropodinae (Marsupialia). *J. Zool. London* 163:165-175.

Woodhead, J., Hand, S. J., Archer, M., Graham, I., Sniderman, K., Arena, D. A., Black, K. H., Godthelp, H., Creaser, P. and Price, E. 2016. Developing a radiometrically-dated chronologic sequence for Neogene biotic change in Australia, from the Riversleigh World Heritage Area of Queensland. *Gondwana Res.* 29:153-167.

Yang, Z. and Rannala, B. 2006. Bayesian estimation of species divergence times under a molecular clock using multiple fossil calibrations with soft bounds. *Mol. Biol. Evol.* 23:212-226.

CONFLICT OF INTEREST - NONE.

Australasian Journal of Herpetology **40:56-58.**
Published 10 July 2019.

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

New subspecies of the Australian Bandy Bandy *Vermicella* Gray, 1841 (Serpentes: Elapidae).

LSID urn:lsid:zoobank.org:pub:B58ABACB-E8B6-4BC1-9DDA-05B092E6FB3F

RAYMOND T. HOSER

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
Received 20 July 2018, Accepted 30 July 2018, Published 12 June 2019.

ABSTRACT

A review of the wide-ranging Bandy Bandy group of snakes, *Vermicella* Gray, 1841, as defined by Cogger (2014), via the inspection of specimens from all parts of their range in continental Australia, indicates a greater diversity than indicated by the current taxonomy.

As a result, the composition of the genus is changed, via a revised taxonomy presented herein.

Five species are now recognized.

This paper also formally names three new subspecies based on consistent morphological differences in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999).

Keywords: Taxonomy; nomenclature; snakes; Elapidae; Australia; Queensland; Victoria; Western Australia; New South Wales; South Australia; Northern Territory; *Vermicella*; *annulata*; *occipitalis*; *lunulata*; *latizonatus*; *snelli*; *multifasciata*; *intermedia*; *vermiformis*; *parscauda*; new subspecies; *kimberleyensis*; *paulmulvanyi*; *isaensis*.

INTRODUCTION

As part of a wide-ranging audit of the Australian snake fauna, specimens of the iconic Bandy Bandy Snakes (Genus *Vermicella*, Gray, 1841) of all recognized species from across the range of each were inspected with a view to ascertaining if there were any hitherto unnamed forms.

While some apparently unnamed morphologically distinct, geographically disjunct populations were identified, the final publication of this paper was held up pending resolution of the identities of previously named forms and potential synonyms.

This was particularly significant in terms of specimens from Cape York in Queensland, which were being identified in texts as *V. annulata* (Gray, 1841), but clearly involved more than one species-level taxon.

In anticipation of my impending publication, a group of people associated with a group known as the (Wolfgang) Wüster gang and Bryan Fry (the same general group) rushed into publication a description of a relevant new species in the online PRINO (Peer reviewed in name only journal) *Zootaxa*.

While I had intended naming the taxon and the actions of the other authors in hastily coining a new name for the species in order to "scoop" my work, was in breach of the ethics of the rules of *the International Code of Zoological Nomenclature* (Ride *et al.* 1999), that nomen is recognized herein.

That species, now known as *V. parscauda* is the narrow-banded form from northern Cape York in Queensland.

In terms of other previously recognized species, all were recognized bar two, which I have chosen to merge into one, thereby decreasing the number of species. However three distinct regional forms worthy of taxonomic recognition are herein formally named as new subspecies.

MATERIALS, METHODS AND RESULTS

Besides inspecting live specimens, museum specimens and quality photos with accurate location data, I also reviewed all relevant available literature. This included the following: Boulenger (1896), Cogger (2014), Cogger *et al.* (1983), Couper and Covacevich (1996), Covacevich (1971), De Vis (1905), Derez *et al.* (2018), Duméril *et al.* (1851), Gray (1841), Hoser (1989), Keogh and Smith (1996), Krefft (1869), Longman (1915, 1916), Simpson (1973), Storr (1968) and Wells and Wellington (1984, 1985) including sources cited therein.

The results as mentioned already included five species being recognized and some newly identified and named (herein) subspecies as well. Material relevant to this paper was stolen during an illegal armed raid by government wildlife officers on our research facility on 17 Aug 2011 and this was not returned in spite of orders by courts to do so (Court of Appeal Victoria 2014, Victorian Civil and Administrative Tribunal 2015).

The destructive illegal armed raid was initiated by false complaints made by associates of the Wüster gang and Fry.

The actions of the raid and the numerous bogus criminal charges arising from it, all of which were defended in court and won by myself (i.e. all claims by the wildlife department were found to be false) (Court of Appeal Victoria 2014, Victorian Civil and Administrative Tribunal 2015), delayed the publication of this paper in any form indefinitely and also enabled Fry's group to publish their paper online in 2018 naming the North Queensland taxon before I was able to re-gather relevant data to do so.

Before dealing with the descriptions in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* (19999), I raise other significant matters below.

IMPORTANT NOTES AND CONSIDERATIONS

Prior to the resolution of this issue, a group ostensibly led by Bryan Fry rushed out a "paper" in the online PRINO (peer reviewed in name only) journal *Zootaxa* on 16 July 2018 and then SPAM posted the internet and tabloid media with a range of claims, including having caught and discovered a new species of Bandy Bandy from Weipa in Queensland.

This all happened on 16 and 17 July 2018.

They called this taxon *Vermicella parscauda* Derez *et al.* (2018) and it is clearly a different taxon to those already recognized in Cogger (2014) and hence recognized herein.

However the group had not in fact "discovered" the species as alleged by them. It had in fact been known for some years and there were already voucher specimens held in the Queensland Museum in Brisbane.

My own audit of *Vermicella*, Gray, 1841 essentially validated the exiting taxonomy save for minor differences and these related to forms best described as subspecies of previously named forms.

I was unable to reliably separate the species *Vermicella multifasciata* (Longman, 1915) and *V. intermedia* Keogh and Smith, 1996 and had sought to synonymise these taxa, which ironically was one of the few useful bits of evidence provided by Derez *et al.* (2018) in their paper in that they also showed both to be conspecific.

However the west Kimberley population assigned to *V. intermedia* is herein formally described as a new subspecies *V. multifasciata kimberleyensis* based on consistent morphological differences.

In terms of *V. annulata*, the serious issue I faced was ascertaining the provenance of the type specimen and those synonymised with that taxon.

Eventually I was able to ascertain that the types of both *Calamaria annulata* Gray, 1841 and *Elaps occipitalis* Duméril and Bibron, 1854 both conformed with the best known variant of *V. annulata*, this being the form from coastal New South Wales and found further north to North Queensland and including most of both New South Wales and Queensland.

This form is typified by well-defined black and white bands, which on the dorsal surface have fairly even demarcation between the colours and from 2-3 full scales of white on the first two cross bands past that on the nape.

Examples of these snakes in life include that on page 175 of Hoser (1989) or page 937 of Cogger (2014) in the top two photos.

The taxa *Elaps occipitalis* Duméril *et al.* (1854), *Vermicella lunulata* Krefft, G. (1869) and *Rhynchelaps latizonatus* De Vis (1905) all apply to the normal morphotype of *V. annulata* (Gray, 1841).

The specimens assigned to *V. annulata* from north-west Victoria and nearby South Australia are significantly different in that they have a far greater preponderance of black, more jagged demarcation between black and white on the dorsal surface and the first two white bands beyond the name are always narrower than two full scales.

These snakes are geographically separated from other populations and there is no available name for them and so they are formally described for the first time as a new subspecies in this paper as *V. annulata paulmulvanyi subsp. nov.*.

Specimens of *V. annulata* from Mount Isa in Queensland also differ from others in the species in that the white rings are of even width on the dorsum and flanks, versus the otherwise typical widening on the lower flanks in typical *V. annulata.* Hence it is formally named as a new subspecies *V. annulata isaensis subsp. nov.*.

In terms of the relevant species in *Vermicella*, the key in Cogger (2014) still applies, save for paragraph 2 (of 4). This is because the taxa *V. multifasciata* and *V. intermedia* are now both one and the same and treated as *V. multifasciata.*

The species *Vermicella parscauda* Derez *et al.* (2018) is most like *V. multifasciata* but is separated from it by way of presence of internasals (versus absence). It is readily separated from *V. annulata* by the presence of 52-87 black body bands versus 35-37 in *V. annulata* (40-46 in *V. vermiformis* Keogh and Smith, 1996). *V. parscauda* has 213-231 ventrals as opposed to 262-302 in *V. snelli* Storr, 1968.

VERMICELLA MULTIFASCIATA KIMBERLEYENSIS SUBSP. NOV.

LSID urn:lsid:zoobank.org:act:54B3DA37-1E84-4009-981F-52B9B1446F6A

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R29588 collected from Liveringa, Western Australia, Latitude -18.05 S., Longitude 124.167 E. The Western Australian Museum, Perth, Western Australia, Australia is a government-owned facility that allows access to its holdings.

Until now this holotype has been referred to the taxon *Vermicella intermedia* Keogh and Smith, 1996.

Paratype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R61727, collected from Camp Creek, Mitchell Plateau, Western Australia, Latitude -14.83 S., Longitude 125.83 E.

Diagnosis: *Vermicella multifasciata kimberleyensis subsp. nov.* is readily separated from *V. multifasciata fasciata* (Longman, 1915), including specimens until now referred to the taxon *V. intermedia* Keogh and Smith, 1996, herein treated as conspecific to it by colouration.

Vermicella multifasciata kimberleyensis subsp. nov. does not have white on the upper labials beneath the eye, whereas *V. multifasciata fasciata* does.

The dorsal surface of the second and third black bands past the nape in *Vermicella multifasciata kimberleyensis subsp. nov.* are 6 scales wide, versus 5 or less in *V. multifasciata multifasciata.*

Vermicella multifasciata kimberleyensis subsp. nov. is characterised by significantly reduced white pigment at the anterior part of the body and head, which manifests as very thin and sometimes broken white rings and increased black on the snout, often manifesting as the absence of the characteristic white cross band between the eyes and the nose as seen in most other *Vermicella* other than aberrant specimens.

All subspecies of *Vermicella multifasciata* are separated from all other *Vermicella* by the absence of internasals.

Distribution: Believed to be confined to the Kimberley district of north-west Western Australia.

Etymology: Named in reflection of where the subspecies occurs.

VERMICELLA ANNULATA PAULMULVANYI SUBSP. NOV.

LSID urn:lsid:zoobank.org:act:12FB9430-977E-43D0-A294-15764896515D

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R53540, collected at 1.5 KM east of Flashjack Dam, Bookmark Biosphere Reserve, South Australia, Australia, Latitude -33.92 S., Longitude 140.48 E.

The South Australian Museum, Adelaide, South Australia, Australia allows access to its holdings.

Paratype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R50226, collected at 7.5 km east of Gluepot Homestead, South Australia, Australia, Latitude -33.76 s., Longitude 140.20 E.

Diagnosis: *Vermicella annulata paulmulvanyi subsp. nov.* is readily separated from nominate *V. annulata annulata* (Gray, 1841) by colouration.

V. annulata annulata has white and black bands of similar thickness when measured from the mid dorsal surface, or alternatively the white bands noticeably widen on the lower flanks if narrower on top. By contrast *V. annulata paulmulvanyi*

subsp. nov. has black bands always significantly wider than the white and the white bands are without significant widening on the flanks.

V. annulata annulata has a fairly smooth transition from black to white and vice-versa as one looks at the bands on the upper body. By contrast the edges of the bands are noticeably jagged in *V. annulata paulmulvanyi subsp. nov.*.

The subspecies *V. annulata isaensis subsp. nov.* is readily separated from the other two subspecies by the combination of a smooth line transition between the black and white bands on the dorsal mid body, rings of even thickness on the mid-body and grey as opposed to black on the anterior snout.

Distribution: *Vermicella annulata paulmulvanyi subsp. nov.* has a distribution centred on the border between New South Wales, Victoria and South Australia, extending to the Flinders Ranges in the west and Bendigo in the East. Nominate *V. annulata annulata* is found in most parts of New South Wales and Queensland, excluding the top end of Cape York and far north-west.

V. annulata isaensis subsp. nov. is only known from the Mount Isa area in north-west Queensland.

Etymology: Named in honour of Paul Mulvany of Blackburn, Victoria, Australia in recognition of his services to wildlife conservation. For decades he has built and maintained some of the wildlife breeding cages at the Snakebusters: Australia's best reptiles facility, making it the world leader at saving threatened and endangered wildlife.

The distinctive black and white colour of this taxon also matches that of the Australian Rules Football Team he supports, namely Collingwood.

VERMICELLA ANNULATA ISAENSIS SUBSP. NOV.

LSID urn:lsid:zoobank.org:act:50EE351B-E3F5-4AE5-8CA9-CDEEB12BDEF3

Holotype: A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number: J87432, collected on the Boulia Road, Mount Isa, Queensland, Australia, Latitude -20.72 E., Longitude 139.48 E.

The Queensland Museum, Brisbane, Queensland, Australia allows access to its holdings.

Diagnosis: The subspecies *V. annulata isaensis subsp. nov.* is readily separated from the other two subspecies of *V. annulata* (Gray, 1841) by the combination of a smooth line transition between the black and white bands on the dorsal mid body, rings of even thickness on the mid-body and grey as opposed to black on the anterior snout.

Vermicella annulata paulmulvanyi subsp. nov. is also readily separated from nominate *V. annulata annulata* (Gray, 1841) by colouration.

V. annulata annulata has white and black bands of similar thickness when measured from the mid dorsal surface, or alternatively the white bands noticeably widen on the lower flanks if narrower on top. By contrast *V. annulata paulmulvanyi subsp. nov.* has black bands always significantly wider than the white and the white bands are without significant widening on the flanks.

V. annulata annulata has a fairly smooth transition from black to white and vice-versa as one looks at the bands on the upper body. By contrast the edges of the bands are noticeably jagged in *V. annulata paulmulvanyi subsp. nov.*.

Distribution: *V. annulata isaensis subsp. nov.* is only known from the Mount Isa area in north-west Queensland. *Vermicella annulata paulmulvanyi subsp. nov.* has a distribution centred on the border between New South Wales, Victoria and South Australia, extending to the Flinders Ranges in the west and Bendigo in the East. Nominate *V. annulata annulata* is found in most parts of New South Wales and Queensland, excluding the top end of Cape York and far north-west.

Etymology: Named in reflection of where the subspecies occurs.

REFERENCES CITED

Boulenger, G. A. 1896. *Catalogue of the snakes in the British Museum, Vol. 3*. London (Taylor and Francis), xiv+727 pp.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia*, 7th ed. CSIRO Publishing, xxx+1033 pp.

Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia, Volume 1: Amphibia and Reptilia.* AGPS, Canberra, ACT:313 pp.

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

Couper, P. J. and Covacevich, J. A. 1996. A Bandy Bandy with a difference. *Memoirs of the Queensland Museum* 39(2):242.

Covacevich, J. 1971. Amphibian and reptile type specimens in the Queensland Museum. *Memoirs of the Queensland Museum* 16:49-68.

Derez, C. M., Arbuckle, K., Ruan, Z., Xie, B., Huang, Y., Dibben, L., Shi, Q., Vonk, F. J. and Fry, B. G. 2018. A new species of Bandy Bandy (*Vermicella*: Serpentes: Elapidae) from the Weipa Region, Cape York, Australia. *Zootaxa* (online): 4446(1):1-12, 16 July.

De Vis, C. W. 1905. Rhynchelaps latizonatus n. s. *Ann. Queensland Museum* (Brisbane) 6:48.

Duméril, A. M. C., Bibron, G. and Duméril, A. H. A., 1854. *Erpétologie générale ou histoire naturelle complète des reptiles. Tome septième. Deuxième partie, comprenant l'histoire des serpents venimeux.* Paris, Librairie Encyclopédique de Roret: i-xii + 781-1536.

Gray, J. E. 1841. A catalogue of the species of reptiles and Amphibia hitherto described as inhabiting Australia, with a description of some new species from Western Australia. Appendix E, pp. 422-449. In: G. Grey, Journals of Two Expeditions of Discovery in Northwest T. and W. Boone, London. Vol. 2: 422-449 + plates.

Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, 2088, Australia:238 pp.

Keogh, J. S. and Smith, S. A. 1996. Taxonomy and natural history of the Australian bandy-bandy snakes (Elapidae: *Vermicella*) with a description of two new species. *Journal of Zoology* 240:677-701.

Krefft, G. 1869. *The Snakes of Australia; an Illustrated and Descriptive Catalogue of All the Known Species*. Sydney, Govt. Printer xxv+100 pp.

Longman, H. A. 1915. Reptiles from Queensland and the Northern Territory. *Mem. of the Queensland Museum* 3: 30-34.

Longman, H. A. 1916. Snakes and lizards from Queensland and the Northern Territory. *Mem. of the Qld Museum* 5:46-51.

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

Simpson, K. N. G. 1973. Amphibians, reptiles and mammals of the Murray River region between Mildura and Renmark, Australia. *Mem. Nat. Mus. Vict.* 34:275-279.

Storr, G. M. 1968. The genus *Vermicella* (Serpentes : Elapidae) in Western Australia and the Northern Territory. *J. Roy. Soc. West. Aust.* 50:80-92.

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

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

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

CONFLICTS OF INTEREST - NONE

Australasian Journal of Herpetology **40:59-61.**
Published 10 July 2019.

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

Two new subspecies of Mulga Dragon *Caimanops amphiboluroides* (Lucas and Frost, 1902) (Squamata: Agamidae).

LSID urn:lsid:zoobank.org:pub:19CAAA4E-92EF-4B22-B95C-DABCD1AF968A

RAYMOND T. HOSER

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
Received 21 March 2017, Accepted 14 May 2019, Published 10 July 2019.

ABSTRACT

An audit was conducted on the endemic Western Australian lizard species, the Mulga Dragon *Caimanops amphiboluroides* (Lucas and Frost, 1902), treated by many authors as being within an expanded *Diporiphora* Gray, 1842.

Bbased on inspection of numerous specimens throughout the known range it was found that those from the south-east of Western Australia and others from a coastal region inland from Geraldton were morphologically distinct from those found north of these areas in the Pilbara and adjacent areas.

As far as is known, the two southern groups of lizards are geographically disconnected by a distance of at least 150 km north-south and by a lesser distance east-west, consisting of mainly unsuitable habitat, indicating long-term divergence and so the unnamed forms are herein described as new subspecies. While no collection location was given for the holotype of Lucas and Frost, inspection of photos of the said specimen confirms it is of the north-west form and so the other populations are herein formally named as *Caimanops amphiboluroides aurantiaco subsp. nov.* and *Caimanops amphiboluroides leucolateralis subsp. nov.*.

Keywords: Lizards; taxonomy; nomenclature; Agamidae; *Caimanops*; *amphiboluroides*; Western Australia; new subspecies; *aurantiaco*; *leucolateralis*.

INTRODUCTION

As part of an ongoing audit of Australian reptiles, specimens of the endemic Western Australian dragon species, the Mulga Dragon *Caimanops amphiboluroides* (Lucas and Frost, 1902) from across their entire range were inspected.

The genus *Caimanops* Storr (1974) has been treated as monotypic for the species originally described as *Diporiphora amphiboluroides* Lucas and Frost, 1902.

The species-level taxon as recognized is a Western Australian endemic, being found in a broad area encompassing nearly half of the land mass of Western Australia, excluding the far south, the tropics and the most arid areas.

Within this remaining area, the species appears to have a disjunct distribution, with specimens from various parts of their range morphologically distinct from one another.

Inspection of specimens from across the known range found those from two regions to be different from the nominate form.

Those from the Goldfields area and nearby areas to the immediate north and west, in south-east Western Australia as well as specimens from the coastal region inland from Geraldton were found to be most divergent from the rest of the population, generally found in the southern to middle interior of Western Australia, including the Pilbara region and nearby parts of the coast.

On this basis they are formally described below as two new subspecies.

MATERIALS AND METHODS

While this is self evident from both abstract and introduction, I mention that inspection of specimens of this species has been over a 40 year period. The holotype (via photos) of *Diporiphora amphiboluroides* Lucas and Frost, 1902, provided to me by the Western Australian Museum has been inspected and carefully matched by myself with specimens from the north-west of the range of the putative species.

In other words it is consistent with that form.

In fact it appears that there may be several distinct forms within *Caimanops amphiboluroides* (Lucas and Frost, 1902) as currently recognized. However in the absence of molecular evidence and collection data for regions between known populations, I have taken a conservative step and only recognized two such populations as being distinct at a taxonomic level.

The population in question are from the Goldfields region of South-east Western Australia and besides being morphologically distinct from the northern populations, it is separated from it by a well demarcated zone of about 150 km across mainly unsuitable habitat.

This implies no gene flow between populations and long term isolation as opposed to the alternative explanation of no collection in the said regions. This in turn explains the morphological differences between the populations as consistently observed.

While it is likely that the south-eastern population is sufficiently divergent to warrant recognition as a full species, I have taken the conservative position and herein formally described as a subspecies in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

A second apparently isolated population inland from Geraldton on the Western Australian coast is also morphologically divergent from the two aforementioned forms and so it too is formally named in this paper as a new subspecies.

It should be noted that unless mandated by the *International Code of Zoological Nomenclature* or relevant subsequent publication, the spelling of the scientific names should not be altered.

There are no conflicts of interest in the preparation of this paper and relevant museum staff across Australia are thanked for their assistance's in this and other relevant scientific projects myself and colleagues have engaged in over the last 40 years, most of whom have done an excellent job in this regard.

The conservation significance of timely recognition of potentially threatened taxa is important and best explained via the papers of Hoser (2019a, 2019b), which means I have absolutely no hesitation in publishing the scientific descriptions within this paper.

References relevant to the taxonomy and nomenclature adopted in this paper include the following: Cogger (2014), Cogger *et al.* (1983), Gray (1842), Hoser (2015, 2019a, 2019b), Hugall *et al.* (2008), Lucas and Frost (1902), Ride *et al.* (1999), Storr (1974), Wells and Wellington (1984, 1985) and sources cited therein.

In terms of the generic placement of the nominate species and subspecies, I note that the molecular results published by Hugall *et al.* (2008) support this position, albeit ambiguously. It should however be noted that many authors still place this taxon within the genus *Diporiphora* Gray, 1842 and people working with these lizards should be aware of the existence of two generic names.

Until the publication of this paper, no one has to the best of my knowledge ever countenanced the possibility that there may be more than one taxonomic entity within *Caimanops amphiboluroides* as conceived to date. However inspection of specimens across the known range of the putative species by myself, led to no other sensible conclusion.

Of note is that Storr (1974) at page 126 grouped the holotype of *Caimanops amphiboluroides* within the northern group of animals, but failed to give any reason for doing so. My own inspection of the same animal confirmed his judgement as correct. That Storr was able to place this specimen within a geographical grouping indicated he was aware of regional differences in the putative taxon, but evidently he was of the view that these differences did not warrant distinction at a taxonomic level.

CAIMANOPS AMPHIBOLUROIDES AURANTIACO SUBSP. NOV.

LSID urn:lsid:zoobank.org:act:F9F8CCF8-40C7-4659-8187-03A15BEF5071

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R12034 collected at Mount Linden, Western Australia, Australia. Latitude 29.19 S., Longitude 122.25 E.

The government-owned Western Australian Museum, Perth, Western Australia, Australia allows access to its holdings.

Paratypes: 1/ A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R39044 collected at Youanmi, Western Australia, Australia, Latitude 8.62 S., Longitude 118.83 E.

2/ A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R544 collected at Mount Sefton Western Australia, Australia, Latitude 28.42 S., Longitude 123.23 E.

Diagnosis: *Caimanops amphiboluroides aurantiaco subsp. nov..* from the Goldfields and immediately adjacent areas of south-east Western Australia is readily separated from the nominate form of the species by the following suite of characters: White markings on flanks forming cross bands, orange on dorsum and sides almost immaculate, versus a dorsum heavily peppered and mottled with white on nominate form. There are no obvious cross bands on the flanks of the nominate form, which instead have alternate indistinct whitish markings on the lower flanks.

In *C. amphiboluroides aurantiaco subsp. nov.* there are five white bars (markings) on each side of the lower flanks, versus 6-7 in the nominate subspecies.

C. amphiboluroides aurantiaco subsp. nov.. has a significantly larger crest on back of neck than nominate form based on a visual inspection of specimens, but this is not quantified here.

Nuchal spines on *C. amphiboluroides aurantiaco subsp. nov..* are creamish white, versus brownish grey in nominate form and coloured in *amphiboluroides leucolateralis subsp. nov.* including as seen on the holotype for *C. amphiboluroides* Lucas and Frost, 1902, which is otherwise faded.

The subspecies *Caimanops amphiboluroides leucolateralis subsp. nov.* from within a 200 km radius of Geraldton in Western Australia is readily separated from the other two subspecies by the following: A distinctly greyish dorsal colouring, lacking the orangeish or reddish tinge or colour seen in the other two subspecies. It is further separated by the presence of a well-defined thick white line or streak running along the mid flank on either side. There are no obvious spines on the limbs and the nuchal spines are coloured.

Scales on the upper hind legs of nominate *Caimanops amphiboluroides amphiboluroides* are barely noticeably raised and those on the upper hind legs of *C. amphiboluroides aurantiaco subsp. nov.* are raised to form an appearance of tiny tubercles.

The diagnosis for both the genus *Caimanops* Storr, 1974 and the two subspecies within the genus, is directly taken from Storr (1974) and copied almost verbatim below (with minor modifications) as it still applies and there is no need to change it.

The genus *Caimanops* Storr, 1974 is defined herein as moderately large agamid lizards with short limbs and tail; tympanum, nuchal crest, gular fold and pre-anal pores present (although these pores are sometimes hard to see). Agreeing with *Physignathus* Cuvier, 1829 and *Intellagama* Wells and Wellington, 1985 and *Diporiphora* Gray, 1842 in having each pre-anal pore perforating a scale and in the alignment of the pores being directed backwards towards midline, but differing from both of those genera in having nasal located on (not below) the canthus rostralis, tail terminating obtusely (as in *Chelosania* Gray, 1845), five low crests along back, dark dorsal markings ranging from distinct to semi-distinct are longitudinal (not transverse) in orientation (except in the case of subspecies *C. amphiboluroides aurantiaco subsp. nov.*) and there is a complete absence of a white upper dorsolateral stripe. Agreeing with *Physignathus* and *Intellagama* (but not *Diporiphora*) in having a nuchal crest of laterally compressed scales, snout low and truncate in profile and no vertebral stripe.

A photo of the nominate subspecies *Caimanops amphiboluroides* in life is seen in Wilson and Knowles (1988) on page 205 at top right and Brown (2014) at top right.

A photo of *C. amphiboluroides aurantiaco subsp. nov.* in life was found online at: https://www.flickr.com/photos/gondwanareptileproductions/31565466685/in/photolist-Hj16RL-k3bsNF-bByDFu-Q6kgwe-GDJHYa-23w75xf-nYFQTx-dHzSi8-cFziJd and downloaded on 10 May 2019.

A photo of *Caimanops amphiboluroides leucolateralis subsp. nov.* in life is seen in Storr, Smith and Johnstone 1983 on plate 1, top left as well as in Brown (2014) on page 719, top left.

Distribution: Goldfields region of south-east Western Australia and nearby areas to the immediate west and north, generally south of latitude 28.40 South. Storr (1974) gives a northern extremity for the nominate form of 23.15 South and a southern extremity for the southern form (new subspecies) of 29.20 South, although more recent records are further south of here, but still away from southwest Australian coast.

The subspecies *Caimanops amphiboluroides leucolateralis subsp. nov.* occurs within a 200 km radius of Geraldton, West Australia.

Nominate *C. amphiboluroides amphiboluroides* is found in the central part of Western Australia generally around the southern part of the Pilbara, including areas immediately south and east.

Etymology: *aurantiaco* in Latin refers to the strong orange colour on the upper back region in this taxon.

CAIMANOPS AMPHIBOLUROIDES LEUCOLATERALIS SUBSP. NOV.

LSID urn:lsid:zoobank.org:act:22CCD5BD-CC7D-48ED-BCE7-C4227608B999

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R5297 collected at Gullewa, Western Australia, Australia. Latitude 28.39 S., Longitude 116.19 E. The Western Australian Museum, Perth, Western Australia, Australia allows access to its holdings.

Paratype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R53062 collected at Bullardoo Station, Mullewa, Western Australia, Australia. Latitude 27.50 S., Longitude 115.40 E.

Diagnosis: The subspecies *Caimanops amphiboluroides leucolateralis subsp. nov*. from within a 200 km radius of Geraldton, on the West Australian coast, is readily separated from the other two subspecies by the following: A distinctly greyish dorsal colouring, lacing the orangeish or reddish tinge or colour seen in the other two subspecies. It is further separated by the presence of a well-defined thick white line or streak running along the mid flank on either side. There are no obvious spines on the limbs and the nuchal spines are coloured. Scales on the upper hind legs of nominate *Caimanops amphiboluroides amphiboluroides* are slightly but barely noticeably raised and those on the upper hind legs of *C. amphiboluroides aurantiaco subsp. nov.* are raised to form an appearance of tiny tubercles.

Caimanops amphiboluroides aurantiaco subsp. nov.. from the Goldfields and immediately adjacent areas of south-east Western Australia is readily separated from the nominate form of the species by the following suite of characters: White markings on flanks forming cross bands, orange on dorsum and sides almost immaculate, versus a dorsum heavily peppered and mottled with white on nominate form. There are no obvious cross bands on the flanks of the nominate form, which instead have alternate indistinct whitish markings on the lower flanks. In *C. amphiboluroides aurantiaco subsp. nov.* there are five white bars (markings) on each side of the lower flanks, versus 6-7 in the nominate subspecies.

C. amphiboluroides aurantiaco subsp. nov.. has a noticeably larger crest on back of neck than nominate form and *C. amphiboluroides leucolateralis subsp. nov*. based on a visual inspection of specimens, but this is not quantified here.

Nuchal spines on *C. amphiboluroides aurantiaco subsp. nov.*. are creamish white, versus brownish grey in nominate form and coloured in *amphiboluroides leucolateralis subsp. nov.* including as seen on the holotype for *C. amphiboluroides* Lucas and Frost, 1902, which is otherwise faded.

The diagnosis for both the genus *Caimanops* Storr, 1974 and the two subspecies within the genus, is directly taken from Storr (1974) and copied almost verbatim below (with minor modifications) as it still applies and there is no need to change it.

The *Caimanops* Storr, 1974 are defined herein as moderately large agamid lizards with short limbs and tail; tympanum, nuchal crest, gular fold and pre-anal pores present (although these pores are sometimes hard to see). Agreeing with *Physignathus* Cuvier, 1829 and *Intellagama* Wells and Wellington, 1985 and *Diporiphora* Gray, 1842 in having each pre-anal pore perforating a scale and in the alignment of the pores being directed backwards towards midline, but differing from both of those genera in having nasal located on (not below) the canthus rostralis, tail terminating obtusely (as in *Chelosania* Gray, 1845), five low crests along back, dark dorsal markings ranging from distinct to semi-distinct are longitudinal (not transverse) in orientation (except in the case of subspecies *C. amphiboluroides aurantiaco subsp. nov.*) and there is a complete absence of white dorsolateral stripe on the upper flanks. Agreeing with *Physignathus* and *Intellagama* (but not *Diporiphora*) in having nuchal crest of laterally compressed scales, snout low and truncate in profile and no vertebral stripe. A photo of the nominate subspecies *Caimanops amphiboluroides* is seen in Wilson and Knowles (1988) on page 205, top right.

A photo of *C. amphiboluroides aurantiaco subsp. nov.* in life was found online at: https://www.flickr.com/photos/gondwanareptileproductions/31565466685/in/photolist-Hj16RL-k3bsNF-bByDFu-Q6kgwe-GDJHYa-23w75xf-nYFQTx-dHzSi8-cFziJd and downloaded on 10 May 2019.

A photo of *Caimanops amphiboluroides leucolateralis subsp. nov*. in life is seen in Storr, Smith and Johnstone 1983 on plate 1, top left as well as in Brown (2014) on page 719, top left.

Distribution: The subspecies *Caimanops amphiboluroides leucolateralis subsp. nov*. as far as is known, is found within a 200 km radius of Geraldton in Western Australia.

C. amphiboluroides aurantiaco subsp. nov. is found in the Goldfields region of south-east Western Australia and nearby areas to the immediate west and north, generally south of latitude 28.40 South. Storr (1974) gives a northern extremity for the nominate form of 23.15 South and a southern extremity for the southern form (new subspecies) of 29.20 South, although more recent records are further south of here, but still away from southwest Australian coast.

Nominate *C. amphiboluroides amphiboluroides* is found in the central part of Western Australia generally around the southern part of the Pilbara and including areas immediately south and east of there.

Etymology: *leucolateralis* in Latin refers to the well-defined whitish lateral markings on the lizard.

REFERENCES CITED

Brown, D. 2014. *A guide to Australian Lizards in Captivity*. Reptile Publications, Burleigh, Qld, Australia: 949 pp.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh edition), CSIRO. Sydney, Australia:1064 pp.

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

Cuvier, G. J. L. N. F. D. 1829. *Le Regne Animal Distribué, d'apres son Organisation, pur servir de base à l'Histoire naturelle des Animaux et d'introduction à l'Anatomie Comparé*. Nouvelle Edition [second edition]. Vol. 2. Les Reptiles. Déterville, France:i-xvi,1-406.

Gray, J. E. 1842. Description of some hitherto unrecorded species of Australian reptiles and batrachians. *Zoological Misc.* 2:51-57.

Gray, J. E. 1845. *Catalogue of the specimens of lizards in the collection of the British Museum*. Trustees of the British Museum/ Edward Newman, London:xxvii+289 pp.

Hoser, R. T. 2015. Australian agamids: Eighteen new species from the genera *Amphibolurus* Wagler, 1830, *Lophognathus* Gray, 1842, *Rankinia* Wells and Wellington, 1984, *Diporiphora* Gray, 1842, *Tympanocryptis* Peters, 1863, as well as three new genera and six new subgenera. *Australasian Journal of Herpetology* 30:37-64.

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.

Hugall, A. F., Foster, R., Hutchinson, M. and Lee, M. S. Y. 2008. Phylogeny of Australasian agamid lizards based on nuclear and mitochondrial genes: implications for morphological evolution and biogeography. *Biological Jour. of the Linnean Soc.* 93(2):343 -358.

Lucas, A. H. S. and Frost, C. 1902. Descriptions of some new lizards from Western Australia. *Proc. R. Soc. Vict.* 15:76-79.

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.

Storr, G. M. 1974. Agamid lizards of the genera *Caimanops*, *Physignathus* and *Diporiphora* in Western Australia and Northern Territory. *Records of the Western Australian Museum* 3:121-146.

Storr, G. M., Smith, L. A. and Johnstone, R. E. 1983. *Lizards of Western Australia. Dragons and Monitors.* Western Australian Museum, Perth, Western Australia:113 pp.

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

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

Wilson, S. K. and Knowles, D. G. 1988. *Australia's Reptiles. A photographic Reference to the Terrestrial Reptiles of Australia.* Collins Australia, Sydney, Australia:447 pp.

CONFLICTS OF INTEREST - NONE.

Australasian Journal of Herpetology **40:62-64.**
Published 10 July 2019.

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

Hi-tech medicine and surgery! Super Glue as a means to fix open wounds in reptiles.

LSID urn:lsid:zoobank.org:pub:35D5C9BA-CDC4-4BC8-878D-FFBE32C26D7F

RAYMOND T. HOSER

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
Received 20 May 2018, Accepted 30 June 2019, Published 10 July 2019.

ABSTRACT

Stitching large lesions in emaciated small reptiles poses logistical problems in that the skin is too weak to hold the sutures required to keep the wound shut.

As a means to get over the problem, commercially available "Super Glue", a common type of quick drying super strength glue, as sold in shops has been found to be a quick and effective means to seal gaping wounds by joining skin tight with healing success the usual outcome.

Keywords: Snake; python; Olive Python; Centralian Carpet Python *Liasis olivaceous; Morelia bredli*; Australia; super glue; open wounds; sealing.

DETAIL

Over more than two decades, I have used so-called "Super Glue" as means to seal wounds in snakes and lizards that would otherwise be difficult to suture up in the usual way.

While there are numerous examples I can give, all of which have been successful (none unsuccessful), only a limited number of examples are given here.

They are however sufficient to show how the process works and why it has been successful.

"Super Glue" is a generic term to describe a number of similar commercially available glues. They come in a tiny tube (5-6 cm long) and the glue itself is clear like white wine. In tiny amounts it bonds almost instantly (or a few seconds) and the bond is very tight and hard to break.

While it does degrade with time, it is excellent for fixing broken china, ring settings, rubber, some plastics, tiles and toys. The principal ingredient is Cyanoacrylate, which is toxic. When sold it comes with a safety warning to avoid contact with the skin and eyes and to avoid breathing the vapour.

Notwithstanding the preceding, dried glue itself is relatively inert and the dangers from this glue arise from the wet form as it emerges from the tiny tube it is packaged in.

The biggest risk when handling the glue is that because it bonds in such tiny amounts one must be careful not to leave drops around or accidentally touch and bond materials together, including for example two fingers.

Because of the bonding issue, one must be very careful when using the glue to fix products such as broken china. Obviously if the glue is to be used on a living and potentially moving animal, these warnings and safety issues become even more important.

On 27 February 2018, I received a severely emaciated young *Liasis olivaceus* Gray, 1842 with a minor infestation of parasitic snake mites.

While the snake had been hatched a year prior, it had not eaten for most of the previous year and so had only grown slightly since hatching and was extremely thin.

In effect the snake presented as a newborn sized snake in emaciated condition.

The mites were removed by way of spraying in a near sealed box and the snake placed in a small mite-free cage of the usual rack-style set up.

In this case it was in a 30 cm (12 inch) long tub, being about 20 cm high and wide.

There was a heat mat under one end and cool at the other.

The tub had newspaper as a substrate and a cut plastic container to form a hide at the warm end, which as a matter of course the snake would rest in.

A day after arrival, the snake was offered a so-called pinkie, being a pink coloured young mouse (no hair), the mouse having been thawed from a freezer. It was refused and so the snake was force fed.

The feeding process was repeated with five pinkies four days later after it was clear that the first had been digested in the usual way.

The force-feeding involved holding the head and front end of the snake in a tight grip and forcing the food item with tongs past the mouth and into the neck of the snake, where as a rule it would then proceed to continue to swallow until it ended up in the stomach region of the body.

After some days following the second force-feeding, I did on 10 March 2019 the same feeding process with a so-called fuzzy mouse, weighing about 8 grams. While the head and neck were easily able to expand to take the girth of the food item, what was not expected was that instead of expanding in the usual way, the skin on the neck split along long lines and yielded grey flesh and

bone underneath. While the snake only measured about 60 cm in length at the time, each gash (there were two) measured about 4 cm in length each (see images on page 64).

It was clear that due to the emaciated condition of the starved snake that the skin had become almost like paper and broke in the same way as weak paper would. The wounds, while completely clean, needed to be shut immediately as there would otherwise be an intolerably high risk of infection and death.

Clearly no sutures of any form would have been able to be used to close the relevant wounds as the skin would not have had enough strength to be able to hold the sutures and stay shut as the snake moved about.

Instead Super Glue was used to seal the wound.

With one person (daughter Adelyn Hoser) holding the snake in a rigid way, she also used her hands to close the gap and hold it the same way.

Using Super Glue I then put a tiny amount across the joined areas of skin and this bonded immediately. Excess was removed as fast as possible and the skin area of the snake where the glue had been applied was checked to be totally dry before the snake was allowed to move about. The snake was also gently wiped and monitored for some minutes to ensure no inadvertent bonding occurred (see image on page 64).

Significant in this case is that while the snake's skin had broken apart, there was no open wounds as such with bleeding and so none of the toxins of the glue had any ready access to the body fluid system.

As mentioned already, dried glue is inert and so as expected there were no signs of glue toxicity to the snake.

Noting the nature of the operation detailed herein and the weakness along the line of joining, the snake was not fed again until after it shed its skin which was only 13 days later (23 March 2019) and anticipated.

The cage was saturated in the days preceding the shedding to ensure maximum ease and reduce risk of breaking open of the wound area. When the snake did in fact shed its skin, the wound had effectively completely healed and all that remained was a discoloured grey line where the break had been (see image on page 64).

The snake was force-fed four more pinkies immediately after shedding (the cage now being dry again) and this was repeated five days later.

Five days after that the snake was deemed to be in far better condition as compared to when received and was force-fed a so-called fuzzy mouse, weighing about 8 grams.

As it was pushed down the neck region with use of tongs, I was surprised that as before there was yet two more splits of the skin as previously, but these two were 5 cm in length, being longer than before.

These were sealed in the same manner as previously and again the snake was not fed until shedding its skin.

That was in fact 20 days later.

The process this time was as for previous, in that the snake was kept in a saturated wet cage in the days prior to shedding and the wounds had basically healed when the new skin was visible.

Due to the risk of relapse, feeding of the snake in following weeks was particularly conservative, being only pinkie mice for the first four feeds and then on feed five a so-called fuzzy mouse, weighing about 8 grams was force-fed to the snake.

In this case the mouse was forced past the jaw and into the neck, but no further, at which point it managed to get the mouse down all the way by itself and without causing any re-split of the skin.

At the time this paper was written in May 2019, the snake has continued to be force-fed fuzzy mice of about 8 grams, which it takes as explained above and has continued to grow larger and more robust accordingly.

Quantities of mice have been upped to be 3-4 at a time, equating to feeds of adult mice and due to frequency of feeding the snake has become well-fed and now on a good growth trajectory.

However due to the extremely restricted food intake of the first year of its life, the snake is likely to mature as a small adult.

At end June 2019, the snake was assist fed an adult sized mouse for the first time and there was no issues with skin split on the sides.

In 2016 I was presented with a pet Green Tree Frog *Litoria caerulea* (White, 1790) that had been slit with a knife or something similar. Using a method similar to that described above the inch long cut was sealed shut and the frog held for a short time in a dry plastic tub, with care to ensure that it did not itself adhere to the surface.

The cut healed and was shed a month after being sealed.

In 2015, an adult female Centralian Carpet Python *Morelia bredli* (Gow, 1981) of 10 years of age was bitten by another of its species while being shipped to a Hands-on Reptile Show and discovered with a 5 cm long gash on its back on arrival at the event.

As soon as practicable the snake had the wound sealed in the manner as described above and it also visibly healed to all intents and purposes. During the healing time for all relevant animals, including this snake, they were never handed in any way (except perhaps to move gently when cleaning a cage) and none were used in reptile shows or similar.

In the case of the adult female Centralian Carpet Python, I did however make an error and inadvertently took the snake out of its cage and loaded it into a box of snakes for a reptile show just 4 weeks after its wound had been closed.

While being handled at the show, the wound was broken open.

The snake's wound was again sealed, this time using the normal sutures method and the stitches remained in for several months and the wound did not ever re-open. The snake now has minor scarring on the cut line and that is all.

In this case, it was a large strong 2 metre python and the skin was certainly strong enough to hold sutures. The only advantage of the use of Super Glue in the first instance was ease of application and had I not by way of oversight, handled or caused to be handled, the snake too soon after the wound had been sealed with Super Glue, I have no doubt at all that it would have sealed in the same way as occurred for the Olive Python detailed above.

Even as of end June 2019, that snake has never been handled, except for feeding and cleaning purposes and it is unlikely to be handled at public reptile shows for several months beyond this date and only by the stage that any likelihood of re-opening of neck wounds is gone.

Note that they appeared 100 per cent healed at end June 2019.

However in the case of that snake, the risk seems to be from feeding, rather than external means and so size of food being force-fed (or taken) is more the issue.

In summary, Super Glue, administered with extreme care is an effective part of the armoury of a herpetologist and reptile veterinarian in terms of sealing wounds in snakes, lizards and frogs and potentially other small animals in cases where the skin may not be easily sutured or other relevant factors are at play, including for example immediate access to sutures, when Super Glue is available and on hand.

REFERENCES CITED

Gow, G. F. 1981. A new species of Python from central Australia. *Australian Journal of Herpetology* 1 (1):29-34.

Gray, J. E. 1842. Synopsis of the species of prehensile-tailed snakes, or family Boidae. *Zoological Miscellany* 2:41-46.

White, J. 1790. *Journal of a voyage to New South Wales with sixty five plates of non descript animals, birds, lizards, serpents, curious cones of trees and other natural productions*. Appendix: Debrett: London:299 pp.

CONFLICTS OF INTEREST - NONE.

Australasian Journal of Herpetology

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

Hoser, R. T. 2019. Hi-tech medicine and surgery! Super Glue as a means to fix open wounds in reptiles. *Australasian Journal of Herpetology* 40:62-64.

Images (Raymond Hoser): Top, skin split on emaciated 1 year old python.
Middle: Skin sealed and dried with "Super Glue"
Bottom: Sealed and healed wound 13 days later after sloughing skin.