

## The inevitable split up of the common Australian skink lizard *Allengreerus delicata* AKA *Lampropholis delicata* into resurrected and new species (Reptilia: Squamata: Scincidae).

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### ABSTRACT

Long known to be a species complex, the putative species originally described as *Mococa delicata* De Vis, 1888, has a chequered taxonomic history. It has since been placed in the genera *Lygosoma*, *Leiolopisma*, *Lampropholis* and most recently *Allengreerus* by Hoser (2009), based on divergence from the type species within *Lampropholis* Fitzinger, 1843.

Related forms have been formally named including *Lampropholis longleyi* Wells and Wellington, 1985 from the New England region of New South Wales, *Lampropholis colossus* Ingram, 1990 from the Bunya Mountains, Queensland, *Allengreerus ronhoseri* Hoser, 2009 from near Shepparton in northern Victoria and *A. delicata jackyhoseri* from Pakenham, (Melbourne), Victoria, Australia.

Cogger (2014), following from the unscientific dictates of Kaiser *et al.* (2013), synonymised the preceding forms with "*Lampropholis delicata*", (excluding one of the least divergent of them, being *L. colossus*) as have more recent authors such as Wilson and Swan (2017).

This was also in the face of excellent peer reviewed scientific descriptions for each and noting that Kaiser *et al.* (2013) was not peer reviewed. It was in fact published in their own online "journal".

However, the peer reviewed scientific evidence of Chapple *et al.* in 2011 showed that each of these preceding formally named forms diverged from the nominate form of *L. delicata* with a type locality of Warro Station, Port Curtis, Queensland (between Bundaberg and Rockhampton), millions of years prior.

*A. longleyi* diverged about 6 MYA from *A. delicata*; *A. ronhoseri* from *A. longleyi* about 4 MYA and *A. colossus*, *A. delicata jackyhoseri* both diverged from *A. ronhoseri* and from each other about 3.5 MYA, with no known genetic admixture, meaning each should be given full species-level recognition.

Besides recognizing these five previously named species, this paper formally describes and names 14 other obviously divergent forms in the same species complex in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 2019), being a significant addition to the biodiversity inventory of Australia.

Each has an estimated minimum divergence from their nearest relative of at least 2 MYA.

An obviously divergent new species in the *Lampropholis guichenoti* Duméril and Bibron, 1839 species complex, with a 2.15-5.77 MYA divergence from its nearest relative *L. swani* Wells and Wellington, 1985 is also formally named for the first time.

**Keywords:** Taxonomy; nomenclature; Australia; Skink; lizard; Scincidae; *Lampropholis*; *Allengreerus*; *delicata*; *longleyi*; *colossus*; *ronhoseri*; *jackyhoseri*; *guichenoti*; *lunneyi*; *swani*; New species; *allengreeri*; *brunneo*; *dorsei*;  *davidmerceicai*; *robertwatsoni*; *angelikadennesae*; *scottgranti*; *rosswellingtoni*; *kaputarensis*; *trevorhawkeswoodi*; *richardwellsei*; *adelynhoseri*; *matheri*; *marulanensis*; *oxyi*.

## INTRODUCTION

Long known to be a species complex, the putative species originally described as *Mococa delicata* De Vis, 1888, is one of the most common lizards in south-east Australia.

Known as the "Garden skink", "Delicata Skink", or "Dark-flecked Garden Skink" the putative species has a chequered taxonomic history.

It has since been placed in the genera *Lygosoma* Hardwicke and Gray, 1827, *Leiopisma* Duméril and Bibron, 1839, *Lampropholis* Fitzinger, 1843 and most recently *Allengreerus* Hoser, 2009 by Hoser (2009), based on divergence from the type species within *Lampropholis* Fitzinger, 1843, that being *Lygosoma guichenoti* Duméril and Bibron, 1839.

Related forms have been formally named including *Lampropholis longleyi* Wells and Wellington, 1985 from the New England region of New South Wales, *Lampropholis colossus* Ingram, 1991 from the Bunya Mountains in south-east Queensland, *Allengreerus ronhoseri* Hoser, 2009 from near Shepparton in northern Victoria and *A. delicata jacksoserae* from Pakenham, (Melbourne), Victoria, Australia.

Cogger (2014), following from the unscientific dictates of Kaiser *et al.* (2013), synonymised the preceding forms with "*Lampropholis delicata*", (excluding one of the least divergent of them, being *L. colossus*) as have more recent authors such as Wilson and Swan (2017).

This was also in the face of excellent peer reviewed scientific descriptions for each of the preceding taxa and noting that Kaiser *et al.* (2013) was not peer reviewed. It was published in their own online "journal" and quickly discredited by Hoser (2015a-f).

However, the peer reviewed scientific evidence of Chapple *et al.* (2011a) showed that each of these preceding formally named forms diverged from the nominate form of *L. delicata* with a type locality of Warro Station, Port Curtis, Queensland (between Bundaberg and Rockhampton), millions of years prior.

*A. longleyi* diverged about 6 MYA from *A. delicata*; *A. ronhoseri* from *A. longleyi* about 4 MYA and *A. colossus* as well as *A. delicata jacksoserae* diverged from *A. ronhoseri* and each other about 3.5 MYA, with no known genetic admixture.

Added to that the defined morphological differences, with species level recognition often automatic with a 1.5 MYA or more divergence, I have no hesitation in stating the obvious in that each of *A. delicata*, *A. colossus*, *A. ronhoseri*, *A. longleyi* and *A. jacksoserae* shall be treated from here on in as full species. Molecular studies (e.g. Pyron *et al.* 2013 and Chapple *et al.* 2011a) have confirmed the divergence of relevant species with respect of the generic assignment of *Allengreerus* Hoser, 2009 and so it too is used throughout this paper as correct.

Besides recognizing these five previously named species, this paper is the culmination of a project to formally identify and name other species which have until now been treated as populations of *A. delicata*.

Referring also to the species "*Lampropholis colossus* Ingram, 1991" endemic to the Bunya Mountains, Queensland, treated herein as properly placed in the genus *Allengreerus* Hoser, 2009, it appears to be a divergent form of putative *A. delicata* (De Vis, 1888), which happened to be in an unnamed species-level clade of the taxon, based on the phylogeny of Chapple *et al.* (2011a). 4 groups within that unnamed clade all appeared to diverge from one another about 2 MYA and in turn from other named clades at least 3.5 MYA.

The claim by Wilson (2015) of *A. colossus* that it is "*Status uncertain; possibly outlying pop. of L. delicata*" while more-or-less correct at the time, can be amended to read that it is a valid species, allied to *A. delicata*, but divergent by some millions of years.

Ingram (1991) who first mooted that *A. colossus* may have been an aberrant population of *A. delicata* also wrote:

"Moreover, there are several other unnamed distinctly coloured populations of *L. delicata* throughout eastern Queensland that

warrant similar investigations. Undoubtedly, the taxon *L. delicata* is still a complex of species."

The putative species *Lampropholis guichenoti* Duméril and Bibron, 1839, already divided three ways by Wells and Wellington, 1985, but continually treated as a single species by all publishing authors since was also audited as part of this project. This was to determine:

A/ The validity of the taxa formally named by Wells and Wellington in 1984 and 1985 and,

B/ Regardless of the preceding, to see if there were any further unnamed forms warranting formal scientific description.

## MATERIALS AND METHODS

A review of the relevant literature was undertaken.

This was to ascertain distribution of putative *A. delicata* and *L. guichenoti*, diagnostic information published to date and also any or all available synonyms for given forms.

An audit of the holdings of Australian museums was also conducted.

Specimens from across the range were inspected, or re-inspected, noting that these two species groups (*A. delicata* and *L. guichenoti*) had been studied by myself for some decades (see for example Hoser 1989, 2009, 2012).

Included were live specimens, dead animals and photos of specimens with good quality location data.

Field work was conducted by myself in every mainland state of Australia, including those states where putative *A. delicata* (and *L. guichenoti*), has been known to occur, this being done over more than 5 decades and including inspection of many thousands of living specimens, including repeated visits to many remote locations.

Literature relevant to the taxonomy and nomenclature adopted within this paper in terms of the putative species *A. delicata* and *L. guichenoti* include Baker (1980), Boulenger (1887), Bowles (2000), Chapple *et al.* (2011a, 2011b, 2016a, 2016b), Cogger (2014), Cogger *et al.* (1983), Daly and Hoyer (2016), De Vis (1888), Doody and Paull (2013), Driessen and Brereton (1998), Duméril and Bibron (1839), Eldridge *et al.* (2020), Fisher (1948), Forsman and Shine (1995), Gray (1842, 1845), Green (1981), Greer (1967, 1974, 1976, 1989, 1997), Harris *et al.* (2020), Henle (1981), Hoser (1989, 2009, 2012), Howard *et al.* (2003), Hutchinson (1979), Ingram (1991), Ingram and Rawlinson (1981), Jacobson (1973), Joss and Minard (1985), Kay *et al.* (2013), Loveridge (1934, 1939), Lyon (1972), Mather (1990), McKeown (1996), Metcalfe and Annable (2016), Miller *et al.* (2017), Mittleman (1952), Mo (2015), Moule *et al.* (2015), Murphy (1994, 2010), Naimo *et al.* (2021), Osborne and Hoefler (2018), Pyron *et al.* (2013), Rawlinson (1969, 1971), Ride *et al.* (1999), Singhal *et al.* (2018), Smith (1937), Swan *et al.* (2017), Taylor *et al.* (1993), van Winkel *et al.* (2018), Walsh *et al.* (2018), Wells (1981, 2002, 2011), Wells and Wellington (1984, 1985a), Wilson (2015), Wilson and Knowles (1988), Wilson and Swan (2010, 2017) and all relevant sources cited therein.

## RESULTS

As noted in the introduction, Chapple *et al.* (2011a) gave a molecular basis for the recognition of each of *A. delicata*; *A. ronhoseri*, *A. colossus*, *A. longleyi* and *A. jacksoserae* as full species.

Their paper also flagged a number of other species, based on divergences of populations in excess of 1.5 MYA.

These were inspected to see if they had quantifiable differences enabling diagnosis as species.

In addition to this, a divergent population warranting species-level recognition was located in the Mount Kaputar area of New South Wales this being the only one for which there is no molecular data.

As a result of this, those fourteen species for which there are no available synonym names are formally described herein and formally named in accordance with the *International Code of*

*Zoological Nomenclature* (Ride *et al.* 1999, as amended online since).

The species *Mococa cuprea*, Gray, 1842, as detailed in Boulenger, 1887, is not a synonym of anything resembling *A. delicata* as alleged on the Wuster gang controlled website at: <https://reptile-database.reptarium.cz/species?genus=Lampropholis&species=delicata>

(viewed most recently on 20 May 2022).

(who also got the date of Boulenger's publication wrong).

The head scalation in plate XX, Fig 2, does not conform. Neither do the scalation and morphological details in the account of Boulenger (1887) at pages 268-269, including for example the mid-body scale rows, or number of lamellae under the fourth toe.

The species described as *Leiolopisma hawaiiensis* Loveridge, 1939 may well be synonymous with a form previously described, or even one formally named in this paper.

If it is ultimately shown to be synonymous with one of these taxa, the first formally named form will take priority and will be the nomen appropriately used beyond any date that the identity of the Loveridge-named taxon is made properly known.

In terms of putative *L. guichenoti*, Chapple *et al.* (2011b) in their detailed phylogeny, concluded that what they described as northern *L. guichenoti* was in fact a valid species with a 7.91-11.62 MYA divergence from the population south of the Hunter Valley.

They stopped short of stating the obvious, in that it already had been named by Wells and Wellington (1985) as *L. swani* with a type locality in the New England region of New South Wales.

Furthermore they found that the southern population was split into two clades, being:

1/ Southern Victoria and South Australia (including the nominate form with a type locality of Kangaroo Island, South Australia), and,

2/ The only available name for the clade from north-east Victoria and southern New South Wales, south of the Hunter Valley, was *L. lunneyi*, Wells and Wellington, 1984, with a type locality of near Nowra in New South Wales.

Chapple *et al.* (2011b) found the two southern clades (*L. guichenoti* and *L. lunneyi*) diverged from one another some 3.62-5.77 MYA.

Hence Chapple *et al.* (2011b) emphatically confirmed that the two species in the *L. guichenoti* complex formally named by Wells and Wellington in 1984 and 1984 were in fact valid.

Hence my formal recognition of both forms and their resurrection from synonymy with *L. guichenoti*.

Chapple *et al.* (2011b) also flagged a Queensland population of putative "Northern *L. guichenoti*" from south-east Queensland as being significantly divergent from those south of the McPherson Range on the NSW/Queensland border.

With a divergence of 2.15-5.77 MYA between the south-east Queensland population and *L. lunneyi* from New South Wales, combined with obvious morphological divergence between the forms, I have no hesitation in formally naming it as a new species, *Lampropholis oxyi sp. nov.*

#### INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

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

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

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

This includes if gender assignment of suffixes seems incorrect,

Latinisation is wrong, apparent spelling mistakes and so on (see Article 32.5.1 of the *International Code of Zoological Nomenclature*).

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

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

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 20 May 2022 (including if also viewed prior), unless otherwise stated and was accurate in terms of the content cited herein as of that date.

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

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

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

Unless otherwise stated in the descriptions below, maximum adult SV is 45 mm.

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

#### ALLENGREERUS ALENGREERI SP. NOV.

LSIDurn:lsid:zoobank.org:act:9DF57456-2C75-45F0-BE80-A2E34E41E9BE

**Holotype:** A preserved specimen at the Australian National Wildlife Collection (Commonwealth Scientific and Industrial Research Organisation (AKA CSIRO), Canberra, ACT, Australia, specimen number R05114 collected from a suburban back yard in the Railway Estate, Townsville, Queensland, Australia, Latitude -19.2667 S., Longitude 146.8167 E.

This government owned facility allows access to its holdings.

**Paratypes:** 1/ Two preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J82316 and J84609 both collected from Townsville Common Conservation Park, Townsville, Queensland, Australia, Latitude -19.23111 S., Longitude 146.76 E.

2/ A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J57568 collected from Townsville, Queensland, Australia, Latitude -19.266667 S., Longitude 146.816667 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888) has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species with a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a).

One species only has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper.

All the relevant species, as well as their estimated divergences from their nearest previously described and/or closest related relatives (if described at the same time) are given below.

*Allengreerus delicata* (De Vis, 1888), with a type locality of Warro Station, Port Curtis, Queensland (between Bundaberg and Rockhampton), has a known distribution from about Bundaberg Queensland, on the coast, north to the St. Lawrence Gap, near Marlborough, Queensland, also on the coast.

*A. allengreeri* sp. nov. occurs north of the Burdekin Gap, generally north of just south of Townsville, Queensland in coastal areas to include the wet tropics region of far north Queensland. It diverged from *A. delicata* 3 MYA.

*A. brunneo* sp. nov. occurs in the Eungella/Mackay region of North Queensland, which is located between the St. Lawrence Gap (north of Rockhampton) and Burdekin Gap (South of Townsville). It diverged from *A. delicata* and *A. allengreeri* sp. nov. 3 MYA.

*A. longleyi* (Wells and Wellington, 1985), with a type locality of Guyra, New South Wales is confined to the New England region between Armidale, New South Wales and Girraween in far southern Queensland and ranges east of there. It diverged from *A. delicata* 6.5 MYA.

*A. colossus* (Ingram, 1991), with a type locality of Bunya Mountains, Queensland is believed to be restricted to the Bunya Mountains, South-east Queensland and diverged from *A. longleyi* 4.2 MYA.

*A. dorsei* sp. nov. is confined to Kroombit Tops, Queensland and diverged from *A. colossus* and associated newly named species 3 MYA.

*A. davidmerceicai* sp. nov. known only from the vicinity of Cooloola, south-east Queensland diverged from *A. colossus* and associated newly named species 2 MYA.

*A. robertwatsoni* sp. nov. occurs in the D'aguiar and Conondale Ranges in the hinterland of Brisbane's north and the nearby Sunshine coast. It diverged from *A. colossus* and associated newly named species 2 MYA.

*A. angelikadennesae* sp. nov. is found south of the Brisbane River valley in the hillier or wetter southern suburbs of Brisbane, from Parkinson extending south-west to Barney View. It may be found in a wider area. It diverged from *A. colossus* and associated newly named species 2 MYA.

*A. ronhoseri* Hoser, 2019 is a species from inland eastern Vic, including the lower Goulburn River valley (the type locality) and western slopes of southern and central New South Wales, with a 4MYA divergence from *A. colossus* and *A. jackyhoseræ* (Hoser, 2012).

*A. scottgranti* sp. nov. is confined to South-east South Australia, but generally not including Adelaide and the nearby hills (natural occurrence at least, noting the invasiveness of these species due to human mediated movements), but also including a population on the lower Eyre Peninsula and including far south-west Victoria. There is a 2 MYA divergence from *A. ronhoseri*.

No species in the complex occupies Victoria south-west of Melbourne to Portland in far west Victoria, this region including the Otway Ranges, which would appear to be otherwise good habitat for these lizards, had they been able to cross the unfavourable intervening areas.

*A. rosswellingtoni* sp. nov. occurs only in the vicinity of Coolah Tops, New South Wales and has a 4 MYA divergence from *A. ronhoseri*.

*A. kaputarensis* sp. nov. is confined to wetter parts of the Mount Kaputar massif in north inland New South Wales and is the only taxon in the complex for which there is no DNA divergence evidence available. Another endemic in the Kaputar Massif, *Contundo roomi* Wells and Wellington, 1985 (note the use of the correct genus nomen for this taxon), was shown by Sadlier *et al.*

(2019) to have a 6 MYA divergence from its nearest relative.

*A. trevorhawkeswoodi* sp. nov. occurs in the vicinity of the Blackdown Tableland, Queensland and has a 3.5 MYA divergence from *A. ronhoseri*.

*A. richardwellsei* sp. nov. is believed to be confined to the coastal strip of New South Wales north of the Hunter Valley to the McPherson ranges barrier on the NSW, Queensland border, definitely occurring between Port Macquarie and Yamba. It has a 3.5 MYA divergence from *A. ronhoseri*.

*A. jackyhoseræ* Hoser, 2012, originally formally described as a subspecies of *A. delicata* but from here on in treated as a full species, occurs in Victoria generally south of the Great Dividing Range, from Melbourne's eastern suburbs at least as far east to the New South Wales border.

It diverged from *A. colossus* 4 MYA.

*A. adelynhoseræ* sp. nov. is found from the Royal National Park, south of Sydney in New South Wales, north to the Central Coast of New South Wales, being stopped by the Hunter Valley intrusion to the north. It diverged from *A. jackyhoseræ* 2.5 MYA.

*A. matheri* sp. nov. occurs south of where the Illawarra Escarpment meets to coast, just north of Wollongong, New South Wales, south to at least Nowra. It is uncertain which taxon occurs between there and the Victorian border or where the ranges of *A. jackyhoseræ* and *A. matheri* sp. nov. extend to along the NSW south coast, from south or north respectively. *A. matheri* sp. nov. diverged from *A. maralunensis* sp. nov. 2 MYA.

*A. marulanensis* sp. nov. is known only from an isolated population in the Brayton-Marulan area in the New South Wales, southern highlands. *A. maralunensis* sp. nov. diverged from *A. matheri* sp. nov. 2 MYA.

The preceding species are separated from one another by each of the following unique suites of characters:

*Allengreerus delicata* (De Vis, 1888) is separated from other species in the complex by the following combination of characters:

A generally dark brown dorsum, including the head and tail and upper surfaces of the limbs. The head may be slightly lighter or tending slightly yellowish; anterior of tail may become slightly greyish. The light upper boundary of the flank is very narrow and indistinct and the lower boundary is semi-distinct and also sometimes dotted white above. Other than the lower parts, the upper flanks are a similar brown to the dorsum, but just slightly darker in colour, but not grey or blackish as seen in many other species in the complex; in this species not forming an obvious lateral stripe. Head has little if any peppering of any sort, upper labials are a brownish colour, barely lighter than above, no obvious spots, speckling or markings on the upper surfaces of the limbs and on the body. On the dorsum, flecking is either absent, or indistinct, including any darkening on parts of each scale. There are no obvious markings on the tail, although sides are slightly darker than the upper surface; the distal end barely lightens. Toes may have 2-3 semi-distinct white bars.

Any head markings are either absent or barely distinct.

*A. delicata* in life is depicted online at:

<https://www.inaturalist.org/observations/97124712>

and

<https://www.inaturalist.org/observations/103435087>

*A. allengreeri* sp. nov. is separated from other species in the complex by the following unique combination of characters:

A light grayish brown dorsum with a semi-distinct lighter brown edge separating the dorsum from the blackish lateral stripe on the upper flank. This stripe is reduced in thickness to occupy half or less than half of the flank, the lower boundary of which may or may not be distinct, below which is whitish. The upper lateral boundary and stripe extends well onto the (original tail). There is semi-distinct light and dark flecking on the upper body from the neck to the base of the tail, this being most numerous and prominent just posterior to the pelvic girdle. Upper surfaces

of limbs are brown, with dense blackish speckling, tending to brown with black bands on the digits of toes and hind feet. Upper and lower labials and lower neck are whitish with greyish-black peppering. The dorsum of the head is immaculate or nearly so anterior to the eyes, with speckling or peppering commencing posterior to the eyes. The dark lateral stripe extends well down the original tail before breaking up into spots along a line and then becoming indistinct on the lower half of the tail. Upper surface of the tail is similar in colour to the dorsum and with barely distinct dark peppering, as well as sometimes a small amount of barely distinct lighter peppering. Iris is yellowish orange in colour.

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

<https://www.inaturalist.org/observations/108218022>

*A. brunneo* sp. nov. is separated from other species in the complex by the following unique combination of characters:

A rich medium chocolate brown dorsally, being slightly lighter on the head and darker on the upper surfaces of the limbs and the tail.

Most of the head, including the upper labials are an even brown in colour. No obvious markings, flecks or peppering on any part of the upper body.

At the top of the flanks on the dorsum are well-defined thin whitish lines on each side of the dorsum, separating a thick blackish line on either flank.

In turn this line is bounded on the lower surface by a well defined white boundary, continuing onto the white ventral surface. Dark and light spots on the upper surfaces of the limbs are barely visible. On the neck, the dark line running to the flanks is either absent or barely distinct at the posterior end, as is the case for where it runs onto the anterior end of the side of the tail. No markings at all on the tail. Iris is greyish-beige.

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

<https://www.inaturalist.org/observations/96209436>

*A. longleyi* (Wells and Wellington, 1985) is separated from other species in the complex by the following unique combination of characters:

A greyish, rather than brownish, grey-brown dorsum, distinctive in that it has numerous small but distinctive whitish flecks on the dorsum and anterior half of the tail, arranged in a series of longitudinal lines. In some specimens these are blackish, rather than whitish flecks, but otherwise the markings are the same. Lower and upper labials whitish. The white upper labials then grade towards the even brownish grey head. Posterior end of tail is slightly lighter, but all the upper surface of the tail is similar to the dorsum of the body in colour.

At the sides of the dorsum the boundary between the dorsum and the distinctive thick black stripe on the flank is slightly lightened, but is distinct because of the well defined boundary of the black. Occupying all but the very lower flank, this black line has a well defined white boundary with the white under parts. Venter is immaculate white. The thick black line on the flank commences behind the ear, runs over the axila of the forelimb, effectively through the hind limb and onto the side of the tail, where it remains thick and prominent on the side of the tail for the first half of its length, before fading to merge with the rest of the tail. Upper surfaces of the limbs are brownish-grey with dark and light speckling.

Iris is light brown.

*A. longleyi* in life is depicted online at:

<https://www.inaturalist.org/observations/96287821>

and

<https://www.inaturalist.org/observations/39470798>

*A. colossus* (Ingram, 1991) is separated from other species in the complex by the following unique combination of characters: Middle of dorsum is dark brown to almost blackish, grading on the edges to a sharp whitish boundary on the corner of the upper flank. Below this it is dark brown on the upper half, grading to

whitish, but without any obvious boundary, although in some specimens the dark flank is punctuated by a white line running through the lower part. The dark flank line is less distinct on the posterior neck, while anterior to the ear, the scales on the side of the head are mainly white, most also having small light brown centres, these being larger in the upper scales. Top of head is dark brown, with black etching in many scales.

Many dorsal scales also have black spots, giving the lizard a darker appearance. The upper surface of the anterior tail is brown, bounded on the flanks with a semi-distinct irregular edged line, this line ranging from grey to blackish, below being grey with numerous whitish flecks. Upper surface of limbs are whitish, with many blackish spots and specks. Fingers and toes are brown with distinctive blackish borders on the scales. Ventrally yellow. Maximum SV 56mm. Iris light beige to light brown.

*A. colossus* in life is depicted in Wilson (2015) on page 154 at top left, and online at:

[https://www.flickr.com/photos/zimny\\_anders/36591515134](https://www.flickr.com/photos/zimny_anders/36591515134)

*A. dorsei* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Light brown head, with dark flecks or marbling both anterior and posterior to the eyes. A generally dark brown dorsum, with scattered yellowish and darker flecks or marbling. There is a well defined dark blackish stripe running from the snout, through the eye and above the axila of the forelimb becoming a well-defined thick blackish lateral stripe, which in turn runs onto the anterior part of the tail. Upper surfaces of the limbs are dark greyish brown with black flecks and a distinctive white undersurface. Sides of tail are light grey with a series of dark grey markings along the medial line (of the flank) on the anterior third to half, forming a sort of broken line with an irregular edge. Top of tail is a greyish brown. Iris is brown. Under surfaces are whitish with grey speckling.

*A. davidmerceicai* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Dorsum is greyish brown, immaculate in colour, light brown on the head, lower dorsum and tail is greyish, becoming yellowish at the tip.

There is no light boundary above the thick dark stripe on the upper flank.

At the lower boundary is a distinctive thick white line, below which is a thin greyish-black border, which fades at the lower surface to the whitish venter.

This white line continues past the hind limb onto the tail, where it terminates abruptly.

Upper labials and scales immediately above are whitish, becoming brownish at the upper parts of the side of the head. There is limited grey peppering on the head away from the labials. A semi-distinct and irregular band, better described as a stripe, runs from nostril to eye (not from the snout), being mottling between the eye past the ear, before forming as a thick dark stripe anterior to the forelimb axila. Upper surfaces of the limbs are brown with black speckling. Toes and fingers are light in colour but with dark at the scale boundaries.

On the upper flank of the anterior tail is a row of evenly spaced white spots, forming a line running down the tail (on either side). Iris is greyish-yellow.

Adult snout-vent is 45 mm.

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

<https://www.inaturalist.org/observations/106518371>

and

<https://www.inaturalist.org/observations/25288597>

*A. robertwatsoni* sp. nov. is separated from other species in the complex by the following unique combination of characters:

As for *A. davidmerceicai* sp. nov. as described above, except for the following obvious differences:

1/ There are scattered semi-distinct blackish markings in the form

of flecks or dots on the dorsal surface of the body and;  
2/ There is not a row of evenly spaced white spots, forming a line running down the tail (on either side).

*A. robertwatsoni* sp. nov. in life is depicted online at:  
<https://www.inaturalist.org/observations/11442952>  
and

<https://www.inaturalist.org/observations/36993376>

*A. angelikadennesae* sp. nov. is separated from other species in the complex by the following unique combination of characters:  
As for *A. davidmerceicai* sp. nov. as described above, but separated from both *A. davidmerceicai* sp. nov. and *A. robertwatsoni* sp. nov. by having:

1/ Numerous distinct blackish markings in the form of flecks or dots on the dorsal surface of the body and;

2/ Brownish upper labials as opposed to whitish in the other two species. There is also some semi-distinct dark barring on the upper labials.

*A. angelikadennesae* sp. nov. in life is depicted online at:  
<https://www.inaturalist.org/observations/99326162>

*A. ronhoseri* Hoser, 2009 is separated from other species in the complex by the following unique combination of characters:  
Dorsum is gun-metal grey, head light brown. Tail is grey with scattered black and white speckling.

Scattered but distinct, irregular light flecks on the back. Dark upper-mid lateral stripes are absent or indistinct and the upper boundary is not defined by any light colour. Lightening of colour around the labial scales is either absent or not very pronounced. There is a distinct peppering colouration on the lower parts of the upper labials in a manner only seen in this taxon. This colouration is best seen by looking at photos of adult specimens in life. Iris is light yellowish-orange. Maximum SVL is 42 mm.

*A. ronhoseri* in life is depicted in Hoser (2009), pages 2, 4, 5 and online at:

<https://www.inaturalist.org/observations/86656917>

*A. scottgranti* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Upper surface of head, immaculate brown and without any peppering or spots. Neck, slightly yellowish before grading to reddish brown on the dorsum. This is densely peppered with small black flecks, which enlarge just before the flank. These flecks also enlarge on the upper surface of the tail, at which point they become less dense. The anterior of the tail is a faded version of the dorsal colour, becoming grey in the middle and brownish near the tip. There are more black flecks on the sides than the top of the tail.

On either side of the dorsum and at the top of the flank is a thin, evenly edged, well defined and prominent creamy-white line forming a boundary. Otherwise there is no change in dorsum colour before this boundary. Below this line on the flank is a dark zone that is merely darker than the dorsum and heavily flecked, but not blackish at all. The lower edge is bound by a well-defined white line.

The prominent creamy-white line forming a boundary for the upper flank commences immediately anterior to the forelimb and effectively stops at the hind limb, not extending onto the tail in any meaningful way, there being a short row of scattered blackish spots where the line would continue along the side of the tail.

Upper surfaces of the limbs are light brown with dark markings occupying about half the surface. Upper labials are whitish. Above these the scales are whitish but with dark centres, becoming more so as one gets to the upper side of the head, which in turn is an immaculate brown colour. From snout to neck, the only evidence of a line is broken dark brown spots on the temple posterior to the eye.

Venter is whitish, iris light brown and maximum SV is 45 mm.

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

<https://www.inaturalist.org/observations/68074640>

*A. rosswellingtoni* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Upper surface of head light brown, dorsum medium brown, with indistinct black flecks and tail is brownish-grey.

Head peppered black on top and sides. Labials whitish with well defined dark spots or specks as is the anterior chin. A well defined blackish line runs from snout through nostril and eye and posterior to it, then fading above the ear before reforming as a well-defined blackish stripe anterior to the axilla of the forelimb. This stripe runs to the hind limb. Beyond this onto the tail it forms an ill defined and/or broken blackish line with jagged edges, fading posteriorly down the tail.

Upper surfaces of limbs are black with well-defined medium brown spots.

At the top of the black line on the flank the boundary is not lighter than the surface of the dorsum or is barely so. The lower margin of the black band or stripe is ill defined and fades into the white ventral colour. On the dorsum, there is faded black spotting or flecks in indistinct lines running down the back, which is only noticeable on close inspection. Fingers and toes are dark, with light brown boundaries to the scales.

Iris in this species ranges from grey to brown.

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

<https://www.flickr.com/photos/126237772@N07/49224702262>  
and

<https://www.flickr.com/photos/stephenmahony/42722975722>

*A. kaputarensis* sp. nov. is separated from other species in the complex by the following unique combination of characters:

As for *A. rosswellingtoni* sp. nov. as described above except for:

1/ A well defined blackish line runs from snout through nostril and eye and posterior to it, then continues above the ear, without fading and continuing as a well-defined blackish stripe anterior to the axilla of the forelimb, going on to form the lateral stripe.

2/ Numerous distinct black flecks on the dorsum.

*A. trevorhawkeswoodi* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Reddish brown head, with dark flecks or marbling both anterior and posterior to the eyes. A generally dark brown dorsum, with each scale on the dorsum having an ill-defined black centre, occupying about half the scale in most cases, this ratio being highest along the medial line and reducing towards the flanks on the back. There is a well defined dark blackish stripe running from the snout, through the eye and above the axilla of the forelimb becoming a well-defined thick blackish flank stripe, which in turn runs onto the anterior part of the tail. Upper surfaces of the limbs are dark greyish brown with black flecks and a distinctive white undersurface. Sides of tail are light grey with a series of dark grey markings along the medial line (of the flank) on the anterior third to half, forming a sort of broken line with irregular edge. Iris is brown. Top of tail is a greyish brown. Under surfaces are whitish with grey speckling.

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

<https://www.inaturalist.org/observations/67445546>

*A. richardwellsei* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Anterior of head light brown, grading to chocolate brown posteriorly, then dark greyish-brown on the dorsum, even across the width of the upper surface, then a dark grey tail. A thin somewhat dotted yellow line demarcates that upper edge of a well-defined blackish line that runs all the way from the snout, through the nostril, eye and above ear, above forelimb and along the upper and mid flank and along the anterior part of the tail. The centre of this black line has one or two rows of tiny white spots, most prominent in the region equidistant of the limbs. Below this blackish line is a well-defined thin white line, bound below by a greyish-white ventral surface. The upper surfaces

of the body, flanks and upper surfaces of the limbs are all covered with a scattering of small, but distinct white dots, these sometimes being black, grey or more than one of these colours.

Upper labials are whitish-grey, venter is whitish-grey, toes and fingers alternate black and white, iris is dark. Peppering of grey on anterior upper labials, usually on each scale, but top of head is either immaculate or indistinctly marbled. Iris is brown.

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

<https://www.inaturalist.org/observations/69187702>

and

<https://www.inaturalist.org/observations/22324325>

*A. jackyhoserae* Hoser, 2012 is separated from other species in the complex by the following unique combination of characters:

The white stripe along each side of the lower flanks commencing behind the ear and before the front leg and running to the hind leg is indistinct and only runs between the limbs in most specimens. Dorsum is a dark grayish black or dark greyish brown in color.

Head dark brown and usually immaculate, as in no mottling or flecks.

Tail is light grey, with no obvious markings save for a faded indistinct and jagged edged broken line running down the mid-dorsal line of the tail.

*A. jackyhoserae* has a tiny white spot behind the eye, which is sometimes faded.

Upper surfaces of the limbs are gun-metal grey to black, sometimes with lighter areas between the dark.

Upper and lower labials are light, but peppered with brown.

The greyish-black lateral stripe commences behind the ear and runs onto the base of the tail before narrowing, then breaking up into spots and finally disappearing, at usually about the length of the extended hind limb down the tail.

No stripe from nose to ear. Occasionally one or more smallish irregular brown spots are on the temple behind ear.

Venter is whitish grey.

Iris is grey-brown.

*A. jackyhoserae* in life is depicted online at:

<https://www.inaturalist.org/observations/106486758>

and

<https://www.inaturalist.org/observations/101676367>

*A. adelynhoserae* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Medium brown upper surfaces of the head, sides, including upper and lower labials are white with numerous dark grey-brown flecks, extending posterior to the eye. Top of head immaculate, but with slight indistinct marbling. A well defined black line runs from the tip of the snout, through the nose and eye, above ear and continuously onto the upper flank, where it thickens and continues onto the anterior part of the side of the tail. In most specimens the line remains unbroken down the sides of most of the (original) tail.

Lower surface of the lateral stripe is not distinct and fades to greyish white. Venter is white with some flecks of grey. The dorsum is generally unmarked save for semi-distinct darkening of the posterior edges of the scales, giving it a slightly fish-like appearance. Upper surfaces of the limbs are mainly a medium brown with black in between, with semi-distinct white specks, more common on the hind limbs. Fingers and toes are mainly black, with some brown barring.

There are numerous tiny white spots on the flanks commencing from the neck to the base of the tail, these being most numerous on the lower half, these spots being distinct and obvious in some specimens, but indistinct in others.

Max SV 42 cm. Iris is medium brown.

*A. adelynhoserae* sp. nov. is depicted in life in Hoser (1989) on page 100 (photo 249) and Cogger (2014) on page 582 top left

and online at:

<https://www.inaturalist.org/observations/8621731>

and

<https://www.inaturalist.org/observations/107656926>

*A. matheri* sp. nov. is separated from other species in the complex by the following unique combination of characters:

As for *A. adelynhoserae* sp. nov. as described above except for:

1/ On the dorsum of the back the rear of every second row of scales (crossways) is a black dot giving the appearance of semi-distinct longitudinal lines of spots down the dorsum.

2/ Many inspected specimens have low welts (folds of skin) on the anterior flanks.

3/ Upper surfaces of the limbs are mainly dark (blackish) with white markings.

4/ There is reduced white on the sides of the head, with upper labials being white overlain mainly with brown and scales above tending to be all brown, with no white (in contrast to still white in *A. adelynhoserae* sp. nov.).

5/ Iris is light orange.

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

<https://www.inaturalist.org/observations/84813987>

and

<https://www.inaturalist.org/observations/5780255>

and

<https://www.inaturalist.org/observations/94886006>

*A. marulanensis* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Light brown upper surface of head, with limited indistinct darker marbling. Dorsum of body same colour, but overlain with a reticulation of grey, including a series of tiny whiteish ocelli, not seen in any other species in the complex. Upper surfaces of limbs are well marked blackish and light brown, with fingers and toes mainly light and with black flecks. There is no obvious white or yellow line or colour change at the interface of the dorsum and the black lateral stripe, which commences anterior to the front legs and runs onto the tail. The lower surface of the dark lateral stripe is bound on the body by a distinctive white band of moderate thickness, which in turn gives way to the greyish-white venter.

There is a black band, better described as a stripe, running from snout, through nose, above eye and fading above the ear, beyond which it re-forms quickly as the dark lateral stripe.

Upper labials are brown with black etchings, while scales behind the eye and sides of neck are whitish, but heavily peppered brown, grey or black.

Iris is brown.

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

**Distribution:** *A. allengreeri* sp. nov. occurs north of the Burdekin Gap, generally north of just south of Townsville, Queensland in coastal areas to include the wet tropics region of far north

Queensland, being known from Mount Elliot in the south to Cairns in the north.

**Etymology:** *A. allengreeri* sp. nov. is named in honour of Allen E. Greer, herpetologist of many years

at the Australian Museum, Sydney, now of Mudgee, New South Wales, who perhaps more than anyone else has resolved taxonomic questions in relation to Australasian skinks, including issues arising from four controversial works by Richard Wells and Cliff Ross Wellington in the 1980's, published in Wells and Wellington (1984, 1985a, 1985b, 1987).

**ALLENGREERUS BRUNNEO SP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:1B7C6D76-BA9F-4441-97A1-0140BE114BE9

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.120818 collected by Allen Greer at the Pandanus Creek Picnic Area, Cathus State Forest, Central East Queensland, Australia, Latitude -20.80 S., Longitude 148.533 E.

This government owned facility allows access to its holdings.

**Paratypes:** Two preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.120819 and R.120820 collected by Allen Greer at the Pandanus Creek Picnic Area, Cathus State Forest, Central East Queensland, Australia, Latitude -20.80 S., Longitude 148.533 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, 18 of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a).

One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. brunneo* sp. nov..

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov., *A. brunneo* sp. nov., *A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceicai* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov., *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoseri* Hoser, 2012, *A. adelynhoseri* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov..

The species *A. brunneo* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

A rich medium chocolate brown dorsally, being slightly lighter on the head, and darker on the upper surfaces of the limbs and the tail.

Most of the head, including the upper labials are an even brown in colour. No obvious markings, flecks or peppering on any part of the upper body.

At the top of the flanks on the dorsum are well-defined thin whitish lines on each side of the dorsum, separating a thick blackish line on either flank.

In turn this line is bounded on the lower surface by a well defined white boundary, continuing onto the white ventral surface. Dark and light spots on the upper surfaces of the limbs are barely visible. On the neck, the dark line running to the flanks is either absent or barely distinct at the posterior end, as is the case for where it runs onto the anterior end of the side of the tail. No markings at all on the tail. Iris is greyish-beige.

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

<https://www.inaturalist.org/observations/96209436>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. brunneo* sp. nov. diverged from its nearest formally named relatives *A. delicata* and *A. allengreeri* sp. nov. 3 MYA., based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the preceding description of *A. allengreeri* sp. nov. which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. brunneo* sp. nov. occurs in the Eungella/Mackay region of North Queensland, which is located between the St. Lawrence Gap (north of Rockhampton) and Burdekin Gap (South of Townsville). It diverged from *A. delicata* and *A. allengreeri* sp. nov. 3 MYA.

**Etymology:** The new species name "*brunneo*" comes from the Latin word meaning "Brown", in reflection of the brown colouration of this species.

**ALLENGREERUS DORSEI SP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:0AEC9E14-11A8-4B1F-8645-784CEEA15515

**Holotype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J43873 collected from Upper Kroombit Creek, Kroombit Tops, 45km South south-west of Calliope, Queensland, Australia, Latitude -24.45 S., Longitude 150.866667 E.

This government owned facility allows access to its holdings.

**Paratypes:** 21 preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J39607, J40115, J40137, J40138, J42157, J42413, J42416, J42417, J42421, J47620, J47631, J47638, J47639, J54882, J54883, J54884, J54885, J54886, J54887, J54888 and J63731 all collected from Kroombit Tops, South south-west of Calliope, Queensland, Australia.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a).

One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other

14 are formally described as new in this paper, including *A. dorsei* sp. nov.

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov., *A. brunneo* sp. nov.,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceica* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov., *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov.

The species *A. dorsei* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

Light brown head, with dark flecks or marbling both anterior and posterior to the eyes. A generally dark brown dorsum, with scattered yellowish and darker flecks or marbling. There is a well defined dark blackish stripe running from the snout, through the eye and above the axilla of the forelimb becoming a well-defined thick blackish lateral stripe, which in turn runs onto the anterior part of the tail. Upper surfaces of the limbs are dark greyish brown with black flecks and a distinctive white undersurface. Sides of tail are light grey with a series of dark grey markings along the medial line (of the flank) on the anterior third to half, forming a sort of broken line with an irregular edge. Top of tail is a greyish brown. Iris is brown. Under surfaces are whitish with grey speckling.

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. dorsei* sp. nov. diverged from its nearest formally named relatives *A. colossus* and associated newly named species 3 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. dorsei* sp. nov. is confined to Kroombit Tops, Queensland, Australia and is a narrow range endemic. It is appropriately recognized as a vulnerable species.

**Etymology:** *A. dorsei* sp. nov. is named in honour of Marc Dorse of Toowoomba, Queensland, Australia, previously of Mount Tamborine, Queensland, Australia, a wildlife demonstrator of some decades (Business name "Deadly Australians", Australian Registered Trademark number 797420, registered in 1999), in recognition of his services to education and wildlife conservation in Australia.

Dorse was the first person in the world to breed in captivity the little known freshwater turtle species *Wollumbinia purvisi* (Wells

and Wellington, 1985) (genus and species both formally named by Wells and Wellington), which Dorse did in 2014-2015.

The more recent and widely posted claim in 2019-2020 by John Weigel and his privately owned zoo business in receipt of massive amounts of government hand outs and trading as the "Australian Reptile Park" to be the first in the world to breed this species (*Wollumbinia purvisi*) (e.g. as posted at: <https://reptilepark.com.au/animals/reptiles/turtles-tortoises/manning-river-turtle/>) is nothing more than a scam to entice well-meaning gullible people to donate yet more money to his privately owned business masquerading as a charity.

Trading on the plight of endangered wildlife by making false claims for personal profit, in order to scam cash from well-meaning but otherwise ill informed people is ethically and morally repugnant!

#### ALLENGREERUS DAVIDMERCEICAI SP. NOV.

LSIDurn:lsid:zoobank.org:act:6A15BA5E-7548-4AC0-B4E9-0EC40BAF8502

**Holotype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J55037 collected from Cooloola National Park, Queensland, Australia, Latitude -25.95 S., Longitude 153.116667 E.

This government owned facility allows access to its holdings.

**Paratypes:** 15 preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J22336, J25398, J25399, J25400, J25401, J25402, J27391, J27392, J27393, J27394, J31294, J32517, J49694, J86755 and J86756 all collected from near Lake Poona, Cooloola National Park, Queensland, Australia, Latitude -25.958333 S., Longitude 153.108333 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a). One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. davidmerceica* sp. nov.

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov., *A. brunneo* sp. nov.,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceica* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov., *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov.

The species *A. davidmerceica* sp. nov. is separated from the other 18 above listed species by the following suite of characters: Dorsum is greyish brown, immaculate in colour, light brown on the head, lower dorsum and tail is greyish, becoming yellowish at the tip.

There is no light boundary above the thick dark stripe on the upper flank.

At the lower boundary is a distinctive thick white line, below which is a thin greyish-black border, which fades at the lower surface to the whitish venter.

This white line continues past the hind limb onto the tail, where it terminates abruptly.

Upper labials and scales immediately above are whitish, becoming brownish at the upper parts of the side of the head. There is limited grey peppering on the head away from the labials. A semi-distinct and irregular band, better described as a stripe, runs from nostril to eye (not from the snout), being mottling between the eye past the ear, before forming as a thick dark stripe anterior to the forelimb axilla. Upper surfaces of the limbs are brown with black speckling. Toes and fingers are light in colour but with dark at the scale boundaries.

On the upper flank of the anterior tail is a row of evenly spaced white spots, forming a line running down the tail (on either side). Iris is greyish-yellow.

Adult snout-vent is 45 mm.

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

<https://www.inaturalist.org/observations/106518371>

and

<https://www.inaturalist.org/observations/25288597>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. davidmerceicai* sp. nov. diverged from its nearest formally named relatives *A. colossus* and associated newly named species 2 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** The new species *A. davidmerceicai* sp. nov. is known only from the vicinity of Cooloola, south-east Queensland and presumably occurs only in this general area as a range-restricted taxon.

**Etymology:** *A. davidmerceicai* sp. nov. is named in honour of David Merceica, formerly of Victoria, Australia, now of Queensland, Australia, a businessman and now owner of Snakes Downunder Reptile Park and Zoo, at 51 Lucketts Rd, Childers, Queensland, 4660, Australia.

Merceica has made significant contributions to herpetology in Australia, with particular emphasis on captive breeding rare and sought after species.

**ALLENGREERUS ROBERTWATSONI SP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:01DADB2F-BC4F-41E8-9403-41D604A841AB

**Holotype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J34164 collected from Mount Nebo, Queensland, Australia, Latitude -27.383333 S., Longitude 152.783333 E.

This government owned facility allows access to its holdings.

**Paratypes:** Six preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.97878, R.97879, R.97880, R.97881, R.97882 and R.97883 collected from Mount Nebo, Queensland, Australia, Latitude -27.383333 S., Longitude 152.783333 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a). One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. robertwatsoni* sp. nov.

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov. *A. brunneo* sp. nov.,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorseyi* sp. nov., *A. davidmerceicai* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov. *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov.

The species *A. robertwatsoni* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

Dorsum is greyish brown, with scattered semi-distinct blackish markings in the form of flecks or dots, light brown on the head, lower dorsum and tail is greyish, becoming yellowish at the tip.

There is no light boundary above the thick dark stripe on the upper flank.

At the lower boundary is a distinctive thick white line, below which is a thin greyish-black border, which fades at the lower surface to the whitish venter.

This white line continues past the hind limb onto the tail, where it terminates abruptly.

Upper labials and scales immediately above are whitish, becoming brownish at the upper parts of the side of the head. There is limited grey peppering on the head away from the labials. A semi-distinct and irregular band, better described as a stripe, runs from nostril to eye (not from the snout), being mottling between the eye past the ear, before forming as a thick dark stripe anterior to the forelimb axilla. Upper surfaces of the limbs are brown with black speckling. Toes and fingers are light in colour but with dark at the scale boundaries.

On the upper flank of the anterior tail there is not a row of evenly spaced white spots, forming a line running down the tail (on either side) as seen in the species *A. davidmerceicai* sp. nov..

Iris is greyish-yellow.

Adult snout-vent is 45 mm.

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

<https://www.inaturalist.org/observations/11442952>

and

<https://www.inaturalist.org/observations/36993376>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral

band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. robertwatsoni* sp. nov. diverged from its nearest formally named relatives *A. colossus* and associated newly named species 2 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. robertwatsoni* sp. nov. occurs in the D'aguilar and Conondale Ranges in the hinterland of Brisbane's north and the nearby Sunshine coast.

**Etymology:** *A. robertwatsoni* sp. nov. is named in honour of Brisbane based snake catcher Robert Watson, of Stafford Heights (Brisbane), trading as "South-eastern Reptiles: Snake Catching Brisbane Northside", in recognition of his services to wildlife conservation in Queensland.

#### ALLENGREERUS ANGELIKADENNESAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:064887E2-9960-4FC8-8995-2C27966312D4

**Holotype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J46094 collected from Barney View, near Rathdowney, Queensland, Australia, Latitude -28.216667 S., Longitude 152.75 E.

This government owned facility allows access to its holdings.

**Paratype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J67537 collected from lower portals, Mount Barney Creek, Barney National Park, Queensland, Australia, Latitude -28.252778 S., Longitude 152.697222 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a).

One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. angelikadennesae* sp. nov..

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov. *A. brunneo* sp. nov.,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceicai* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov. *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp.

nov., *A. richardwellsei* sp. nov., *A. jackyhoseri* Hoser, 2012, *A. adelynhoseri* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov..

The species *A. angelikadennesae* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

Dorsum is greyish brown, with distinct blackish markings in the form of flecks or dots on the dorsal surface of the body, light brown on the head, lower dorsum and tail is greyish, becoming yellowish at the tip.

There is no light boundary above the thick dark stripe on the upper flank. At the lower boundary is a distinctive thick white line, below which is a thin greyish-black border, which fades at the lower surface to the whitish venter. This white line continues past the hind limb onto the tail, where it terminates abruptly.

Upper labials and scales immediately above are brownish with some semi-distinct dark barring on the upper labials. Sides of head are generally brown in colour as is the top of the head. There is limited grey peppering on the head away from the labials. A semi-distinct and irregular band, better described as a stripe, runs from nostril to eye (not from the snout), being mottling between the eye past the ear, before forming as a thick dark stripe anterior to the forelimb axilla. Upper surfaces of the limbs are brown with black speckling. Toes and fingers are light in colour but with dark at the scale boundaries.

On the upper flank of the anterior tail is a row of evenly spaced white spots, forming a line running down the tail (on either side). Iris is greyish-yellow.

Adult snout-vent is 45 mm.

*A. angelikadennesae* sp. nov. in life is depicted online at: <https://www.inaturalist.org/observations/99326162>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. angelikadennesae* sp. nov. diverged from its nearest formally named relatives *A. colossus* and associated newly named species 2 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. angelikadennesae* sp. nov. is found south of the Brisbane River valley in the hillier or wetter southern suburbs of Brisbane, from Parkinson extending south-west to Barney View.

**Etymology:** *A. angelikadennesae* sp. nov. is named in honour of Angelika Emmaline Dennes, a snake catcher based in Brisbane and the Gold Coast, trading as "Back to bush snake relocations" in recognition of her services to wildlife conservation and public safety.

**ALLENGREERUS SCOTTGRANTI SP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:A7BA2E5F-E4C3-4708-81F8-0066BA6700AB

**Holotype:** A preserved adult female specimen at the South Australian Museum, Adelaide, South Australia, specimen number R48660 collected from 3.8 km south east of Westwood Homestead at the Gum Lagoon Conservation Park, South Australia, Latitude -36.32 S., Longitude 140.0197 E.

This government owned facility allows access to its holdings.

**Paratype:** A preserved adult female specimen at the South Australian Museum, Adelaide, South Australia, specimen number R48648 collected from 3.2 km south east of Westwood Homestead at the Gum Lagoon Conservation Park, South Australia, Latitude -36.33 S., Longitude 140.0256 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a).

One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. scottgranti sp. nov.*

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri sp. nov.*, *A. brunneo sp. nov.*,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei sp. nov.*, *A. davidmerceicai sp. nov.*, *A. robertwatsoni sp. nov.*, *A. angelikadennesae sp. nov.*, *A. ronhoseri* Hoser, 2019, *A. scottgranti sp. nov.*, *A. rosswellingtoni sp. nov.*, *A. kaputarensis sp. nov.*, *A. trevorhawkeswoodi sp. nov.*, *A. richardwellsei sp. nov.*, *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae sp. nov.*, *A. matheri sp. nov.* and *A. marulanensis sp. nov.*

The species *A. scottgranti sp. nov.* is separated from the other 18 above listed species by the following suite of characters:

Upper surface of head, immaculate brown and without any peppering or spots. Neck, slightly yellowish before grading to reddish brown on the dorsum. This is densely peppered with small black flecks, which enlarge just before the flank. These flecks also enlarge on the upper surface of the tail, at which point they become less dense. The anterior of the tail is a faded version of the dorsal colour, becoming grey in the middle and brownish near the tip. There are more black flecks on the sides than the top of the tail.

On either side of the dorsum and at the top of the flank is a thin, evenly edged, well defined and prominent creamy-white line forming a boundary. Otherwise there is no change in dorsum colour before this boundary. Below this line on the flank is a dark zone that is merely darker than the dorsum and heavily flecked, but not blackish at all. The lower edge is bound by a well-defined white line.

The prominent creamy-white line forming a boundary for the upper flank commences immediately anterior to the forelimb and effectively stops at the hind limb, not extending onto the tail in any meaningful way, there being a short row of scattered blackish spots where the line would continue along the side of the tail.

Upper surfaces of the limbs are light brown with dark markings occupying about half the surface. Upper labials are whitish. Above these the scales are whitish but with dark centres, becoming more so as one gets to the upper side of the head,

which in turn is an immaculate brown colour. From snout to neck, the only evidence of a line is broken dark brown spots on the temple posterior to the eye.

Venter is whitish, iris light brown and maximum SV is 45 mm.

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

<https://www.inaturalist.org/observations/68074640>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. scottgranti sp. nov.* diverged from its nearest formally named relative *A. ronhoseri* 2 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri sp. nov.* in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. scottgranti sp. nov.* is confined to South-east South Australia, but generally not including Adelaide and the nearby hills (natural occurrence at least, noting the invasiveness of these species due to human mediated movements), but also including a population on the lower Eyre Peninsula and including specimens from far south-west Victoria.

**Etymology:** The new species *A. scottgranti sp. nov.* is named in honour of Scott Grant of Whyalla, South Australia (as of 2022), in recognition of his services to wildlife conservation. He took over the lease on the Whyalla Fauna and Reptile Park, but was within three short years forced to shut down at gunpoint in late 2021. This is because his zoo was too successful and popular with the general public. This meant that his business posed a potential threat to the business success of the government owned zoos in Adelaide, who prefer to operate in a monopolistic environment. The dysfunctional government enterprise "Zoos South Australia" seeks by all means, including improper, to be the only or main wildlife experience for the local population, and to collect money from them to see the animals, sell photo rights, claim grants and donations for breeding rare species and so on.

**ALLENGREERUS ROSSWELLINGTONI SP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:E4A99FCE-73F1-47A5-A876-4EBEA66A8818

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.152164 collected from the Rocky Falls Picnic Area, Coolah Tops, National Park, New South Wales, Australia, Latitude -31.70583 S., Longitude 150.01444 E.

This government owned facility allows access to its holdings.

**Paratypes:** Five preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.152179 and R.185787 collected from the Rocky Falls Picnic Area, Coolah Tops, National Park, New South Wales, Australia,

Latitude -31.70583 S., Longitude 150.01444 E.; specimen numbers R.185857 and R.185859 collected from the Brackens Cottage area, Coolah Tops, National Park, New South Wales, Australia, Latitude -31.74961 S., Longitude 150.03179 E. and specimen number R.185788 collected from the Shepherds Peak Trail, Coolah Tops National Park, New South Wales, Australia, Latitude -31.82362 S., Longitude 150.20243 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a). One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. rosswellingtoni sp. nov.*

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri sp. nov.*, *A. brunneo sp. nov.*,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei sp. nov.*, *A. davidmerceicai sp. nov.*, *A. robertwatsoni sp. nov.*, *A. angelikadennesae sp. nov.*, *A. ronhoseri* Hoser, 2019, *A. scottgranti sp. nov.*, *A. rosswellingtoni sp. nov.*, *A. kaputarensis sp. nov.*, *A. trevorhawkeswoodi sp. nov.*, *A. richardwellsei sp. nov.*, *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae sp. nov.*, *A. matheri sp. nov.* and *A. marulanensis sp. nov.*

The species *A. rosswellingtoni sp. nov.* is separated from the other 18 above listed species by the following suite of characters: Upper surface of head light brown, dorsum medium brown, with indistinct black flecks and tail is brownish-grey.

Head peppered black on top and sides. Labials whitish with well defined dark spots or specks as is the anterior chin. A well defined blackish line runs from snout through nostril and eye and posterior to it, then fading above the ear before reforming as a well-defined blackish stripe anterior to the axilla of the forelimb. This stripe runs to the hind limb. Beyond this onto the tail it forms an ill defined and/or broken blackish line with jagged edges, fading posteriorly down the tail.

Upper surfaces of limbs are black with well-defined medium brown spots.

At the top of the black line on the flank the boundary is not lighter than the surface of the dorsum or is barely so. The lower margin of the black band or stripe is ill defined and fades into the white ventral colour. On the dorsum, there is faded black spotting or flecks in indistinct lines running down the back, which is only noticeable on close inspection. Fingers and toes are dark, with light brown boundaries to the scales.

Iris in this species ranges from grey to brown.

*A. rosswellingtoni sp. nov.* in life is depicted online at: <https://www.flickr.com/photos/126237772@N07/49224702262>

and <https://www.flickr.com/photos/stephenmahony/42722975722>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks;

less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. rosswellingtoni sp. nov.* diverged from its nearest formally named relative *A. ronhoseri* 4 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri sp. nov.* in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. rosswellingtoni sp. nov.* appears to be a range-restricted endemic confined to the Coolah Tops area in central-west, New South Wales, Australia and based on the limited distribution should be formally listed as a vulnerable species as a matter of urgency.

**Etymology:** The new species *A. rosswellingtoni sp. nov.* is named in honour of Cliff Ross Wellington of Ramornie, northern New South Wales, Australia in recognition of his many contributions to Australian herpetology, that go well beyond two publications he is a well-known co-author of, namely Wells and Wellington (1984 and 1985).

#### ALLENGREERUS KAPUTARENSIS SP. NOV.

**LSID**Durn:lsid:zoobank.org:act:5246D285-C93A-42BD-A0C8-670CD98DBCD2

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.161983 collected from the north side of Mount Coryah, 200 metres south of the road leading to Mount Kaputar, New South Wales, Australia, Latitude -30.27691 S., Longitude 150.11727 E. This government owned facility allows access to its holdings.

**Paratypes:** Four preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, as follows:

1/ R.161735 collected at Dawson Springs, on the Narrabri Road, about 2 km from Coryah Gap, New South Wales, Australia, Latitude -30.27777 S., Longitude 150.11721 E.

2/ R.161984 collected on the north side of Mount Coryah, 200 metres south of the road leading to Mount Kaputar, New South Wales, Australia, Latitude -30.27666 S., Longitude 150.11721 E.

3/ R.94829 collected at the creek below the Bark Hut Camping area, Mount Kaputar National Park, New South Wales, Australia, Latitude -30.30 S., Longitude 150.183 E.

4/ R.162136 collected at the Horton River, Upstream of Horton Falls Road Crossing, New South Wales, Australia, Latitude -30.3361 S., Longitude 150.31388 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a).

One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other

14 are formally described as new in this paper, including *A. kaputarensis* sp. nov.

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov. *A. brunneo* sp. nov.,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceicai* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov. *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov.

The species *A. kaputarensis* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

*A. kaputarensis* sp. nov. is separated from other species in the complex by the following unique combination of characters:

Upper surface of head light brown, dorsum medium brown, with indistinct black flecks and tail is brownish-grey.

Head peppered black on top and sides. Labials whitish with well defined dark spots or specks as is the anterior chin. A well defined blackish line runs from snout through nostril and eye and posterior to it, then continues above the ear, without fading and continuing as a well-defined blackish stripe anterior to the axilla of the forelimb, going on to form the lateral stripe (versus fading before the ear in the morphologically similar *A. rosswellingtoni* sp. nov.). This stripe runs to the hind limb. Beyond this onto the tail it forms an ill defined and/or broken blackish line with jagged edges, fading posteriorly down the tail.

Upper surfaces of limbs are black with well-defined medium brown spots.

At the top of the black line on the flank the boundary is not lighter than the surface of the dorsum or is barely so. The lower margin of the black band or stripe is ill defined and fades into the white ventral colour. On the dorsum, there are numerous distinct black flecks on the dorsum (versus faded black spotting or flecks in indistinct lines running down the back, which is only noticeable on close inspection in the morphologically similar *A. rosswellingtoni* sp. nov.). Fingers and toes are dark, with light brown boundaries to the scales. Iris in this species ranges from grey to brown.

*A. kaputarensis* sp. nov. is confined to wetter parts of the Mount Kaputar massif in north inland New South Wales and immediately adjacent areas of suitable habitat and is the only taxon in the complex for which there is no DNA divergence evidence available. Another endemic in the Kaputar Massif, *Contundo roomi* Wells and Wellington, 1985 (note the use of the correct genus nomen for this taxon), was shown by Sadlier *et al.* (2019) to have a 6 MYA divergence from its nearest relative.

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally

occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. kaputarensis* sp. nov. is confined to wetter parts of the Mount Kaputar massif in north inland New South Wales, Australia and immediately adjacent areas of suitable habitat, is range restricted and should urgently be listed as a vulnerable species.

Refer to the relevant comments in Hoser (2019a, 2019b).

**Etymology:** *A. kaputarensis* sp. nov. is named in reflection of where it occurs, being the environs of the Mount Kaputar Massif in inland New South Wales, Australia.

#### **ALLENGREERUS TREVORHAWKESWOODI SP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:BFA1EAA7-E2EF-45E5-9699-C9102675B085

**Holotype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J64075 collected from the Blackdown Tableland State Forest, Queensland, Australia, Latitude -23.866667 S., Longitude 149.078611 E.

This government owned facility allows access to its holdings.

**Paratypes:** Three preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J64076, J64077 and J64078 all collected from the Blackdown Tableland State Forest, Queensland, Australia, Latitude -23.866667 S., Longitude 149.078611 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a).

One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. trevorhawkeswoodi* sp. nov.

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov. *A. brunneo* sp. nov.,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceicai* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov. *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov.

The species *A. trevorhawkeswoodi* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

Reddish brown head, with dark flecks or marbling both anterior and posterior to the eyes. A generally dark brown dorsum, with each scale on the dorsum having an ill-defined black centre, occupying about half the scale in most cases, this ratio being highest along the medial line and reducing towards the flanks on the back. There is a well defined dark blackish stripe running from the snout, through the eye and above the axilla of the forelimb becoming a well-defined thick blackish flank stripe, which in turn runs onto the anterior part of the tail. Upper surfaces of the limbs are dark greyish brown with black flecks and a distinctive white undersurface. Sides of tail are light grey with a series of dark grey markings along the medial line (of the flank) on the anterior third to half, forming a sort of broken line

with irregular edge. Iris is brown. Top of tail is a greyish brown. Under surfaces are whitish with grey speckling.

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

<https://www.inaturalist.org/observations/67445546>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. trevorhawkeswoodi* sp. nov. diverged from its nearest formally named relative *A. ronhoseri* 3.5 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. trevorhawkeswoodi* sp. nov. is a range-restricted endemic confined to the Blackdown Tableland, Queensland, Australia and should therefore be listed as a vulnerable species.

**Etymology:** *A. trevorhawkeswoodi* sp. nov. is named in honour of distinguished Zoologist, Dr. Trevor J. Hawkeswood of Sydney, New South Wales, Australia, in recognition of his many contributions to zoology over some decades, including his strong advocacy against taxonomic vandalism as practiced by Welsh criminal Wolfgang Wüster and his gang of thieves as detailed by Cogger (2014), Hoser (2007, 2009, 2012a-c, 2013c-d, 2015a-g), Hawkeswood (2021) and ICZN (1991, 2001, 2021).

#### ALLENGREERUS RICHARDWELLSEI SP. NOV.

**LSIDurn:lsid:zoobank.org:act:8E69DF67-3B6E-4589-BDE4-CF338C240767**

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.144587 collected from Yuraygir National Park, north of Minnie Water, New South Wales, Australia, Latitude -29.74055 S., Longitude 153.29166 E.

This government owned facility allows access to its holdings.

**Paratypes:** 1/ A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.144593 collected from Yuraygir National Park, north of Minnie Water, New South Wales, Australia, Latitude -29.74055 S., Longitude 153.29166 E.

2/ Two preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.20766 and R.20767 collected from Minnie Water (near Grafton), New South Wales, Australia, Latitude -29.783 S., Longitude 153.3 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a). One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. richardwellsei* sp. nov..

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov. *A. brunneo* sp. nov.,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceicaei* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov. *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov.

The species *A. richardwellsei* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

Anterior of head light brown, grading to chocolate brown posteriorly, then dark greyish-brown on the dorsum, even across the width of the upper surface, then a dark grey tail. A thin somewhat dotted yellow line demarcates that upper edge of a well-defined blackish line that runs all the way from the snout, through the nostril, eye and above ear, above forelimb and along the upper and mid flank and along the anterior part of the tail. The centre of this black line has one or two rows of tiny white spots, most prominent in the region equidistant of the limbs. Below this blackish line is a well-defined thin white line, bound below by a greyish-white ventral surface. The upper surfaces of the body, flanks and upper surfaces of the limbs are all covered with a scattering of small, but distinct white dots, these sometimes being black, grey or more than one of these colours. Upper labials are whitish-grey, venter is whitish-grey, toes and fingers alternate black and white, iris is dark. Peppering of grey on anterior upper labials, usually on each scale, but top of head is either immaculate or indistinctly marbled. Iris is brown.

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

<https://www.inaturalist.org/observations/69187702>

and

<https://www.inaturalist.org/observations/22324325>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. richardwellsei* sp. nov. diverged from its nearest formally named relative *A. ronhoseri* 3.5 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named

species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. richardwellsei* sp. nov. is believed to be confined to the coastal strip of New South Wales north of the Hunter Valley to the McPherson ranges barrier on the New South Wales (NSW), Queensland border, definitely occurring between Port Macquarie and Yamba in NSW, Australia.

**Etymology:** *A. richardwellsei* sp. nov. is named in honour of Australian herpetologist, Richard Wells, recently of Lismore, New South Wales, Australia, in recognition for his services to herpetology and zoology globally, including his strong advocacy against taxonomic vandalism as practiced by Welsh criminal Wolfgang Wüster and his gang of thieves as detailed by Cogger (2014), Hoser (2007, 2009, 2012a, 2012c, 2013a, 2015a-f, 2017a, 2019a, 2019b), Hawkeswood (2021), ICZN (1991, 2001, 2021) and sources cited therein.

Besides the association of Richard Wells with the exact area this species occurs, it is also noted that along with his colleague, Cliff Ross Wellington, they formally named another species in this complex, namely *A. longleyi* (Wells and Wellington, 1985) since shown by Chapple et al. (2011a) using molecular techniques to be a valid species-level taxon.

Richard Wells is also by far the largest benefactor with respect of collecting and donating reptiles to the Australian Museum in Sydney, having donated many thousands of specimens to their research collection spanning full-time work over many decades. He has received few if any accolades for this achievement.

Coincidentally, he also caught some of the paratypes for the new species *A. adelynhoserae* sp. nov., described below from McCarr's Creek, New South Wales, an area I also engaged in extensive fieldwork over many decades, including in the immediately adjacent West Head area of Kurringai Chase (see Hoser, 1989).

The spelling of the species name "*richardwellsei*" with the added second last letter "e" is deliberate and should not be changed unless mandated by an International Commission of Zoological Nomenclature (ICZN) rule either I am unaware of or that is later introduced.

**ALLENGREERUS ADELYNHOSERAE SP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:2F4C9586-B5A1-4134-AC04-583F170E5405

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.141011, collected from the Newington Woodland, Homebush Bay, Sydney, New South Wales, Australia, Latitude -33.83193 S., Longitude 151.06888 E.

This government owned facility allows access to its holdings.

**Paratypes:** 1/ Four preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.106530, R.106531, R.106532 and R.106533 collected by Richard Wells from McCarr's Creek, Kurringai Chase National Park, north of Sydney, New South Wales, Australia, Latitude -33.666 S., Longitude 151.25 E. 2/ A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.141010, collected from the Newington Woodland, Homebush Bay, Sydney, New South Wales, Australia, Latitude -33.83193 S., Longitude 151.06888 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and

within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple et al. (2011a). One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. adelynhoserae* sp. nov..

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeeri* sp. nov. *A. brunneo* sp. nov.,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceicai* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov. *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov..

The species *A. adelynhoserae* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

Medium brown upper surfaces of the head, sides, including upper and lower labials are white with numerous dark grey-brown flecks, extending posterior to the eye. Top of head immaculate, but with slight indistinct marbling. A well defined black line runs from the tip of the snout, through the nose and eye, above ear and continuously onto the upper flank, where it thickens and continues onto the anterior part of the side of the tail. In most specimens the line remains unbroken down the sides of most of the (original) tail.

Lower surface of the lateral stripe is not distinct and fades to greyish white. Venter is white with some flecks of grey. The dorsum is generally unmarked save for semi-distinct darkening of the posterior edges of the scales, giving it a slightly fish-like appearance. Upper surfaces of the limbs are mainly a medium brown with black in between, with semi-distinct white specks, more common on the hind limbs. Fingers and toes are mainly black, with some brown barring.

There are numerous tiny white spots on the flanks commencing from the neck to the base of the tail, these being most numerous on the lower half, these spots being distinct and obvious in some specimens, but indistinct in others.

Max SV 42 cm. Iris is medium brown.

*A. adelynhoserae* sp. nov. is depicted in life in Hoser (1989) on page 100 (photo 249) and Cogger (2014) on page 582 top left and online at:

<https://www.inaturalist.org/observations/8621731>

and

<https://www.inaturalist.org/observations/107656926>

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within

*Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. adelynhoserae* sp. nov. diverged from its nearest formally

named relative *A. jacksyhoserae* 2.5 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeeri sp. nov.* in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. adelynhoserae sp. nov.* is found from the Royal National Park, south of Sydney in New South Wales, including other parts of the Sydney basin, north to the Central Coast of New South Wales, being stopped by the Hunter Valley intrusion to the north. It does well in urbanised areas and is an invasive species.

**Etymology:** *A. adelynhoserae sp. nov.* is named in honour of my eldest daughter Adelyn Hoser, of Park Orchards, Victoria, Australia, in recognition of over 20 years of services to wildlife conservation globally.

#### ALLENGREEERUS MATHERI SP. NOV.

LSIDurn:lsid:zoobank.org:act:3F6C03D2-4FAD-410A-8C16-74CD24A2523B

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R148555 collected by Allen E. Greer from north of Seafoam Avenue, west of railway line at Thirroul (north of Wollongong), New South Wales, Australia, Latitude -34.316 S., Long. 150.916 E. This government owned facility allows access to its holdings. This government owned facility allows access to its holdings.

**Paratypes:** 1/ 17 preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.98993, R.98994, R.98995, R.98996, R.98997, R.98998, R.98999, R.99000, R.99001, R.99003, R.99004, R.99005, R.99006, R.99007, R.99008, R.99009 and R.99013 all collected from around Wollongong, New South Wales, Australia, Latitude -34.433 S., Longitude 150.90 E. 2/ A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.64087 collected from Dapto, New South Wales, Australia, Latitude -34.50 S., Longitude 150.783 E. 3/ A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.60901 collected from the surf beach at Shellharbour, New South Wales, Australia, Latitude -34.583 S., Longitude 150.866 E. 4/ A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.67584, collected from Seven Mile Beach, Gerroa, New South Wales, Australia, Latitude -34.766 S., Longitude 150.816 E.

**Diagnosis:** Until now, *Allengreeerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a). One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. matheri sp. nov.*

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeeri sp. nov.*, *A. brunneo sp. nov.*,

*A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei sp. nov.*, *A. davidmerceicai sp. nov.*, *A.*

*robertwatsoni sp. nov.*, *A. angelikadennesae sp. nov.*, *A. ronhoseri* Hoser, 2019, *A. scottgranti sp. nov.*, *A. rosswellingtoni sp. nov.*, *A. kaputarensis sp. nov.*, *A. trevorhawkeswoodi sp. nov.*, *A. richardwellsei sp. nov.*, *A. jacksyhoserae* Hoser, 2012, *A. adelynhoserae sp. nov.*, *A. matheri sp. nov.* and *A. marulanensis sp. nov.*

The species *A. matheri sp. nov.* is separated from the other 18 above listed species by the following suite of characters:

Medium brown upper surfaces of the head, sides, including upper and lower labials are white with numerous dark grey-brown flecks, extending posterior to the eye. Top of head immaculate, but with slight indistinct marbling. A well defined black line runs from the tip of the snout, through the nose and eye, above ear and continuously onto the upper flank, where it thickens and continues onto the anterior part of the side of the tail. In most specimens the line remains unbroken down the sides of most of the (original) tail.

Lower surface of the lateral stripe is not distinct and fades to greyish white. Venter is white with some flecks of grey.

On the dorsum of the back the rear of every second row of scales (crossways) is a black dot giving the appearance of semi-distinct longitudinal lines of spots down the dorsum.

There is reduced white on the sides of the head, with upper labials being white overlain mainly with brown and scales above tending to be all brown, with no white (in contrast to still white in *A. adelynhoserae sp. nov.*).

Many inspected specimens have low welts (folds of skin) on the anterior flanks.

Upper surfaces of the limbs are mainly dark (blackish) with white markings.

Fingers and toes are mainly black, with some brown barring.

There are numerous tiny white spots on the flanks commencing from the neck to the base of the tail, these being most numerous on the lower half, these spots being distinct and obvious in some specimens, but indistinct in others.

Max SV 42 cm. Iris is light orange.

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

<https://www.inaturalist.org/observations/84813987>

and

<https://www.inaturalist.org/observations/5780255>

and

<https://www.inaturalist.org/observations/94886006>

All the preceding species, being the entirety of the *A.*

*delicata* complex, are separated from all other species within *Allengreeerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. matheri sp. nov.* diverged from its nearest formally named relative *A. marulanensis* (described in this paper) 2 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally

occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. matheri* sp. nov. occurs south of where the Illawarra Escarpment meets to coast, just north of Wollongong, New South Wales, south to at least Nowra. It is uncertain which taxon occurs between there and the Victorian border or where the ranges of *A. jackyhoserae* and *A. matheri* sp. nov. extend to along the NSW south coast, from south or north respectively. However based on known limits of other pairs of sister taxa which have distributional limits on the south coast of New South Wales, it is reasonable to infer a southwards distribution of *A. matheri* sp. nov. to at least as far south as Ulladulla, New South Wales, Latitude 35.3572 S., Longitude 150.4613 E.

**Etymology:** *A. matheri* sp. nov. is named in honour of Michael Mather of Wollongong in New South Wales, Australia in recognition of a lifetime's contributions to herpetology in Australia, particularly with respect to the captive study and breeding of small skinks and pygopids (Pygopodidae) over many decades.

**ALLENGREERUS MARULANENSIS SP. NOV.**

LSIDurn:lsid:zoobank.org:act:9493504F-758C-43EC-B5C7-EA7BDE279A31

**Holotype:** A preserved male specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R39166 collected from 3 km south west of Brayton, New South Wales, Australia, Latitude -34.67 S., Longitude 149.95 E.

This government owned facility allows access to its holdings.

**Paratypes:** 1/ A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.64426, collected 4 miles west of Marulan, near the Hume Highway, New South Wales, Australia, Latitude -34.75 S., Longitude 149.933 E. 2/ Two preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.52849 and R.52850 collected from Uringalia Creek, 25 miles north of Goulburn in New South Wales, Australia, Latitude -34.683 S., Longitude 150.083 E.

**Diagnosis:** Until now, *Allengreerus delicata* (De Vis, 1888), better known as *Lampropholis delicata*, has been treated as a wide-ranging taxon found more-or-less continuously from the wet tropics in far north Queensland, south along the coast and near ranges through New South Wales, into Victoria and across into south-east South Australia.

It is now known that the distribution is somewhat broken and within this realm are no less than 19 apparently allopatric species, eighteen of which have a divergence of about 2 MYA or more minimum between one another's closest relatives, based on the molecular phylogeny published by Chapple *et al.* (2011a).

One of these 19 species has no molecular data, but is clearly divergent and self-evidently isolated from all others.

5 of these species have been previously described and the other 14 are formally described as new in this paper, including *A. marulanensis* sp. nov..

The 19 relevant species are: *A. delicata* (De Vis, 1888), *A. allengreeri* sp. nov. *A. brunneo* sp. nov., *A. longleyi* (Wells and Wellington, 1985), *A. colossus* (Ingram, 1991), *A. dorsei* sp. nov., *A. davidmerceicai* sp. nov., *A. robertwatsoni* sp. nov., *A. angelikadennesae* sp. nov. *A. ronhoseri* Hoser, 2019, *A. scottgranti* sp. nov., *A. rosswellingtoni* sp. nov., *A. kaputarensis* sp. nov., *A. trevorhawkeswoodi* sp. nov., *A. richardwellsei* sp. nov., *A. jackyhoserae* Hoser, 2012, *A. adelynhoserae* sp. nov., *A. matheri* sp. nov. and *A. marulanensis* sp. nov..

The species *A. marulanensis* sp. nov. is separated from the other 18 above listed species by the following suite of characters:

Light brown upper surface of head, with limited indistinct darker marbling. Dorsum of body same colour, but overlain with a

reticulation of grey, including a series of tiny whiteish ocelli, not seen in any other species in the complex. Upper surfaces of limbs are well marked blackish and light brown, with fingers and toes mainly light and with black flecks. There is no obvious white or yellow line or colour change at the interface of the dorsum and the black lateral stripe, which commences anterior to the front legs and runs onto the tail. The lower surface of the dark lateral stripe is bound on the body by a distinctive white band of moderate thickness, which in turn gives way to the greyish-white venter.

There is a black band, better described as a stripe, running from snout, through nose, above eye and fading above the ear, beyond which it reforms quickly as the dark lateral stripe.

Upper labials are brown with black etchings, while scales behind the eye and sides of neck are whitish, but heavily peppered brown, grey or black.

Iris is brown.

All the preceding species, being the entirety of the *A. delicata* complex, are separated from all other species within *Allengreerus* Hoser, 2009 and/or *Lampropholis* Fitzinger, 1843, *sensu lato* as defined in Cogger, 2014 by the following suite of characters:

An absence of an irregular dark vertebral stripe; the dark lateral band is usually, but not always, not bordered by a well-defined narrow light coloured band, but rather either with no border or a border created by a lightening of the dorsum near the flanks; less than 29 mid-body rows and less than 27 lamellae under the fourth toe; four supraoculars and usually seven supralabials; usually seven supraciliaries; parietal scales are fused to form a single shield, but are distinct from the interparietal; dark lateral stripe is usually but not always defined on the lower edge by some sort of white line or edge; lower surfaces white, whitish grey or yellow and either immaculate or lightly peppered, but not heavily spotted with black or with chevrons (derived from Cogger, 2014).

*A. marulanensis* sp. nov. diverged from its nearest formally named relative *A. matheri* (described in this paper) 2 MYA based on the phylogeny of Chapple *et al.* (2011a), confirming the appropriateness of the species-level assignment of this taxon.

Details of the diagnostic characters of each of the 19 species in this species group, enabling separation of each named species from all others, including where they are found (naturally occur) and their dated divergences from one another, in terms of next closest related species are contained within the earlier description of *A. allengreeri* sp. nov. in this paper, which is explicitly relied upon herein as part of this formal description.

**Distribution:** *A. marulanensis* sp. nov. is known only from an isolated population in the Brayton-Marulan area in the New South Wales, southern highlands (Australia) and is presumed to be range-restricted. It should therefore be formally listed by governments as vulnerable, before it potentially expires due to bureaucratic indifference as detailed by Hoser (2019a, 2019b).

The preceding comment is made noting that the species has until now been treated as a population of a putative species that is widespread, "weedy", invasive and not under any known threat.

**Etymology:** *A. marulanensis* sp. nov. is named in reflection of the best known town from where it is known to occur, that being Marulan in New South Wales, Australia (as described below).

Marulan is a usually cold, windswept cesspit of a place, severely degraded by human activity and for many years a petrol stop on the highway from Sydney to Melbourne, populated by a bunch of petrol outlets and not much else.

More recently it has obtained a notorious reputation for the corrupt and violent NSW Police ambushing motorists for allegedly failing to observe ridiculously slow (and variable by remote control) speed limits on the local highway.

The presence of a hitherto unknown and locally endemic species, may I hope, improve the reputation and profile of this impoverished hell-hole of a place.

**LAMPROPHOLIS OXYI SP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:F18A667A-7A7E-4DBD-B987-C07529E4B499

**Holotype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J46121 collected from 3 km west of Rainbow Beach, Queensland, Australia, Latitude -25.9 S., Longitude 153.1 E.

This government-owned facility allows access to its holdings.

**Paratypes:** Two preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J60616 and J60617 collected from Marcoola, Queensland, Australia, Latitude 26.5810 S., Longitude 153.0947 E.

**Diagnosis:** *Lampropholis oxyi sp. nov.* has until now been treated as putative *Lampropholis guichenoti* Duméril and Bibron, 1839 by all relevant publishing authors, including for example Cogger (2014), representing the majority view of Australian herpetologists at the time.

Chapple *et al.* (2011b) found that putative *L. guichenoti* had at least four deeply divergent clades, sufficiently divergent to be recognized as separate species, each separated from one another by well-known biogeographical barriers.

*L. guichenoti* with a type locality of Kangaroo Island, South Australia is found in south-east South Australia and southern Victoria.

*L. lunneyi* Wells and Wellington, 1984 with a type locality from near Nowra on the NSW South Coast, occurs in north-east Victoria and southern New South Wales as far north as the Hunter Valley.

*L. swani* Wells and Wellington, 1985 occurs north of the Hunter Valley and to the NSW/Queensland border, with a type locality in the New England region near Walcha, New South Wales.

*L. oxyi sp. nov.* is believed to occur generally north of the Queensland border in south-east Queensland, north to at least Maryborough.

*L. oxyi sp. nov.* is readily separated from the three other preceding species (*L. guichenoti*, *L. lunneyi* and *L. swani*) by having scattered white spots on the back of adult males that are mainly arranged to form two lines running either side of the mid dorsal dark zone that is barely darker than the rest of the dorsum, versus white spots generally scattered all over the back and not in lines or clustered to form rows on either side of the mid dorsal dark zone in adult males of the other three species.

In males, the white line running from the upper labials over the axilla of the front leg and along the mid-lower flank to the hind limb is prominent and bordered above with dark and blackish anterior to the forelimb.

In *L. guichenoti*, *L. lunneyi* and *L. swani* the white line referred to above is generally indistinct and/or absent behind the ear.

Adult female *L. oxyi sp. nov.* have a slight yellowish tinge in the dorsum, absent in the otherwise greyish brown colour of the other three species.

*L. swani* is also separated from *L. oxyi sp. nov.* by having a very dark and prominent thick mid-dorsal band, which is relatively indistinct in *L. oxyi sp. nov.*

The dark band behind the eye is thick and prominent in *L. swani*, versus thin or absent in the other three species.

In *L. guichenoti* there is usually a break in this band behind the eye, while in *L. lunneyi* it either thins or becomes indistinct just posterior to the eye.

All of *L. guichenoti*, *L. oxyi sp. nov.*, *L. swani* and *L. lunneyi* are separated from all other species within *Lampropholis* Fitzinger, 1843 *sensu* Cogger (2014), which includes all the species of *Allengreerus* Hoser, 2009 as defined in this paper, by having some kind of irregular dark vertebral stripe (sometimes indistinct or even absent in some females), and a well defined dark lateral band, not going below the mid-flank (versus does as a rule in *Allengreerus*), bordered below by a well defined, narrower band, lighter in colour than the dorsal surface colour.

*L. oxyi sp. nov.* is depicted in life in Wilson and Swan (2017) on page 321, second photo from bottom and online at: <https://www.inaturalist.org/observations/111052218>

*L. swani* is depicted in life online at:

<https://www.inaturalist.org/observations/18385007>  
and

<https://www.inaturalist.org/observations/103277469>

*L. lunneyi* is depicted in life in Hoser (1989) on page 100 at bottom and Cogger (2014) on page 582 at top right and online at: <https://www.inaturalist.org/observations/109481216>

and

<https://www.inaturalist.org/observations/8925031>

*L. guichenoti* from Kangaroo Island, South Australia are depicted online at:

<https://www.inaturalist.org/observations/42271997>

and

<https://www.inaturalist.org/observations/39956572>

and

<https://www.inaturalist.org/observations/42284788>

Chapple *et al.* (2011b) found that *L. guichenoti* and *L. lunneyi* as a pair diverged from *L. swani* and *L. oxyi sp. nov.* 7.91-11.62 MYA; that *L. guichenoti* diverged from *L. lunneyi* 3.62-5.77 MYA and that *L. swani* diverged from *L. oxyi sp. nov.* 2.15-5.77 MYA, confirming the sense in recognising each at the species level.

**Distribution:** While the exact distribution of *L. oxyi sp. nov.* is not certain, this taxon clearly is found north of Brisbane in the coastal strip to just past Maryborough in the north. The southern limit is believed to be in the vicinity of the Queensland/New South Wales border, but the exact area is not known.

**Etymology:** *L. oxyi sp. nov.* is named in honour of a Great Dane Dog, owned by our family named "Oxyuranus", or "Oxy" for short in recognition of his services guarding the family wildlife display business and research facility for the 8 and a half years he shared with us in his lifetime.

**FURTHER NOTES**

In Hoser (2015a-f), I deal with the next-level frauds and lies peddled by the Wolfgang Wüster gang of thieves to suppress science and to stop the use of valid scientific names proposed by persons outside of their gang.

To this effect, their unscientific edicts have suppressed and delayed scientific progress with respect of the lizards formally named in this paper.

I note that the 15 taxa formally identified and named, should have been recognized long ago, as should have the previously named forms recognized as valid in this paper, but not so elsewhere to this date.

Specifically I refer to *Allengreerus longleyi* (Wells and Wellington, 1985), *A. ronhoseri* Hoser, 2019 and *A. jackyhoserae* Hoser, 2012 as well as *Lampropholis lunneyi* Wells and Wellington, 1984 and *L. swani* Wells and Wellington, 1985.

All five species were formally described and named in journals and papers that were subjected to robust peer review.

The descriptions were based on solid scientific evidence, spelt out clearly the purported differences between these putative forms and those they were most closely related to.

All the descriptions complied with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), or in the case of the earlier names of Wells and Wellington (1984, 1985), the in force *International Code of Zoological Nomenclature* at the time (which happened to be the second edition, although the relevant paper complied with all of codes 2, 3 and 4).

Furthermore anyone with basic intelligence over the age of 10 and who has actually worked with, or seen the relevant forms would have no doubt that they were clearly of different species.

The discredited unscientific rant of Kaiser *et al.* (2013), actually written by Wolfgang Wüster on his own, did without giving

any scientific evidence or reason, synonymise all names of Hoser and Wells and Wellington, including the five species of *Allengreerus* and *Lampropholis* referred to above.

Kaiser *et al.* (2013) was not peer reviewed in any way and did not have a shred of evidence to support their taxonomic and nomenclatural vandalism that they sought others to copy.

Neither of these grossly overweight keyboard warriors, Hinrich Kaiser or Wolfgang Wüster are from Australia. Kaiser is in the back blocks of California, USA at a so-called university that specialises in "Creationist Science" and Wüster is at a second tier university in Wales.

Neither man has probably ever even set eyes on any of the relevant species, but this has not stopped them trying to dictate the taxonomy and nomenclature of all relevant species not just to herpetologists, but also to the ICZN as seen in Rhodin *et al.* (2015).

That attempt by this gang of thieves to hijack the rules of nomenclature was wholly rejected by the ICZN in 2021 (ICZN 2021).

Via the website Wolfgang Wüster controls, being "The Reptile Database" ostensibly edited by Peter Uetz, who is in fact no more than a stooge of Wolfgang Wüster, the claims against any and all Hoser taxonomy and that of Wells or Wells and Wellington (the same Richard Wells in both) are ridiculous in the extreme.

While I could give examples across hundreds of taxa and names, I need only refer to those relevant to the species in this paper.

But before I do, I just make it known that this site is aggressively marketed via black hat SEO (search engine optimisation) as the one and only "go to" complete database and bibliography of herpetology and species descriptions and names. It purports to be a so-called "list of available names" and to have all.

In fact it has far from it.

For example, on the page

<https://reptile-database.reptarium.cz/species?genus=Lampropholis&species=delicata>

Which is the webpage for "*Lampropholis delicata* (DE VIS, 1888)", it goes without saying that the Wells and Wellington species *Allengreerus longleyi* (Wells and Wellington, 1985) and the Hoser species *A. ronhoseri* Hoser, 2019 and *A. jackyhoserae* (Hoser, 2012) are synonymised.

However in the case of the Wells and Wellington name, it is simply omitted from the database, as are the relevant papers of Wells and Wellington (1985a) and Wells (2002), the latter of which confirms the validity of *Allengreerus longleyi* (Wells and Wellington, 1985) with a massive body of evidence.

The webpage does cite the two Hoser names, which in itself is amazing as the vast majority of Hoser papers and names are not on the website and may as well not even exist.

This is due to a stated position on their "what's news" page to not include Hoser names or papers on their site (Uetz 2022), even in the face of an effective ICZN directive to do so (ICZN 2021).

The two *Allengreerus* species are about the last of the Hoser species to be included on the website as they pre-date the publication of Kaiser *et al.* in 2013, from which time on, all things Hoser were banned from the Wolfgang Wüster controlled website.

That means hundreds of papers, species and genera are not included on the site. This is before one factors in the over 1,000 papers and names by Russian authors censored from the site (Uetz, 2022).

The unscientific rant of Kaiser *et al.* (2013) is cited as a basis to synonymise the Hoser names, but worse still, Wolfgang Wüster and his stooge Peter Uetz get others in their gang to try to justify their wholly unscientific and anti-wildlife conservation position.

I publish below the entirety of the comment on the Uetz page about the Hoser names, to illustrate the stupidity and outright dishonesty of what is put forward as their "scientific" position.

"HOSER (2009) established a new genus, *Allengreerus* HOSER 2009 for *L. delicata*. He diagnoses the genus as follows:

"Separated from *Lampropholis* (type species *guichenoti*), to which it/they would otherwise be identified as, by the general lack of a distinct midvertebral stripe as seen in adult specimens."

The validity of *Allengreerus* remains unclear, given that "there is clinal variation within *Lampropholis delicata*, which Hoser has failed to take into account. While he claims *ronhoseri* lacks the pale midlateral stripe of *delicata*, there is a gradual decrease in the frequency of the pale midlateral stripe with increasing latitude in New South Wales." [Glenn Shea, pers. comm]. Without cladistic analysis it is impossible to decide whether Hoser's form is different from *Lampropholis* and whether *A. ronhoseri* is different from *L. delicata*."

Firstly, I shall treat the comment as being written by Peter Uetz, although in reality it was almost certainly written by Wolfgang Wüster, potentially in consultation with others in his gang. After all, as mentioned already, Wolfgang Wüster being based on Wales has probably never set eyes on anything "*Lampropholis*" from Australia in his life and probably would have no idea what one even looks like!

The reference to Glenn Shea makes sense in as much as he lives in Australia and does claim expertise on Australian skinks.

However the comment itself is ridiculous in all major ways.

It confuses the act of erecting a genus *Allengreerus* with the diagnosis of the species, *A. ronhoseri*.

Clinal variation (as alleged) in putative "*Lampropholis delicata*" has zero relevance to the validity of the genus, as that species is placed in the genus anyway.

Uetz, Wüster and Shea all failed to realise that the type species of the genus *Lampropholis* Fitzinger, 1843 is the very different species *Lygosoma guichenoti* Duméril and Bibron, 1839.

So whether or not *Lampropholis delicata* (placed in the genus *Allengreerus* by Hoser in 2009) and *A. ronhoseri* are of the same species is wholly irrelevant in this regard.

As Uetz, Wüster and Shea all failed to assess whether or not the divergence between *Lampropholis guichenoti* and "*Lampropholis delicata*" (including their synonymised form *Allengreerus ronhoseri*) was genus level or otherwise, I shall make a point of (re) doing it here for them.

Reference to the works of Chapple *et al.* (2011) and Pyron *et al.* (2013) indicate a divergence in excess of 10 MYA for the two species.

There are several ways to calibrate the divergences, but all end up being over 10 MYA.

That alone is deemed worthy of genus-level separation in Australian skinks by most herpetologists.

In terms of the action by Uetz, Wüster and Shea to synonymise the two Hoser species *A. ronhoseri* Hoser, 2019 and *A. jackyhoserae* (Hoser, 2012) on their website, I should note the following.

Glenn Shea has been involved in herpetology for decades and even has a PHD from the University of Sydney, giving him an A-grade academic pedigree.

From there the good news ends. His thesis was nothing more than a long-winded rambling piece on Bluetongue Lizards which in the main rehashed what had been well-known for decades.

Glen Ingram later commented that he thought it was "a load of rubbish" but that he felt sorry for Shea, so recommended he get his PHD.

He also said that if he refused it, he'd end up being asked to re-read it later and he said the thought of that was "wholly unbearable".

Most of Shea's work in herpetology since has been a minefield of disasters.

His first notable and destructive incursion into taxonomy in 1988 (Shea *et al.* 1988), formally synonymised *Cannia weigeli* Wells and Wellington, 1987 with *Pseudechis australis* (Gray, 1842).

He had no evidence to support his action, but that clearly did not matter.

Hoser (2001a) and again in Hoser (2001b) formally resurrected *Cannia weigeli* Wells and Wellington, 1987 from synonymy, doing no more than reviewing the peer reviewed evidence published by Wells and Wellington in 1987.

The result is that the species *Cannia weigeli* Wells and Wellington, 1987 is now seen in all major Australian reptile guides, including for example Cogger (2014) as well as Wilson and Swan (2017), although sometimes in the genus *Pseudechis*. Notably in one of his more audacious acts, he petitioned the ICZN in 1987 in a long-winded rant (Shea 1987) to formally suppress the major works of Wells and Wellington in Wells and Wellington (1984, 1985a, 1985b) for the purposes of nomenclature so as to allow him the right to gain the self gratification of renaming the same entities and making the false claim of having discovered them.

The application, in support an earlier one by Richard Shine also in 1987, failed (ICZN 1991).

Shea has also engaged in the morally repugnant act of taxonomic vandalism in recent years, including for example when in 2020, in breach of the *International Code of Zoological Nomenclature* (Article 23. Principle of Priority), he created an invalid junior synonym for *Supremechelys* Hoser, 2014 with his own illegally coined name *Chelydera* Shea, Thomson and Georges 2020.

Shea's co-authors, Scott Thomson and Arthur Georges are both serial offenders when it comes to taxonomic vandalism, this being the deliberate act of naming species or genera they know have already been named by others.

In the case of his comments about *A. delicata*, *A. ronhoseri* and *A. jackyhoserae* on the Uetz website, I shall for the purposes of this commentary, assume they are from Glenn Shea and if they are not (bearing in mind they are attributed to him by webmaster Peter Uetz), I say "sorry" and would advise Shea to take action against his mates for putting rubbish words into his mouth and making him look even more like an idiot.

The relevant statement I take obvious issue with is this:

"While he (Hoser) claims ronhoseri lacks the pale midlateral stripe of delicata, there is a gradual decrease in the frequency of the pale midlateral stripe with increasing latitude in New South Wales." [Glenn Shea, pers. comm]. Without cladistic analysis it is impossible to decide whether Hoser's form is different from *Lampropholis* and whether *A. ronhoseri* is different from *L. delicata*."

Firstly, the species "ronhoseri" was diagnosed as distinct and in the absence of clinal variation in putative "delicata", for which not a shred of evidence has ever been published.

Now noting that the comment was downloaded in 2021 and the page was most recently edited in the same year, based on the addition of references dated 2021, the statement "Without cladistic analysis it is impossible to decide whether Hoser's form is different from *Lampropholis* and whether *A. ronhoseri* is different from *L. delicata*." is quite ridiculous.

At least a decade earlier, Chapple *et al* (2011) did a cladistic analysis of the relevant taxa and found that the various populations did not interbreed or form clines and had in fact diverged millions of years ago.

So much for the alleged clinal variation Shea spoke of. Like the alleged evidence of Kaiser *et al.* (2013) and all of Wolfgang Wüster's ridiculous and libellous claims, none actually existed!

Shea's so called science was in effect, wholly evidence free and fabricated!

As already mentioned, *A. ronhoseri* Hoser, 2019 is a species from inland eastern Vic, including the lower Goulburn River valley (the type locality) and western slopes of southern and central New South Wales, with a 4MYA divergence from *A. colossus* and

*A. jackyhoserae* (Hoser, 2012) and an even greater divergence from the Queensland species *A. delicata*.

*A. jackyhoserae* Hoser, 2012 occurs in Victoria generally south of the Great Dividing Range, from Melbourne's eastern suburbs at least as far east to the New South Wales border.

It diverged from *A. colossus* 4 MYA and even more distantly from the Queensland species *A. delicata*.

Uetz, Wüster and Shea on their "the reptile database" recognize taxa as species with divergences under 500K year divergence, so cannot possibly refuse to recognize the Hoser species with divergences measured in the range of 4MYA if they had a single shred of integrity.

The works of Chapple are cited across "the reptile database", including on the relevant webpage at: <https://reptile-database.reptarium.cz/species?genus=Lampropholis&species=delicata>

so it is not as if Uetz, Wüster and Shea were unaware of the fact that a cladistic analysis had been done on the Hoser species and found them to be valid.

In other words all of Uetz, Wüster and Shea were lying on "the reptile database".

Now in case it is missed by anyone, *A. longleyi* (Wells and Wellington, 1985), with a type locality of Guyra, New South Wales is confined to the New England region between Armidale, New South Wales and Girraween in far southern Queensland and ranges east of there. It diverged from *A. delicata* 6.5 MYA based on the results of Chapple *et al.* (2011), meaning it clearly passes the species test.

But of course, as far as Uetz, Wüster and Shea are concerned, they would prefer that species did not exist. This is even if it were to become extinct as a result of their actions in the same way as happened for another species they chose to pretend did not exist, being *Tympanocryptis pinguicollis* (Mitchell, 1948), also first identified as a species by Wells and Wellington (1985a).

The history of the extinction event was detailed by Hoser (2019b).

The same applies in terms of the species *Lampropholis lunneyi* Wells and Wellington, 1984 and *L. swani* Wells and Wellington, 1985, both of which Uetz, Wüster and Shea preferred to pretend did not exist.

The expertise of Wells and Wellington, who have each spent a lifetime working on these exact species means nothing when it comes to liars and thieves like Uetz, Wüster and Shea.

Significant in terms of the 15 taxa named herein, all have already been confirmed as species with molecular study and "cladistic analysis" bar one, which is clearly divergent in any event.

That of course strongly contradicts the false claims of Uetz, Wüster and Shea on their fraudulent and incomplete database.

Non-recognition of these 15 newly named species, or outright ignoring of them by Uetz, Wüster and Shea on their "the reptile database" if such happens (as is highly likely based on their past actions), will be yet another egregious act of dishonesty by them and further reason to regard their un-peer reviewed site with disdain.

I did in January 2022, email Uetz and phoned him and spoke to him asking him to at least include the "banned" author's papers and names on his "the reptile database". So far he has not seen reason and done so (as of when this paper went to final draft in mid 2022)

#### FINAL CONCLUSIONS

This and other recent papers including some cited herein, as well as for example more recent papers of Hoser (2016, 2017b, 2018a-c, 2019a, 2022a-d), have underscored previously underestimated species diversity in well-known and common Australian putative reptile species. While the species formally named within this paper are not believed to be under any existential threats at present, things can change rapidly if and when new pathogens or pests enter the ecosystem, as seen for

example with frogs as detailed in Hoser (1991).

Aspects of conservation of Australasian reptiles discussed by Hoser (1989, 1991, 1993 and 1996) apply to these species, as does the comments of Hoser (2019a, 2019b).

The latter two papers Hoser (2019a, 2019b) deal specifically with extinction of species arising from non-recognition of valid taxa by small minded ego-driven pseudo-scientists, not wanting to recognize the works or scientific names of persons they see as rivals.

Formal recognition of unnamed species is an important first step to their conservation and management.

It is critically important that valid species should only be named once and not subjected to unwarranted taxonomic vandalism as being practiced by the Wolfgang Wüster gang as detailed by Dubois (2014), Dubois *et al.* (1988), Hoser (2007, 2009a, 2012b-c, 2013a-b, 2015a-f, 2017a, 2019a-b), Hawkeswood (2021) and ICZN (2021).

The ICZN formally rejected the Wolfgang Wüster gang's many applications (e.g. Kaiser, 2012, 2013, 2014a-b, Kaiser *et al.* 2012, 2013 and Rhodin *et al.* 2015) to overwrite names of myself (Hoser) and others (ICZN 2021).

The ICZN stated that all names of Hoser were valid and available, without need to formally make a plenary ruling to effect what was already in effect and obvious.

Separately Hawkeswood (2021) said exactly the same thing.

The Plenary power is to be used to rectify things outside the *International Code of Zoological Nomenclature* and not to affect what is self-evidently compliant with it.

This is not the first time the ICZN have had to deal with the Wolfgang Wüster gang's immoral and anti-conservation actions.

In 1991, the same gang of thieves were ruled against by the ICZN in the matter of names proposed by Wells and Wellington in 1984, 1985a and 1985b.

Notwithstanding the ruling of the ICZN in 1991 (ICZN 1991), in favour of Wells and Wellington's works and a second ruling in their favour in 2001 (ICZN 2001) arising from Sprackland *et al.* (1997) and the ongoing availability of the Wells and Wellington names to the biological sciences, the group known as the Wolfgang Wüster gang of thieves have pressured publishing authors not to use or adopt the Wells and Wellington names (see Hoser 2007, 2009, 2012a, 2012b, 2013a, 2015 a-f, 2017a, 2019a-b) and more recently those I have formally proposed.

This attack has been at numerous levels, ranging from control of editors of journals, lies, defamation and a number of other anti-science tactics (see also Shine 1987, Sprackland *et al.* 1997).

Central in all this has been an evidence free general proposition put by them that the taxonomy of Wells and Wellington or myself is simply wrong and that therefore the names need not be used.

A clear example of this is seen in the online database they effectively control and censor, called "*The Reptile database*", now marketed as the "go to" reference for herpetological taxonomy and nomenclature. It is online at: <https://reptile-database.reptarium.cz>

and optimized for Google (Search engine optimisation). This means that this website comes up for searches for most species of reptile globally when searched for by scientific name.

Once at this website, the internet user is fed the warped and twisted world view of reptile taxonomy as promulgated by Wolfgang Wüster and his gang of keyboard warriors and thieves.

Contrary to the position of the Wolfgang Wüster gang of thieves, the science does support the use of the names proposed in this and other works of myself and also Wells and Wellington (in the vast majority of cases as mentioned earlier) (Hawkeswood 2021), and the sooner they come into general usage, the sooner the relevant species can be properly managed and conserved.

Following on from the ICZN ruling of 2021 (ICZN 2021), the scourge of the Wolfgang Wüster's gang of thieves actions should now be removed from the biological sciences.

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**CONFLICTS OF INTEREST**

None.

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