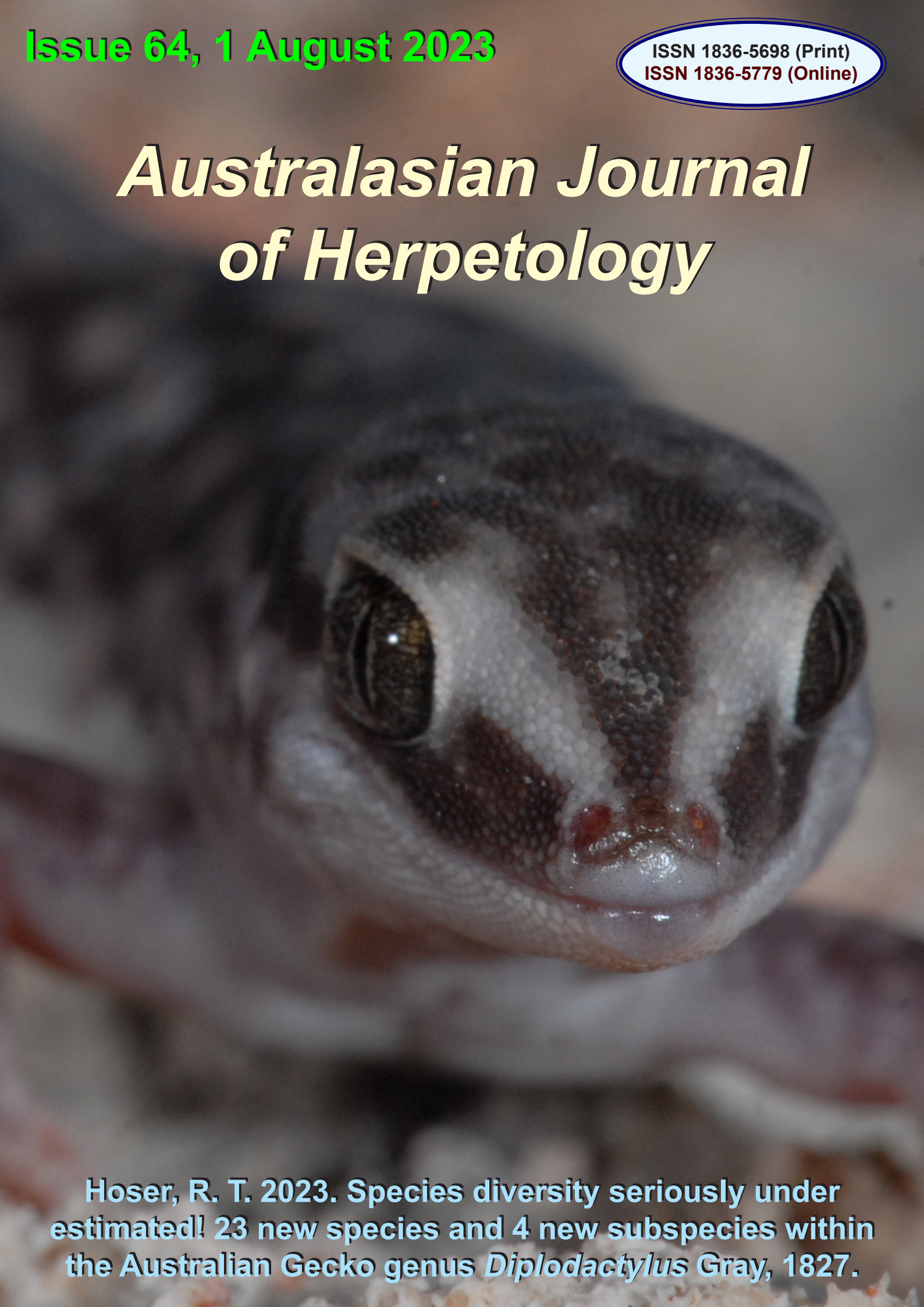


Issue 64, 1 August 2023

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

Australasian Journal of Herpetology



Hoser, R. T. 2023. Species diversity seriously under estimated! 23 new species and 4 new subspecies within the Australian Gecko genus *Diplodactylus* Gray, 1827.

Species diversity seriously under-estimated! 23 new species and 4 new subspecies within the Australian Gecko genus *Diplodactylus* Gray, 1827.

LSIDurn:lsid:zoobank.org:pub:C8EF83CC-A28F-496E-8D35-95806A015012

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Received 12 October 2022, Accepted 16 April 2023, Published 1 August 2023.

ABSTRACT

Following a detailed genus-wide review, this paper significantly revises the taxonomy and nomenclature of the genus *Diplodactylus* Gray, 1827 as currently recognized, almost doubling the number of formally recognized species and subspecies.

In summary the following revisions have been made:

Eight newly named species are added within the so-called *Diplodactylus conspicillatus* Lucas and Frost, 1897 species complex, (subgenus *Manwellisaurus* Wells and Wellington, 1989).

Five of these are 2.5 MYA or older in divergence from nearest relatives, another two over 2 MYA divergent and an eighth population, not sampled for molecular analysis, is significantly morphologically divergent.

Furthermore it has been apparent for some time that the putative species *D. ornatus* Gray, 1845, *D. calcicolus* Hutchinson, Doughty and Oliver, 2009, *D. savagei* Kluge, 1963, *D. galeatus* Kluge, 1963, *D. tessellatus* (Günther, 1875), *D. vittatus* Gray, 1832 and *D. wiru* Hutchinson, Doughty and Oliver 2009 from various parts of mainland Australia are composite so previously unnamed divergent populations are formally named as new species or conservatively as subspecies when the morphological divergence is slight.

All the species and subspecies are named based on usually significant morphological divergences across identified (in this paper) biogeographical barriers of known and dated minimum antiquity, which prima-facie indicate species-level divergences.

All bar two newly named species and all subspecies have been identified in previously published studies cited herein, as unnamed taxa based on dated genetic divergence (all including those named as subspecies herein, at the species level of divergence, viz over 2 MYA divergence), with the two not genetically sampled being significantly morphologically divergent, distributionally isolated and located in areas with known high endemism.

Six divergent subgenera, within *Diplodactylus* Gray, 1827, each group being more than 10 MYA divergent from nearest genus-level relatives are also formally named for the first time.

For the first time ever, this completes a near complete genus-wide revision of *Diplodactylus sensu lato* resulting in most, if not all species in the genus being formally named in accordance with the *International Code of Zoological Nomenclature* (Ride et al. 1999).

Keywords: Taxonomy; nomenclature; gecko; fat tailed gecko; stone gecko; wood gecko; *Diplodactylus*; *Manwellisaurus*; Australia; *conspicillatus*; *hilli*; *laevis*; *platyurus*; *barraganae*; *bilybara*; *custos*; *ameyi*; *ornatus*; *calcicolus*; *galaxias*; *savagei*; *tessellatus*; *galeatus*; *klugei*; *vittatus*; *wiru*; new subgenus; *Johnpat*; *Yankunytjatjaragecko*; *Martugecko*; *Pitjantjatjaragecko*; *Maralinga*; *Malgana*; new species; *adelynaehoserae*; *dundasi*; *jackyhoserae*; *matteoae*; *amaleighheadsae*; *eksteini*; *dorisioi*; *altmani*; *swedoshorum*; *austeni*; *bulliardi*; *oxyi*; *crotalusei*; *sloppi*; *rosswellingtoni*; *richardwellsi*; *fiacummingae*; *dalegibbonsi*; *johnpati*; *aah*; *ooh*; *lenhoseri*; *nuked*; new subspecies; *wongiorum*; *dannyelfahkrii*; *akramelfahkrii*; *moseselfahkrii*.

INTRODUCTION

There have in recent decades been significant revisions of the genus *Diplodactylus* Gray, 1827 resulting in newly named forms arising from the splits of putative species.

Recent revisions of the putative Australian gecko species known as the so-called *Diplodactylus conspicillatus* Lucas and Frost, 1897 complex within the subgenus *Manwellisaurus* (Wells and Wellington, 1989) has resulted in the resurrection of previously synonymised forms (*sensu* Cogger *et al.* 1983, who treated all as a single wide-ranging species).

The original type specimen of *Diplodactylus conspicillatus* Lucas and Frost, 1897 came from at, or near Charlotte Waters in the far south of the Northern Territory, Australia.

Three other related forms were also formally named in ensuing years.

These were *Diplodactylus hilli* Longman, 1915 with a type locality of Port Darwin, Northern Territory, *Gymnodactylus laevis* Sternfeld, 1924 from Hermannsburg Mission, Northern Territory, and *Diplodactylus platyurus* Parker, 1926 with a type locality of Torrens Creek, North Queensland.

As already mentioned, Cogger *et al.* (1983) in their major revision of the Australian herpetofauna formally synonymised the three preceding forms with *D. conspicillatus*.

Shortly after the publication of Cogger *et al.* (1983), Wells and Wellington (1984) and Wells and Wellington (1985) forensically dissected the work of Cogger *et al.* and in combination with their own separate research, based on many years of fieldwork across the Australian continent, compiled their own very different view of the Australian herpetofauna and its classification.

They resurrected and erected hundreds of species and genera and were lampooned by a cohort led by Richard Shine at the time.

There was even a petition led by Shine to the International Commission of Nomenclature (ICZN) to have the works of Wells and Wellington erased from the scientific record that was filed in 1987, and struck out by the ICZN in 1991 (ICZN 1991).

Four decades later, almost all the many taxonomic judgements made by Wells and Wellington have been shown to be correct, mostly through the use of resources and technology not available to Wells and Wellington in 1984 and 1985, in particular through advances in molecular biology.

Likewise for the ICZN nomenclature of Wells and Wellington (1984, 1985) that followed their taxonomic judgments.

In terms of the putative species *Diplodactylus conspicillatus* Lucas and Frost, 1897 it is significant that Wells and Wellington (1984, 1985) were the first herpetologists post-dating Cogger *et al.* (1983) to formally resurrect *D. hilli* Longman, 1915 and *D. platyurus* Parker, 1926 from synonymy.

As for almost all things Wells and Wellington, Shine publicly condemned the pair and their taxonomy, but in the alternative offered no scientific basis to refute what they had done.

Oliver *et al.* (2014) published a molecular phylogeny of putative *Diplodactylus conspicillatus* Lucas and Frost, 1897 from across their known pan-Australian range, which confirmed the actions of Wells and Wellington as being correct. But rather than giving the pair credit for what they were first to do, they condemned them in line with their cohort's unscientific anti Wells and Wellington position.

Oliver *et al.* (2014) used molecular methods not available thirty years prior to find that the *Diplodactylus conspicillatus* Lucas and Frost, 1897 was in fact even more speciose than even Wells and Wellington had suspected in 1984 and 1985.

To that end and on the basis of their newly acquired molecular data, Oliver *et al.* (2014) further resurrected the only other available name within the complex, *Gymnodactylus laevis* (as *D. laevis*) and formally named three forms being *D. barraganae*

from immediately south of the Gulf of Carpentaria, *D. bilybara* from the Pilbara region in Western Australia and *D. custos* from the Kimberley district of Western Australia.

Couper and Oliver (2016) formally named *D. ameyi* from inland regions of western Queensland and New South Wales.

In total this resulted in the original putative species being formally split into 8 named and widely recognized species.

By way of example, all are depicted in Wilson and Swan (2021) as separate, valid, diagnosable species.

In the seven years since the publication of Couper and Oliver (2016), no further works specifically on the *D. conspicillatus* complex or their taxonomy have been published.

However the published molecular phylogeny of Oliver *et al.* (2014) indicated at least seven other potentially unnamed forms, none of which have been named in the 9 years since that paper being published and with no herpetologist indicating any intention of doing so.

With five of these being 2.5 MYA or older in divergence from nearest relatives, thereby exceeding most arbitrary species level divergence thresholds, another two just under 2.5 MYA divergent and another population, not sampled for molecular analysis, but being significantly divergent from its closest allopatric relative, it was decided to inspect specimens of all the flagged candidate species with reference to relevant publications to determine if they were identifiable as species and should be formally named.

Furthermore it has been apparent for some time that the putative species *D. ornatus* Gray, 1845, *D. calcicolus* Hutchinson, Doughty and Oliver, 2009, *D. galeatus* Kluge, 1963, *D. tessellatus* (Günther, 1875) and *D. vittatus* Gray, 1832, most being from southern, central or western Australia are composite so divergent populations were looked at to see if any of them should be formally named as new species.

The westernmost population of putative *D. wiru* Hutchinson, Doughty and Oliver (2009), a southern Australian species, (or species pair) was also flagged as divergent and worthy of inspection.

Six additional potentially unnamed divergent subgenera, within *Diplodactylus* Gray, 1827, each group being more than 10 MYA divergent from nearest genus-level relatives, based on phylogenies published, including Skipworth *et al.* (2019) were also inspected to confirm whether or not they should be formally named for the first time.

The urgency of this task was underscored by the rapid human population growth in Australia brought about by a government that both pays people to breed and imports migrants as fast as they can, which combined is an ecological disaster for many fragile native species.

Obviously no species can be conserved by any government until it is formally identified and named.

MATERIALS AND METHODS

Inspected were live and dead specimens from across the range of the putative species complex *Diplodactylus conspicillatus* Lucas and Frost, 1897 *sensu* Oliver *et al.* (2014), with particular emphasis on the flagged unnamed forms.

Also inspected were photos of specimens with good quality locality data to aid in checking for consistency of characters across relevant regions.

The aim of the exercise was mainly to confirm consistent diagnosable differences between the relevant candidate species as flagged in Oliver *et al.* (2014).

Also inspected and analysed in the same way, were populations of the putative species *D. ornatus* Gray, 1845, *D. calcicolus* Hutchinson, Doughty and Oliver, 2009, *D. savagei* Kluge, 1963, *D. galeatus* Kluge, 1963, *D. vittatus* Gray, 1832, *D. tessellatus* (Günther, 1875) and *D. wiru* Hutchinson, Doughty and Oliver 2009, all from mainly southern, central or western

Australia, which have been identified as being composite in earlier studies, with relevant populations inspected with reference to the type forms of each species and in the absence of available synonyms.

Six additional divergent candidate subgenera (relevant species) within *Diplodactylus* Gray, 1827, each group being more than 10 MYA divergent from nearest genus-level relatives based on recent studies including Skipworth *et al.* (2019) were also scrutinized with a view to formally naming each for the first time.

Previously published studies on the relevant taxa were also reviewed and those relevant to the taxonomic and nomenclatural decisions within this paper included Aplin and Adams (1988), Bauer and Henle (1994), Boulenger (1885), Brown (2014), Brygoo (1991), Cogger (2014), Cogger *et al.* (1983), Couper and Oliver (2016), Doughty and Hutchinson (2008), Donnellan *et al.* (1999), Doughty and Oliver (2013), Doughty *et al.* (2008, 2010), Duméril and Bibron (1836), Edwards *et al.* (2012), Ellis *et al.* (2018), Fry (1914), Gamble *et al.* (2008), Gemel *et al.* (2019), Glauert (1956), Gray (1832, 1845), Günther (1867, 1875), Han *et al.* (2004), Hoser (1989, 2007a, 2009a-c, 2012a-c, 2014a-b, 2015 a-g, 2016a-b, 2016b, 2017a-c, 2018, 2019a-b, 2020a-b, 2022a-b), Hutchinson *et al.* (2006, 2009), King (1987, 1997), King and Mengden (1990), Kinghorn (1929), Kluge (1963a-b, 1965, 1967), Laube (1997), Longman (1915), Loveridge (1934), Lucas and Frost (1894, 1896, 1897, 1903), Maldonado *et al.* (2012), Melville *et al.* (2004), Mertens (1967), Michael and Lindenmayer (2011), Oliver *et al.* (2007a, 2007b, 2007c, 2009, 2014), Parker (1926), Pellegrin (1909), Pepper *et al.* (2006, 2008), Peters (1863), Pianka (1969), Riedel *et al.* (2020), Rösler (2000, 2017, 2022), Skipwith *et al.* (2019), Sternfeld (1925), Steindachner (1870), Storr (1964, 1978, 1979, 1988), Storr *et al.* (1990), Swan *et al.* (2022), Tiedemann *et al.* (1994), Underwood (1954), Vanderduys *et al.* (2020), Wells and Wellington (1984, 1985, 1989), Werner (1910a-b), Wilson and Knowles (1988), Wilson and Swan (2021), Zietz (1920) and sources cited therein.

RESULTS

As already stated in the abstract, inspection of many specimens within the *D. conspicillatus* group, yielded consistent morphological differences between populations and so the eight flagged candidate species are formally named herein.

This paper formally diagnoses and names all eight of these taxa as new species in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Two species occur on or near Cape York, Queensland, one in the top end of the Northern Territory, two in south-west Queensland, one in Western Australia, one in South/Central Australia and the eighth species across a wide swathe of southern inland Australia.

Furthermore *D. ornatus* Gray, 1845 is split two ways, with one species, that from the Shark Bay area of the west coast of Western Australia, separated by a well-known biogeographical barrier immediately south, being the edge of the Victoria Plateau (Western Australia), is named for the first time; *D. calcicolus* Hutchinson, Doughty and Oliver, 2009, is split three ways, with two populations west of the type population from the Eyre Peninsula in South Australia, named as new species for the first time, one from the coast along the Nullarbor and the other from the region around Albany in south-west Australia, again corresponding with both the molecular evidence of Doughty and Oliver (2009) and earlier studies cited by them as well as being in line with known biogeographical barriers that affect similarly constrained species.

In the case of *D. calcicolus sensu lato*, the species complex has clearly had populations cut off from one another at times of range constriction in the Pliocene/Pleistocene caused by the

aridification of its restricted coastal habitat combined with the need for moist microhabitat requirements by the gecko.

The *D. savagei* Kluge, 1963 species group was shown by Doughty, Pepper and Keogh (2010) to consist of three divergent species. However Doughty *et al.* (2010) only named one of them, that being *D. galaxias* Doughty, Pepper and Keogh, 2010. The third in the complex, until now not formally named, is formally named herein for the first time as a new species and all are also placed in the subgenus *Johnpat* subgen. nov.

Based on consistent morphological differences (identified in the descriptions herein) and molecular divergences, *D. galeatus* Kluge, 1963 (also placed in a new subgenus) is split three ways.

The molecular phylogeny of Oliver *et al.* (2007a) and Skipworth *et al.* (2019) found the trio diverged from their nearest relatives between 15 and 25 MYA, clearly being worthy of genus-level recognition.

I have taken the conservative position of placing all three in the new subgenus *Yankunytjatjaragecko* gen. nov. being one of six new subgenera named in this paper.

The two newly named species are *Diplodactylus* (*Yankunytjatjaragecko*) *aah* sp. nov. from the Macdonell Ranges of central Australia and *D.* (*Yankunytjatjaragecko*) *ooh* sp. nov. from the Bagot and Beddoma Ranges in northern South Australia, with *D. galeatus* Kluge, 1963 having a type locality of Stuart Range, South Australia (adjacent to Coober Pedy) being the most southern of the three species.

The molecular phylogeny of Oliver *et al.* (2007a) indicated three main population groups, all diverging from one another somewhere between 5 and 10 MYA (see Fig. 3), all populations of which also appear to be allopatric, being separated by zones of unsuitable habitat in the form of either (watercourse) channel country (flood plains that are essentially rock free) (between the southern two populations), or sand dunes, also rock free (between the two more northern populations), hence prohibiting gene flow between any of the three and explaining the measured divergence dates.

As they are morphologically divergent, anciently separated and evolving separately, it is appropriate that they are treated as fully separated allopatric species.

Putative *D. tessellatus* (Günther, 1875) is split three ways at the species level, with two western populations formally named for the first time. On top of that, three subspecies are also formally named.

In terms of explaining this decision, it came after inspecting many hundreds of (mainly living adult) specimens from all the Eastern and central States, being the entire known range of the putative taxon.

The molecular studies of Oliver *et al.* (2009) and earlier ones, including Oliver *et al.* (2007a) flagged at least three putative species within the *D. tessellatus* complex, being the type form, one from north-west South Australia and another apparently distantly related form of the same putative species from around the Port Augusta to Woomera area of South Australia (being generally south of the Lake Eyre drainage basin).

In the first instance and based on earlier publications, there was absolutely no indication in terms of what caused the three populations to separate, or why one of these appeared to be more closely to type *D. vittatus* Gray, 1832 than *D. tessellatus*. Notwithstanding the highly variable colouration within the species complex, even within specimens at a single location, proximal locations, or for that matter by age, I was, for the first time ever, able to see consistent trends in colour and morphology.

I was also able to see that these morphotypes corresponded more with drainage systems than with proximity by location

or any other obvious factor, this being the first time such a correlation had been drawn in these putative species.

Hence, while it was possible for specimens as far apart as much of Queensland, a huge chunk of mid-western New South Wales, Victoria and parts of southern and central South Australia to be both genetically and morphologically alike, specimens proximal to one another in South Australia could easily be grouped into four genetically and morphologically divergent forms.

These were plotted with drainage basins as were the divergent forms from north-east Queensland and the Barkly Tableland and I was able to identify six readily diagnosable forms.

Oliver *et al.* (2017a) claimed more than 10 MYA divergence for the three most divergent forms, herein treated as full species.

These in turn corresponded to the Murray Darling Basin, herein identified as 1/ The type form for the species *D. tessellatus* (type locality of Brewarrina, New South Wales), which included a divergent lineage to the immediate west as well, 2/ The form from the Lake Eyre drainage basin, being the form from north-west South Australia and since matched with other specimens from north-east of there in far south-west Queensland and 3/ The form from the area between Port Augusta and Woomera, South Australia, from an unconnected basin south of the Lake Eyre drainages, which while based on colouration, appears to be more similar to *D. tessellatus* than *D. vittatus*, is in fact more closely related to *D. vittatus* as evidenced by its similar Karyotype of $2n = 38$ (matching *D. vittatus* and not *D. tessellatus sensu lato*, which in turn has either 28 for *D. tessellatus sensu stricto* or 30 for *D. lenhoseri sp. nov.*). However with a divergence estimated (by inference) by Oliver *et al.* (2007a) and Skipworth *et al.* (2019) for this taxon, at over 15 MYA from either *D. tessellatus* or *D. vittatus* it is placed in a new subgenus and formally named as a new species as well.

Of the preceding trio of species identified, only the type form of *D. tessellatus* has an available name, so the other two are both formally named for the first time herein.

That the phylogenetic and morphological evidence placed species in the complex within specific drainage basins in terms of this putative species well known to prefer black soil riverine floodplains as habitat is not in hindsight an unusual situation.

Similar distribution patterns for black soil plain species groups and species division has been found before and documented with putative species pairs or trios that I have identified or split in the past, reconciled with the exact same river drainage systems and relevant biogeographical barriers including for example:

1/ *Denisonia devisi* Waite and Longman, 1920 from the Murray/Darling system, *Denisonia maculatus* (Steindachner, 1867), from the Fitzroy River System (east coast of Queensland) and *Denisonia gedyei* Hoser, 2016 (Hoser 2016a), from Gulf of Carpentaria drainages, in particular the Flinders River system, being the only drainage this recently discovered taxon has been found to occur within.

2/ *Platyplectron salmini* (Steindachner, 1867) (AKA *Limnodynastes salmini*) from the Murray Darling system and *P. snakemansbogensis* Hoser, 2020 (Hoser, 2020a) from the Fitzroy River System (east coast of Queensland),

3/ *Placidaserpens guttata* (Parker, 1926) (AKA *Pseudonaja guttata*) from the Lake Eyre drainages in western Queensland and *P. whybrowi* Hoser, 2009 (Hoser, 2009b) from the Barkly Tableland, Northern Territory, separated from the Queensland population of *P. guttata* by the Georgina River intrusion, running more or less along the NT/Qld border south from the Selwyn Ranges (Mount Isa) through the black soil area (as sand and rocks) south to the deserts further south, with the complete formation of the barrier previously dated at about 1.5 MYA, which notably prevented *Panacedecheis colletti*

(Boulenger, 1902) (AKA *Pseudechis colletti*) also primarily of the Lake Eyre drainages in western Queensland from entering areas of suitable habitat on the adjacent Barkly Tableland in the Northern Territory, noting also that a sister species *P. guttata* (De Vis, 1905) mainly of the Murray-Darling basin has previously been shown to have diverged from *P. colletti* about 1.5 MYA.

4/ *Pantherosaurus (Aspetosaurus) spenceri* (Lucas and Frost, 1903) (AKA *Varanus spenceri*) from the Northern Territory and the until recently confused related species *P. maxhoseri* Hoser, 2015 (Hoser 2015g) from the Cooper's Creek black soil areas of western Queensland, again split by the Georgina River intrusion.

Other than the divergence dates of species pairs more-or less confined to the Coopers Creek /Lake Eyre drainages versus those from the rivers draining to the Gulf of Carpentaria to the north, in particular the Flinders River system, being the main one in proximity to the south-flowing Coopers Creek / Lake Eyre drainages, which have not been dated, the species constrained by the other drainage basins or associated barriers as identified above, have had divergence dates consistently found to be at species level.

While not sampled for DNA by previous studies, species that are more-or less confined to the Coopers Creek /Lake Eyre drainages versus those from the rivers draining to the Gulf of Carpentaria to the north (e.g. *Denisonia devisi* versus *D. gedyei*) are highly divergent indicating long term separation.

It should be noted however that the downward fold of north central Queensland between the coastal and far western ranges, that ends at the Gulf of Carpentaria has a wide region south of Hughendon / Richmond of flat relief where some drainages (most importantly those connected to the Flinders River system) flow to the north in proximity to others running south, enabling potential movement of constrained black soil plains taxa across the putative barrier.

Contrary to the preceding however is the apparent absence of black soil Coopers Creek system, floodplain species along the Flinders River basin (e.g. *Panacedecheis colletti*, *Platyplectron salmini*, *Placidaserpens guttata* or *Pantherosaurus spenceri*) which failed to cross the relevant barrier to reach the north-flowing waterways, and areas of obviously suitable habitat, putting a date on that barrier forming being in excess of 1.5 MYA.

Hence on the basis of the preceding, those apparently isolated and morphologically divergent populations of putative *D. tessellatus* from the Barkly Tableland area in the Northern Territory, separated from the rest by the Georgina River intrusion, and that from Richmond / Hughenden in north-central Queensland, separated from the rest further south and inhabiting floodplains of north-flowing rivers in the Flinders River basin are sufficiently divergent to warrant species-level recognition.

However in the absence of clear molecular evidence, I have taken the most conservative position available and given both these populations recognition as subspecies and deal with them on this basis in the descriptions that follow.

I anticipate it likely that ultimately each will be formally elevated to full species.

In the phylogeny of Oliver *et al.* (2009) a limited number of samples of their type form of *D. tessellatus* did not group with the majority of specimens, even though they appeared to be within the same broad distribution and not strictly peripheral to it.

That is specimens outside the divergent group, but within *D. tessellatus* were found to the north, east and south, the western boundary being that of a completely different competing species inhabiting the Coopers Creek / Lake Eyre system. Inspection of specimens also showed specimens from the

relevant locations to be morphologically divergent and readily separable from the typical form, generally found to the east (as well as the north-east and south).

Inspection found that these specimens had a distribution centred on the northern Flinders Ranges and drainages flowing from them and were generally kept separate from the Murray / Darling populations to the east by the intervening north-south running ranges and elevated areas running north of Broken Hill to the New South Wales / Queensland border area.

By inference the Oliver *et al.* (2009) phylogeny shows species-level divergence for this population and so again, I have taken the most conservative position available and given this population recognition as a subspecies and deal with it on this basis in the descriptions that follow.

It has been noted by myself previously that black soil dwelling, riverine dependent species groups of reptile or frog appeared to have crossed the Great Dividing Range, west of Rockhampton, Queensland in the past geological times, but sufficiently to have speciated on either side of this barrier.

The break appears to have been between the Fitzroy River basin in the east and the south-flowing Murray Darling system to the south-west.

Notable among these lineages and where they now inhabit, are the turtles of the subgenus *Supremechelys* Hoser, 2014 (Hoser 2014b), being *Chelodina (Supremechelys) duboisi* Hoser, 2014, from the east coast and *C. expansa* Gray, 1857 from the inland, Murray/Darling System, the frogs in the *Ranaster snakemansbogensis* (Hoser, 2020), (east coast) and *R. salmini* (Steindachner, 1867) (inland), species pair and the snakes in the genus *Denisonia* Krefft, 1869 (*sensu* Hoser 2016a), including *D. maculatus* (Steindachner, 1867) (east coast) and *D. devisi* (Waite and Longman, 1920) inland in the Murray / Darling system, and notably including *Denisonia gedyei* Hoser, 2016 (Hoser 2016a), from the Flinders River system flowing north to the Gulf of Carpentaria.

In each case the migration has self evidently been east to west as noted by the molecular evidence for *Supremechelys* as cited by Hoser (2014b), and the distributions of the other species groups which at the present time occupy the north of the basin, but have not yet made it as far south as the drainages north of the Great Dividing Range in mid Victoria.

That the river dwelling *Supremechelys* species now occur in all suitable habitat in the basin, including northern Victoria in major rivers like the Goulburn River system, while the land dwelling species just named have not yet got there is simply a reflection as how fast they can travel *sensu* Hoser (2009c).

I was unable to find any evidence of a reverse west-east migration of putative *D. tessellatus* (or for that matter any other reptile or frog species). The reason for this in terms of putative *D. tessellatus* is unknown but is probably one or other of 1/ An inability to cross the barrier, 2/ Lack of suitable habitat on the east side of the barrier, or competing species in the upper Fitzroy River basin, or 3/ A combination of the preceding factors.

It should be noted that the name coined by Glenn Shea, Scott Thomson and Arthur Georges, *Chelydera* in 2020 in the notorious online PRINO (peer reviewed in name only) journal *Zootoxic* in an act of egregious taxonomic vandalism is a junior synonym of *Supremechelys* Hoser (2014), and therefore the name *Chelydera* should not be used for the relevant species as *Supremechelys* is the correct ICZN name and has priority. Significant is that while the distribution of *D. tessellatus sensu lato* and the relevant species and subspecies as defined and described in this paper in eastern Australia mirrored that of snakes of the genus *Denisonia sensu* Hoser (2016a), the *D. tessellatus sensu lato* are clearly of a western form and were unable to make the west-east jump in central Queensland to the Fitzroy River basin, whereas *Denisonia* were able to do the

reverse jump.

There appear to be no collected specimens of *D. tessellatus sensu lato* in any Australian museum from the Fitzroy River basin Queensland and it is self evident from the holdings at these museums that this absence is an absence of presence and not from lack of collecting effort.

The westernmost population of putative *D. wiru* Hutchinson, Doughty and Oliver ,2009 from southern Australia, found to be divergent in molecular analysis has herein been formally named as a morphologically diagnosable subspecies.

The choice to describe the taxon as a subspecies, rather than as a species, was made by virtue of the relatively limited molecular divergence (across the Nullarbor Plain barrier) and similar morphology between the east and west populations.

The *Diplodactylus vittatus* Gray, 1832 complex, was subdivided by Hutchinson *et al.* (2009), in which they resurrected various forms and named two western forms.

As noted already, there has been further subdivision of these in this paper.

In terms of the eastern specimens of *D. vittatus* Gray, 1832, Hutchinson *et al.* (2009) in line with earlier authors confirmed the existence of two main lineages, one of which was clearly not named, while noting deep phylogenetic breaks within both these lineages as well, this in turn being based on very limited sampling across the eastern third of Australia.

Oliver *et al.* (2007a) had already calibrated these breaks, claiming a 15 MYA divergence between the two main lineages, one inhabiting the south-east of the country from south-east Queensland, to near north-east Victoria occurring generally along the coast and nearby ranges, with the other clade of species occurring generally north and west of there, being from north-east Queensland, through inland New South Wales, to South-west Victoria and nearby South Australia.

Oliver *et al.* (2007a) found divergences in excess of 5 MYA for each of three subgroups in each lineage.

These timelines, self-evidently of the species level, broadly equate with divergences measured for other groups of reptile taxa (sibling species) affected by the same biogeographical barriers as seen for example in the genera *Amalosa* Wells and Wellington, 1984, *Uvidocolus* Oliver and Bauer, 2011; *Egernia* Gray, 1838, *Siaphos* Gray, 1831 and *Ctenotus* Storr, 1964 as detailed in the papers of Hoser (2017a) (for *Amalosa*), Hoser (2016b) (for *Uvidocolus*), Hoser (2018) (for *Egernia*), Hoser (2022a) (for *Siaphos*) and Hoser (2022b) (for *Ctenotus*).

Because of the combination of 1/ Molecular divergence of calibrated antiquity, well and truly at the species level (Oliver *et al.* 2007a), 2/ Combined with allopatry of populations across biogeographical barriers of known antiquity that matches the molecular evidence of Oliver *et al.* (2007a), via Hoser (2016b, 2017a, 2018, 2022a-b), 3/ In turn corroborated by consistent morphological differentiation, I have no hesitation in naming the five relevant identified forms as new species in accordance with the *International code of Zoological nomenclature* (Ride *et al.* 1999).

However in the process of inspecting specimens from across all Eastern States and eastern South Australia, I was not only able to readily identify consistent differences between the six identified lineages, but I also further identified three other populations that seemed to be divergent from all the others.

One was at Mount Kaputar, NSW, an area known for endemism in wildlife, including reptiles, a second was a population from Canberra, Australian Capital Territory (ACT) and nearby to the south to the upper Murray River basin, being an area also known for endemism in reptiles and then thirdly a geographically allopatric population of the eastern clade lineage from central Victoria, with most specimens inspected coming from the environs of Bendigo, in central Victoria, about 154 km by road, north-west of Melbourne.

In terms of the Mount Kaputar, NSW population, I only had limited material for inspection (mainly juveniles) and noting colour and morphological changes with age, I deferred taking action with respect to that population, or assigning them to any species identified or named herein.

In terms of the Canberra region population, it was a very easy decision to make to formally name them as a new species, even in the absence of molecular data.

The specimens were quite obviously of the so-called eastern or type *D. vittatus* Gray, 1832 clade lineage in that they had a mid dorsal line, that was mainly in the form of a series of blotches down the back, either even on either side of the midline or joined to it, with either an extremely thin line running down the spine, in this case broken up on the lower back, this reduction of the midline being a condition of all forms of the eastern clade, except for that from the Sydney basin and highlands to the west (herein named as *D. richardwellsi* sp. nov.) or to a lesser extent in the Bendigo population.

This condition just described is never seen in the western clade lineages, all of which have a bold, relatively thick and unbroken line running down the midline of the dorsum.

The Canberra population appears to be restricted to the basalt plains of Canberra and nearby areas and south to Lake Hume on the NSW / Victorian border and including the Monaro District of NSW (centred on the town of Cooma) and is isolated by some distance from all other populations of putative *D. vittatus* to the north and the west.

Those populations to the west of Canberra are of the western lineage clade, in this case being *D. stoppi* sp. nov., also found in Victoria, north of the Great Dividing Range (from near Albury / Wodonga to the west, with an intrusion into northern Victoria south-west of there), while the Sydney basin population to the north (*D. richardwellsi* sp. nov.) is so morphologically divergent from the Canberra population (and being the most proximal in the eastern clade lineage), that I have no reasonable alternative than to conclude it is a very different species to the others.

In fact, *D. fiacummingae* sp. nov. being the Canberra form, seems to be most similar to the range restricted *D. rosswellingtoni* sp. nov. from the Granite Belt of far south-east Queensland and immediately adjacent New South Wales, than either of the two genetically identified species in between, being *D. vittatus* Gray, 1832 from the southern New England region and *D. richardwellsi* sp. nov. from the Sydney basin and the elevated areas to the west.

The rule of parsimony in light of the published molecular data of Oliver *et al.* (2017) effectively precludes any possibility that the Granite belt population and Canberra population of putative *D. vittatus sensu lato* could be one and the same species.

Another morphologically divergent population from Bendigo, for which there is no molecular data is also formally named as a new species.

Clearly of the eastern clade lineage, it has broken blotches on the tail, versus the unbroken or near unbroken dorsal line on the tail in the western lineage. While the mid-dorsal line is medium, being significantly different to *D. fiacummingae* sp. nov. the Bendigo population has the eastern clade trait of black markings or peppering within the light mid-dorsal line.

There is no molecular data for this taxon, but I note the following relevant and applicable facts.

The *D. vittatus* species complex happens to share a lot in common with another species complex occupying Victoria and southern New South Wales, being the *Pseudodelma impar* Fischer, 1882 species group.

A plotting of the distribution of both species between Canberra and central Victoria, shows almost identical ranges of habitation.

Both species groups have a similar break just south of the

NSW border. Both species tend to inhabit rocky areas, where they shelter under slabs on the surface.

Species in both groups are known not to travel far, as in they have very narrow home ranges.

In terms of *P. impar* from Victoria and the more recently described *Pseudodelma cummingae* Hoser, 2017 (Hoser 2017c) from the Canberra region, Maldonado *et al.* (2012) found a mitochondrial DNA divergence of 5.2 to 6.2 %, which they estimated as being 12.3 to 2.7 MYA, which is well and truly species-level divergence and supports the taxonomic action of Hoser (2017c).

It is also notable that I inspected a specimen of the western clade (assignable to the newly named taxon, *D. stoppi* sp. nov.) from just west of Glenrowan (near Wangaratta), in itself, further implying a break between the Canberra to Lake Hume population of what is herein named as *Diplodactylus fiacummingae* sp. nov. and the apparently isolated form from central Victoria, mainly around Bendigo.

As the Bendigo animals are quite divergent from those within the same clade to the north-east and on the basis of implied divergence from them and all others in the *D. vittatus* complex, I again have no hesitation in naming them as a new species.

Their new name, *D. dalegibbonsi* sp. nov., is in honour of a local Bendigo herpetologist, Dale Gibbons.

In terms of my investigation of the *D. vittatus* complex, I should make it known that I systematically inspected several hundred specimens from all parts of the known range of the putative species being over 100 separate localities. This included specimens from most parts of Queensland, including north-east, west, far south and various population isolates, or at least what appeared to be. Specimens were examined from most parts of New South Wales, except for the arid far north-west, where they do not occur, as well as south New South Wales, the Australian Capital Territory and numerous locations along the state border with Victoria, or just either side of it, from Lake Hume in Snowy Mountains region of the south-east, across the Murray basin to eastern South Australia. The distributional limits for the various forms identified are not exact, but because I was able to view different taxa from relatively proximal locations, I can say that the stated ranges for each taxon, will be fairly accurate and should be treated as such unless and until concrete evidence to the contrary occurs.

In any event, my conclusions can be readily tested by matching the relevant diagnostic features of each species as identified herein with photos of live specimens on photo sharing websites like "Flickr" or "iNaturalist" against the provenance of the relevant specimens.

In summary the relevant taxa within the *D. vittatus* complex that are formally identified and named for the first time are as follows:

I note that the previously named type form of *D. vittatus* Gray, 1832, is herein confined to the New England Tableland of New South Wales, generally south of the biogeographical break along the general line of Grafton / Glen Innes and Inverell, separated in a straight line distance from the newly named form from the Granite Belt of Queensland and immediately adjacent New South Wales by a straight line distance of over 60 km.

That taxon, formally named as *D. rosswellingtoni* sp. nov. appears to be confined to a very small zone within the cooler areas of the Granite belt of Queensland and immediately adjacent New South Wales. This the area bound by Bolivia Hill, New South Wales / Stanthorpe, Queensland in the South, Fenton, Queensland in the North and Inglewood, Queensland in the west, encompassing an area of more than 100 km east to west and 200 km north to south.

D. richardwellsi sp. nov. is the species from the Sydney basin and extending to the hilly country to the west, being the so-called central highlands of New South Wales. It appears

to be one of many endemic species to this general area. Within the so-called type clade lineage of *D. vittatus* from south-east Australia, *D. richardwellsi* sp. nov. is one of two members commonly seen with a well-defined midline down the spine and in which the outer edges are not composed of spots or blotches joined to the midline, giving it a degree of morphological conformity with the so-called western clade of *D. vittatus* (*sensu* Oliver *et al.* 2007). Both are however separated from western clade species by the presence of black spotting, peppering or smudges within the light dorsal midline, which by contrast is immaculate in the western clade species.

D. fiacummingae sp. nov. is the distinctive form from the immediate vicinity of Canberra, ACT and south to the NSW / Victorian border around Lake Hume, including the Monaro district (Cooma), in New South Wales.

D. dalegibbonsi sp. nov. is the distinctive brownish-coloured form from central Victoria, with most known specimens being found mainly around Bendigo.

Within the so-called western lineage, no species of which have been named to date, the relevant species are as follows:

D. oxyi sp. nov. is the form found in most parts of Queensland, except for the Granite Belt and nearby elevated areas of the far south-east. It is readily characterised by a relatively thick mid-dorsal band and minimal spotting on the flanks, which alone separate this species from the rest.

D. crotalusei sp. nov. from north-west New South Wales and south-west Queensland is similar in many respects to *D. oxyi* sp. nov., but instead has distinctive smallish yellow spots in a single row, running along either side of the body on upper flank.

D. sloppi sp. nov. from south-west New South Wales and across northern Victoria (west of Wodonga) to the south-east of South Australia is distinctive in the clade in that the dorsal colouration is faded, in that there is less distinction between dark and light, the mid dorsal line is reduced in thickness to become relatively thin and with 12 or more jagged edges on the body (either side of the line), versus less than ten (at most), if present, in either *D. crotalusei* sp. nov. or *D. oxyi* sp. nov.. In *D. sloppi* sp. nov. the line of white spots on the upper flank, has the spots greatly enlarged in size and also reduced in colour intensity, giving the lizard overall a far more sandy colouration.

In terms of the provenance the type specimen of *D. vittatus*, Hutchinson *et al.* (2009) stated it was from North-west New South Wales based on the collection history and tentatively assigned it to the eastern clade of species. However they stated it was from the north-west slopes of New South Wales, an area which appears to have both east and west clade species (named and identified above).

However, having inspected both specimens from across the range of the complex and a photo of the holotype *D. vittatus*, it is quite easy to establish the exact provenance of the holotype in terms of the species within the complex.

The holotype of *Diplodactylus vittatus*, BMNH 1946.9.7.43, photographed by Hal Cogger and depicted in Hutchinson *et al.* (2009) is clearly of the form from the New England Tableland of New South Wales and no other.

This is evidenced by the mid dorsal line of narrowish to medium width, having the "door knob" extrusions from the midline, typical of that form, and the eastern clade of species, contrasting with the straight line usually seen, or somewhat jagged edge sometimes seen in *D. crotalusei* sp. nov. from further west, being of the western clade of species and the random arrangement of white spots on the mid and lower flanks, again typical of that form, versus the well defined single line of spots on the upper flank in *D. crotalusei* sp. nov..

The two character states just outlined preclude any other form in the complex.

For completeness, *D. rosswellingtoni* sp. nov., of the far north New England region in southern Queensland and northern

New South Wales also proximal to the collection locality is so radically different to the holotype of *D. vittatus*, that there is zero possibility of it being that taxon as seen in the formal description of that taxon below.

As mentioned already, six divergent species or species groups are formally placed in newly named subgenera, within *Diplodactylus* Gray, 1827.

Each group was more than 10 MYA divergent from nearest genus-level relatives based on recent published phylogenies, including Oliver *et al.* (2007), and Skipworth *et al.* (2019).

In other words they were found to be suitable to be formally named for the first time and so are diagnosed and named in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) in this paper.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

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

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

In terms of the following formal descriptions, spelling of names 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 (Ride *et al.* 1999 and ICZN 2012). Unusual spellings in terms of new names, in this paper are deliberate and not typographical errors.

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 14 April 2023, unless otherwise stated and were accurate in terms of the context cited herein as of that date.

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

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

In the unlikely event any "first reviser" seeks to merge two or more newly named taxa into one, then the name to be retained is that which is first by page priority as listed in the abstract keywords.

CONSERVATION

Delays in recognition of these species and subspecies could jeopardise the long-term survival of the taxa as outlined by Hoser (2019a, 2019b) and sources cited therein.

Also refer to the relevant comments within Hoser (1989, 1991, 1993, 1996 and 2007).

Therefore attempts by taxonomic vandals like the Wolfgang Wüster gang via Kaiser (2012a, 2012b, 2013, 2014a, 2014b) and Kaiser *et al.* (2013) (as frequently amended and embellished, e.g. Rhodin *et al.* 2015, Thiele *et al.* 2020, Hammer and Thiele 2021) to unlawfully suppress the recognition of these taxa on the basis they have a personal dislike for the person who formally named it should be resisted (e.g. Ceriaco *et al.* 2023, Cogger 2014, Dubois *et al.* 2019, Hawkeswood, 2021, Mosyakin 2022 and Wellington 2015). Claims by the Wüster gang against this paper and the descriptions herein will no doubt be no different to those the gang have made previously, all of which were discredited long ago as outlined by Ceriaco *et al.* (2023), Cogger (2014), Cotton (2014), Dubois *et al.* (2019), Hawkeswood (2021), Hoser,

(2007a-b, 2009a, 2012a, 2012c, 2013, 2015a-f, 2019a, 2019b), ICZN (1991, 2001, 2021), Mosyakin (2022), Wellington (2015) and sources cited therein.

Some material within descriptions is repeated to ensure each fully complies with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

DIPLODACTYLUS (MANWELLISAURUS)

ADELYNHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:17776E28-D974-4049-B61D-B70888BE8F14

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R143909 collected from 9.3 km west of Normanton post office, via Cloncurry Road, Queensland, Australia, Latitude -17.7300 S., Longitude 141.0300 E.

This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen number R143911 collected from 8.2 km west of Normanton post office, via Cloncurry Road, Queensland, Australia, Latitude -17.7300 S., Longitude 141.0300 E. and specimen number R143916 collected from 8.4 km west of Georgetown on Croydon Road, Queensland, Australia, Latitude -18.2800 S., Longitude 143.4700 E.

Diagnosis: *Diplodactylus adelynhoserae* sp. nov. has until now been treated as a population of *D. platyurus* Parker, 1926, but is readily separated from that taxon and the closely related *D. ameyi* Couper and Oliver, 2016 (previously treated as a population of *D. platyurus*) by dorsal colouration in adults and eye colour.

D. adelynhoserae sp. nov. has a gold coloured iris, versus bluey-grey, sometimes with a slight gold tinge in parts in *D. platyurus* or brown in *D. ameyi*.

Dorsally, the colour patterns of all three preceding species are also quite different from one another.

D. adelynhoserae sp. nov. has a consistent broad zone of light along the mid-vertebral line, which in turn is made of irregular outline by darker triangular-shaped incursions from the flanks and entering the dorsal surface. The upper tips are dark and well defined and these incursions are joined as a continuum on the mid to upper flanks, with the lower half of the flank being of the same general pigmentation or colour, albeit lightening in colour as one moves towards the whitish venter.

D. platyurus is similar in pattern to the above, but in the case of this taxon, the lighter mid-dorsal zone is narrowed, incursions are not triangular, but rather irregular in shape and on many specimens, the incursions break the lighter mid-dorsal zone either completely or incompletely, to make it appear as a row of joined, partially joined or unjoined spots or blotches.

D. ameyi does not have a dorsal pattern remotely resembling either of the other two species.

In *D. ameyi* the dorsum if having light on the mid dorsal line, has it in the form of semi-defined blotches surrounded by darker pigment and this same configuration extending to the flanks, where dark is more prevalent than light. On the mid-dorsal line, any light patches are well separated from one another by dark. Alternatively, the light patches are simply reduced to small to medium-sized spots on an otherwise darker background.

All three preceding species are usually broadly best described as being of a reddish to brown or greyish ground colour on the dorsum when viewed at a distance, sometimes changing in intensity depending on time of day and/or activity.

In turn the three preceding species are separated from all other species within the *D. conspicillatus* Lucas and Frost, 1897 species group by the unique combination of the absence of a prominent pale canthal stripe, combined with the presence of a

small first supralabial that is sub equal in size to the rest of the supralabial row.

The closely related species *D. dundasi* sp. nov. is morphologically most similar to *D. platyurus* but is separated from the three species *D. adelynhoserae* sp. nov., *D. platyurus* and *D. ameyi* by the presence of an enlarged first supralabial that is either the same size as or larger than the others in the supralabial row, rather than one that is reduced in size.

All of *D. dundasi* sp. nov., *D. platyurus*, *D. ameyi* and *D. adelynhoserae* sp. nov. are found in the general region of north Queensland, in generally elevated and dry areas, as well as some flatter areas, but usually not including flood zones.

All species in the *Diplodactylus conspicillatus* group, being the subgenus *Manwellisaurus* Wells and Wellington, 1989, can be separated from all other species within *Diplodactylus* Gray, 1832 by the following suite of characters: All or most supralabials are very small and almost granular, there is at most only one enlarged anterior (first) supralabial; terminal lamellae on fingers at most are only slightly wider than the digit; other prominent enlarged subdigital lamellae are absent; tail is short, as wide or wider than the body, horizontally depressed with heterogeneous scalation, usually bearing large plate-like scales and/or conical tubercles arranged in transverse rows; and dorsal colouration is extremely variable, but never consisting of large clearly defined transverse bands or similarly arranged blotches (modified from Oliver *et al.* 2014).

Diplodactylus adelynhoserae sp. nov. is depicted in life online at:

<https://www.flickr.com/photos/127392361@N04/52197832480/> and

<https://www.flickr.com/photos/171250498@N08/52189096967/>

D. platyurus is depicted in life online at:

<https://www.flickr.com/photos/hamidatun/48984375052/> and

<https://www.flickr.com/photos/edwardevans/51204573739/> and

<https://www.inaturalist.org/observations/64469725> and

<https://www.inaturalist.org/observations/108147204>

D. ameyi is depicted in life in Couper and Oliver (2016) on page 533, Wilson and Swan (2021) on page 91, top and online at:

https://www.flickr.com/photos/colonel_007/52024992333/ and

<https://www.flickr.com/photos/143696880@N06/52191008187/>

Distribution: *D. adelynhoserae* sp. nov. is only known from the area between Normanton and Croydon in north-west Queensland, generally south of the Einasleigh River. Further survey work is required to ascertain the extent of distribution of this taxon and its ongoing conservation status. It appears to be a range-restricted endemic that should be treated as vulnerable to extinction unless and until found otherwise. Refer to the comments in Hoser (1989, 1991, 2007, 2019a, 2019b).

Etymology: *D. adelynhoserae* sp. nov. is named in honour of my daughter, Adelyn Hoser, of Park Orchards, Victoria, Australia, born 19 May 1999 in recognition of her lifetime's services to wildlife conservation (more than 20 years), including actively exposing dishonesty and scams by fraudsters masquerading as wildlife conservationists and being unlawfully arrested by corrupt Victorian Police for doing so.

I note also that the Teri Irwin ("Australia Zoo") business and / or associated fake animal rights groups have protested people like Adelyn Hoser using animals as "props" in photos, even going so far as to have Adelyn Hoser arrested at gunpoint by police raids of questionable legality, while self-evidently, it is OK for her own daughter Bindi to use animals as "props" in her own photos for marketing and money-making purposes.

DIPLODACTYLUS (MANWELLISAURUS) DUNDASI SP. NOV.

LSIDurn:lsid:zoobank.org:act:F3777EBC-51E7-4C85-8237-0043ACE7148B

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J58251 collected from the Melon Yard, Strathgordon Homestead, Cape York, Queensland, Australia, Latitude -14.439120 S., Longitude 142.189 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J81110 collected from the Edward River area, Cape York, Queensland, Australia, Latitude -14.249360 S., Longitude 142.099360 E.

Diagnosis: *Diplodactylus dundasi* sp. nov. has until now been treated as a population of *D. platyurus* Parker, 1926, but is readily separated from that taxon, and the closely related taxa *D. ameyi* Couper and Oliver, 2016 (previously treated as a population of *D. platyurus*) and *D. adelynhoserae* sp. nov.

by the presence of an enlarged first supralabial that is either the same size as or larger than the others in the supralabial row, rather than one that is reduced in size as seen in the other three species. In terms of dorsal colouration it is most similar to that of *D. platyurus* as described below.

D. adelynhoserae sp. nov. has a gold coloured iris, versus bluey-grey, sometimes with a slight gold tinge in parts in *D. platyurus* or brown in *D. ameyi*. Dorsally, the colour patterns of all three preceding species are also quite different from one another.

D. adelynhoserae sp. nov. has a consistent broad zone of light along the mid-vertebral line, which in turn is made of irregular outline by darker triangular-shaped incursions from the flanks and entering the dorsal surface. The upper tips are dark and well defined and these incursions are joined as a continuum on the mid to upper flanks, with the lower half of the flank being of the same general pigmentation or colour, albeit lightening in colour as one moves towards the whitish venter.

D. platyurus is similar in pattern to the above, but in the case of this taxon, the lighter mid-dorsal zone is narrowed, incursions are not triangular, but rather irregular in shape and on many specimens, the incursions break the lighter mid-dorsal zone either completely or incompletely, to make it appear as a row of joined, partially joined or unjoined spots or blotches.

D. ameyi does not have a dorsal pattern remotely resembling either of the other two species.

In *D. ameyi* the dorsum if having light on the mid dorsal line, has it in the form of semi-defined blotches surrounded by darker pigment and this same configuration extending to the flanks, where dark is more prevalent than light. On the mid-dorsal line, any light patches are well separated from one another by dark. Alternatively, the light patches are simply reduced to small to medium-sized spots on an otherwise darker background.

All three preceding species are usually broadly best described as being of a reddish to brown or greyish ground colour on the dorsum when viewed at a distance, sometimes changing in intensity depending on time of day and/or activity.

In turn the three preceding species are separated from all other species within the *D. conspicillatus* Lucas and Frost, 1897 species group by the unique combination of the absence of a prominent pale canthal stripe, combined with the presence of a small first supralabial that is sub equal in size to the rest of the supralabial row.

The closely related species *D. dundasi* sp. nov. confined to the Edward River region of Cape York, Queensland, is as already mentioned, morphologically most similar to *D. platyurus* but is separated from the three species *D. adelynhoserae* sp. nov.,

D. platyurus and *D. ameyi* by the presence of an enlarged first supralabial that is either the same size as or larger than the others in the supralabial row, rather than one that is reduced in size and is otherwise separated from all other species in the *D. conspicillatus* 1897 species group as outlined in the above paragraph.

All of *D. dundasi* sp. nov., *D. platyurus*, *D. ameyi* and *D. adelynhoserae* sp. nov. are found in the general region of north Queensland, in generally elevated and dry areas, as well as some flatter areas, but usually not including flood zones.

All species in the *Diplodactylus conspicillatus* group, being the subgenus *Manwellisaurus* Wells and Wellington, 1989, can be separated from all other species within *Diplodactylus* Gray, 1832 by the following suite of characters: All or most supralabials are very small and almost granular, there is at most only one enlarged anterior (first) supralabial; terminal lamellae on fingers at most are only slightly wider than the digit; other prominent enlarged subdigital lamellae are absent; tail is short, as wide or wider than the body, horizontally depressed with heterogeneous scalation, usually bearing large plate-like scales and/or conical tubercules arranged in transverse rows; and dorsal colouration is extremely variable, but never consisting of large clearly defined transverse bands or similarly arranged blotches (modified from Oliver *et al.* 2014).

Diplodactylus adelynhoserae sp. nov. is depicted in life online at:

<https://www.flickr.com/photos/127392361@N04/52197832480/> and

<https://www.flickr.com/photos/171250498@N08/52189096967/> *D. platyurus* is depicted in life online at:

<https://www.flickr.com/photos/hamidun/48984375052/> and

<https://www.flickr.com/photos/edwardevans/51204573739/> and

<https://www.inaturalist.org/observations/64469725> and

<https://www.inaturalist.org/observations/108147204>

D. ameyi is depicted in life in Couper and Oliver (2016) on page 533, Wilson and Swan (2021) on page 91, top and online at:

https://www.flickr.com/photos/colonel_007/52024992333/ and

<https://www.flickr.com/photos/143696880@N06/52191008187/>

Distribution: *D. dundasi* sp. nov. is only known from the holotype and paratype specimens and therefore is only presently known from the Edward River region of far north Queensland.

Further survey work is required to ascertain the extent of distribution of this taxon and its ongoing conservation status including potential threats. It appears to be a range-restricted endemic that should be treated as vulnerable to extinction unless and until found otherwise. Refer to the comments in Hoser (1989, 1991, 2007, 2019a, 2019b).

Etymology: *D. dundasi* sp. nov. is named in honour of Lachlan Dundas of Frankston, (Melbourne), Victoria, Australia in recognition of his lifetime's services to disabled and underprivileged people in Australia.

DIPLODACTYLUS (MANWELLISAURUS) JACKYHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:EF72AF8E-2C4B-4FFD-8CE9-3CDBF517E219

Holotype: A preserved specimen at the Museum and Art Gallery of the Northern Territory, Darwin, Northern Territory, Australia, specimen number R24076 collected from Arafura Swamp Arnhem Land, Northern Territory, Australia Latitude -12.5300 S., Longitude 134.9000 E.

This government-owned facility allows access to its holdings.

Diagnosis: Until now, *Diplodactylus (Manwellisaurus) jackyhoserae* sp. nov. from the top end of the Northern Territory, *D. matteoae* sp. nov. from south-west Queensland, *D. amaleighheadsae* sp. nov. from south and south-west Australia and *D. eksteini* sp. nov. from the southern parts of the Pilbara in Western Australia, have all been treated as populations of *D. conspicillatus* Lucas and Frost, 1897, with a type locality of Charlotte Waters in the Northern Territory and herein confined to most parts of that "state", except for the tropical north and potentially nearby parts of north-east Western Australia, far north-west Queensland and potentially just south of the border with South Australia.

Oliver *et al.* (2014) flagged these candidate species as divergent lineages in their interpretation of *D. conspicillatus sensu stricto* and all are morphologically diagnosed and separated herein.

They also found each of the five preceding named species to have diverged from one another at least 2.5 MYA, confirming species-level divergences.

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

D. conspicillatus has a dorsum that consists of light cream or yellowish areas, reduced to very large spots in some specimens, that are often in the form of circular or ovoid shaped areas, often joining one another. Between these areas the darker areas, usually purplish brown are heavily peppered or spotted with the alternative light colour. Peppering of the lighter areas is either non-existent or minimal. Limbs are lightish in colour and any spotting or markings on the upper surfaces, if present, are generally dull or indistinct. The (original) tail (upper surface) has numerous well defined dark purplish brown spots of patches, scattered across the dorsal surface, with most of the tail being otherwise of the same light colour as seen in the body blotches. The iris is golden brown.

D. jackyhoserae sp. nov. is a generally darker animal than *D. conspicillatus*, being mainly reddish brown to brown above and with a dorsum that is punctuated by small yellowish white spots only, which become smaller and brighter on the flanks. Upper surfaces of the limbs are barely lighter than the flanks, meaning they are dark and all have prominent small yellow spots. The white lines running along the upper labials from the snout and from snout to upper eye are especially prominent, versus only moderately so in *D. conspicillatus*. The (original) tail (upper surface) is a dark colour in line with that of most of the dorsum and this is closely punctuated by dull orange-yellow spotting, which is indistinct and slightly more dense at the centre than towards the edges. The iris is a reddish-brown or brown colour.

D. matteoae sp. nov. has a purplish-brown dorsum interspersed with dull orange spots, blotches or other markings, often including a narrow mid-vertebral stripe (sometimes broken) and running down most of the dorsum of the body. Limbs are nearly as dark as the body being a purplish colour, but yellow spotting is generally indistinct.

The white line running along the upper labials from the snout is thin and ill defined.

The line running from snout to upper eye is broad, indistinct and yellow in colour.

The upper surface of the original tail is an indistinct combination of dark and light, in similar ratios, but not in any obvious pattern, although light predominates at the centre of the upper surface and the outer edges and dark elsewhere. There are also scattered tiny black dots on the upper surface of the tail. Iris is a golden colour.

D. amaleighheadsae sp. nov. has an upper surface similar to that of *D. conspicillatus*, but differs from that species in that the darker (purplish brown) areas are not peppered light as seen in *D. conspicillatus*. Upper surfaces of the limbs are either

mainly dark (purplish) in colour or heavily marked with dark. The head is all dark, mainly dark purple brown or prominently marked dark purple brown in *D. amaleighheadsae* sp. nov. versus mainly light in *D. conspicillatus* and *D. eksteini* sp. nov.. As in *D. conspicillatus* the (original) tail (upper surface) of *D. amaleighheadsae* sp. nov. has numerous well defined dark purplish brown spots of patches, scattered across the dorsal surface, with most of the tail being otherwise of the same light colour as seen in the body blotches.

The obvious lines running from the snout along the upper labials or from snout to top of eye are thin, faded and heavily bordered with purple brown (between snout and eye) making those stripe/s most prominent.

Iris is a bluey-grey brown.

D. eksteini sp. nov. appears as a generally orangeish to orange-yellow lizard in contrast to the other four preceding species. The head is almost all light on the upper surface, with at most a tiny amount of black peppering or markings, usually randomly appearing on the upper surface. Likewise for the mainly light (original) tail which also lacks the dark spots of *D. conspicillatus* or *D. amaleighheadsae* sp. nov., or the alternative heavily darkened tails of *D. jackyhoserae* sp. nov. or *D. matteoae* sp. nov.. The upper surface of the body is mainly a lightish orange-brown, or yellow-beige to orange colour, with limited darker pigment in the form of peppering and not in the form of any distinct markings.

Upper surfaces of the limbs are of similar colour to the body and peppered with tiny black spots.

Iris is yellowish-grey.

The five preceding species are separated from all others in the subgenus *Manwellisaurus* Wells and Wellington, 1989 by the following suite of characters:

First supralabial is enlarged, contacting the ventral edge of nasal scale and there is a prominent, pale snout to eye stripe present; mid-dorsal scales are conspicuously larger than the dorsolateral scales; scales on the nape are granular, but not appreciably larger than those on side of neck; the original tail is spade-like and lacks an acute attenuated extension at the tip (modified from Oliver *et al.* 2014).

All species in the *Diplodactylus conspicillatus* group, being the subgenus *Manwellisaurus* Wells and Wellington, 1989, can be separated from all other species within *Diplodactylus* Gray, 1832 by the following suite of characters: All or most supralabials are very small and almost granular, there is at most only one enlarged anterior (first) supralabial; terminal lamellae on fingers at most are only slightly wider than the digit; other prominent enlarged subdigital lamellae are absent; tail short, as wide or wider than the body, horizontally depressed with heterogeneous scalation, usually bearing large plate-like scales and/or conical tubercles arranged in transverse rows; and dorsal colouration is extremely variable, but never consisting of large clearly defined transverse bands or similarly arranged blotches (also modified from Oliver *et al.* 2014).

D. conspicillatus in life is depicted online at:

<https://www.inaturalist.org/observations/93393701> (at type locality)

and

<https://www.inaturalist.org/observations/2384424>

and

<https://www.inaturalist.org/observations/89312071>

D. amaleighheadsae sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/152681459>

and

<https://www.inaturalist.org/observations/149960679>

and

<https://www.inaturalist.org/observations/70922583>

D. eksteini sp. nov. in life is depicted online at:
<https://www.inaturalist.org/observations/67992452>
 and

<https://www.inaturalist.org/observations/150385784>

Distribution: *D. jackyhoserae* sp. nov. occurs only in the vicinity of Arnhem Land at the top end of the Northern Territory and immediately adjacent areas.

Etymology: *D. jackyhoserae* sp. nov. is named in honour of my daughter, Jacky Hoser, of Park Orchards, Victoria, Australia, born 19 May 2001 in recognition of her lifetime's services to wildlife conservation (more than 20 years), including actively exposing dishonesty and scams by fraudsters masquerading as wildlife conservationists and being unlawfully arrested by corrupt Victorian Police for doing so.

DIPLODACTYLUS (MANWELLISAURUS) MATTEOAE SP. NOV.

<https://www.zoobank.org/NomenclaturalActs/367E4C1D-3389-4F27-8A14-F959A73C756D>

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.125042 collected from Cunnamulla, south-west Queensland, Australia, Latitude -28.066 S., Longitude 145.683 E.

This government-owned facility allows access to its holdings.

Paratypes: Four preserved specimens at the Australian National Wildlife Collection, (Commonwealth Scientific and Industrial Research Organisation), Canberra, ACT, Australia, specimen numbers R05645, R05646, R05647 and R05648 all collected from Tarko, 25 km south-west of Eulo, south-west Queensland, Australia, Latitude -28.3 S., Longitude 144.8833 E.

Diagnosis: Until now, *Diplodactylus (Manwellisaurus) jackyhoserae* sp. nov. from the top end of the Northern Territory, *D. matteoae* sp. nov. from south-west Queensland, *D. amaleighheadsae* sp. nov. from south and south-west Australia and *D. eksteini* sp. nov. from the southern parts of the Pilbara in Western Australia, have all been treated as populations of *D. conspicillatus* Lucas and Frost, 1897, with a type locality of Charlotte Waters in the Northern Territory and herein confined to most parts of that "state", except for the tropical north and potentially nearby parts of north-east Western Australia, far north-west Queensland and potentially just south of the border with South Australia.

Oliver *et al.* (2014) flagged these candidate species as divergent lineages in their interpretation of *D. conspicillatus sensu stricto* and all are morphologically diagnosed and separated herein.

They also found each of the five preceding named species to have diverged from one another at least 2.5 MYA, confirming species-level divergences.

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

D. conspicillatus has a dorsum that consists of light cream or yellowish areas, reduced to very large spots in some specimens, that are often in the form of circular or ovoid shaped areas, often joining one another. Between these areas the darker areas, usually purplish brown are heavily peppered or spotted with the alternative light colour. Peppering of the lighter areas is either non-existent or minimal. Limbs are lightish in colour and any spotting or markings on the upper surfaces, if present, are generally dull or indistinct. The (original) tail (upper surface) has numerous well defined dark purplish brown spots of patches, scattered across the dorsal surface, with most of the tail being otherwise of the same light colour as seen in the body blotches. The iris is golden brown.

D. jackyhoserae sp. nov. is a generally darker animal than *D. conspicillatus*, being mainly reddish brown to brown above and with a dorsum that is punctuated by small yellowish white spots

only, which become smaller and brighter on the flanks. Upper surfaces of the limbs are barely lighter than the flanks, meaning they are dark and all have prominent small yellow spots. The white lines running along the upper labials from the snout and from snout to upper eye are especially prominent, versus only moderately so in *D. conspicillatus*. The (original) tail (upper surface) is a dark colour in line with that of most of the dorsum and this is closely punctuated by dull orange-yellow spotting, which is indistinct and slightly more dense at the centre than towards the edges. The iris is a reddish-brown or brown colour.

D. matteoae sp. nov. has a purplish-brown dorsum interspersed with dull orange spots, blotches or other markings, often including a narrow mid-vertebral stripe (sometimes broken) and running down most of the dorsum of the body. Limbs are nearly as dark as the body being a purplish colour, but yellow spotting is generally indistinct.

The white line running along the upper labials from the snout is thin and ill defined. The line running from snout to upper eye is broad, indistinct and yellow in colour.

The upper surface of the original tail is an indistinct combination of dark and light, in similar ratios, but not in any obvious pattern, although light predominates at the centre of the upper surface and the outer edges and dark elsewhere. There are also scattered tiny black dots on the upper surface of the tail. Iris is a golden colour.

D. amaleighheadsae sp. nov. has an upper surface similar to that of *D. conspicillatus*, but differs from that species in that the darker (purplish brown) areas are not peppered light as seen in *D. conspicillatus*. Upper surfaces of the limbs are either mainly dark (purplish) in colour or heavily marked with dark. The head is all dark, mainly dark purple brown or prominently marked dark purple brown in *D. amaleighheadsae* sp. nov. versus mainly light in *D. conspicillatus* and *D. eksteini* sp. nov.. As in *D. conspicillatus* the (original) tail (upper surface) of *D. amaleighheadsae* sp. nov. has numerous well defined dark purplish brown spots of patches, scattered across the dorsal surface, with most of the tail being otherwise of the same light colour as seen in the body blotches.

The obvious lines running from the snout along the upper labials or from snout to top of eye are thin, faded and heavily bordered with purple brown (between snout and eye) making those stripe/s most prominent.

Iris is a bluey-grey brown.

D. eksteini sp. nov. appears as a generally orangeish to orange-yellow lizard in contrast to the other four preceding species. The head is almost all light on the upper surface, with at most a tiny amount of black peppering or markings, usually randomly appearing on the upper surface. Likewise for the mainly light (original) tail which also lacks the dark spots of *D. conspicillatus* or *D. amaleighheadsae* sp. nov., or the alternative heavily darkened tails of *D. jackyhoserae* sp. nov. or *D. matteoae* sp. nov.. The upper surface of the body is mainly a lightish orange-brown, or yellow-beige to orange colour, with limited darker pigment in the form of peppering and not in the form of any distinct markings.

Upper surfaces of the limbs are of similar colour to the body and peppered with tiny black spots.

Iris is yellowish-grey.

The five preceding species are separated from all others in the subgenus *Manwellisaurus* Wells and Wellington, 1989 by the following suite of characters:

First supralabial is enlarged, contacting the ventral edge of nasal scale and there is a prominent, pale snout to eye stripe present; mid-dorsal scales are conspicuously larger than the dorsolateral scales; scales on the nape are granular, but not appreciably larger than those on side of neck; the original tail is spade-like and lacks an acute attenuated extension at the tip (modified from Oliver *et al.* 2014).

All species in the *Diplodactylus conspicillatus* group, being the subgenus *Manwellisaurus* Wells and Wellington, 1989, can be separated from all other species within *Diplodactylus* Gray, 1832 by the following suite of characters: All or most supralabials are very small and almost granular, there is at most only one enlarged anterior (first) supralabial; terminal lamellae on fingers at most are only slightly wider than the digit; other prominent enlarged subdigital lamellae are absent; tail short, as wide or wider than the body, horizontally depressed with heterogeneous scalation, usually bearing large plate-like scales and/or conical tubercles arranged in transverse rows; and dorsal colouration is extremely variable, but never consisting of large clearly defined transverse bands or similarly arranged blotches (also modified from Oliver *et al.* 2014).

D. conspicillatus in life is depicted online at:

<https://www.inaturalist.org/observations/93393701> (at type locality)

and

<https://www.inaturalist.org/observations/2384424>

and

<https://www.inaturalist.org/observations/89312071>

D. amaleighheadsae sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/152681459>

and

<https://www.inaturalist.org/observations/149960679>

and

<https://www.inaturalist.org/observations/70922583>

D. eksteini sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/67992452>

and

<https://www.inaturalist.org/observations/150385784>

Distribution: *D. matteoae* sp. nov. is presently only known to occur in the south-west division of Queensland and compared to other species in the complex, may be range-restricted.

While no conservation threats are known, this is by no means certain. Therefore, unless and until further populations are located, this taxon should be immediately listed as a vulnerable species.

Etymology: *D. matteoae* sp. nov. is named in honour of Catherine Matteo, of Hawthorn, Victoria, Australia, (more recently of Franskton and Mornington, Victoria, Australia) in recognition of her many contributions to herpetology in Australia.

DIPLODACTYLUS (MANWELLISAURUS)

AMALEIGHHEADSAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:6327E706-C66F-4555-80A9-8D120E884EF3

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R20884 collected from the Olympic Dam area, Roxby Downs, South Australia, Australia, Latitude -30.38 S., Longitude 136.88 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R45256 collected from Salt Creek Crossing, east of Lake Gairdner, South Australia, Australia, Latitude -31.5500 S., Longitude 136.3500 E.

Diagnosis: Until now, *Diplodactylus* (*Manwellisaurus*) *jackyhoserae* sp. nov. from the top end of the Northern Territory, *D. matteoae* sp. nov. from south-west Queensland, *D. amaleighheadsae* sp. nov. from south and south-west Australia and *D. eksteini* sp. nov. from the southern parts of the Pilbara in Western Australia, have all been treated as populations of *D. conspicillatus* Lucas and Frost, 1897, with a type locality of

Charlotte Waters in the Northern Territory and herein confined to most parts of that "state", except for the tropical north and potentially nearby parts of north-east Western Australia, far north-west Queensland and potentially just south of the border with South Australia.

Oliver *et al.* (2014) flagged these candidate species as divergent lineages in their interpretation of *D. conspicillatus sensu stricto* and all are morphologically diagnosed and separated herein.

They also found each of the five preceding named species to have diverged from one another at least 2.5 MYA, confirming species-level divergences.

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

D. conspicillatus has a dorsum that consists of light cream or yellowish areas, reduced to very large spots in some specimens, that are often in the form of circular or ovoid shaped areas, often joining one another. Between these areas the darker areas, usually purplish brown are heavily peppered or spotted with the alternative light colour. Peppering of the lighter areas is either non-existent or minimal. Limbs are lightish in colour and any spotting or markings on the upper surfaces, if present, are generally dull or indistinct. The (original) tail (upper surface) has numerous well defined dark purplish brown spots of patches, scattered across the dorsal surface, with most of the tail being otherwise of the same light colour as seen in the body blotches. The iris is golden brown.

D. jackyhoserae sp. nov. is a generally darker animal than *D. conspicillatus*, being mainly reddish brown to brown above and with a dorsum that is punctuated by small yellowish white spots only, which become smaller and brighter on the flanks. Upper surfaces of the limbs are barely lighter than the flanks, meaning they are dark and all have prominent small yellow spots. The white lines running along the upper labials from the snout and from snout to upper eye are especially prominent, versus only moderately so in *D. conspicillatus*. The (original) tail (upper surface) is a dark colour in line with that of most of the dorsum and this is closely punctuated by dull orange-yellow spotting, which is indistinct and slightly more dense at the centre than towards the edges. The iris is a reddish-brown or brown colour.

D. matteoae sp. nov. has a purplish-brown dorsum interspersed with dull orange spots, blotches or other markings, often including a narrow mid-vertebral stripe (sometimes broken) and running down most of the dorsum of the body. Limbs are nearly as dark as the body being a purplish colour, but yellow spotting is generally indistinct.

The white line running along the upper labials from the snout is thin and ill defined.

The line running from snout to upper eye is broad, indistinct and yellow in colour.

The upper surface of the original tail is an indistinct combination of dark and light, in similar ratios, but not in any obvious pattern, although light predominates at the centre of the upper surface and the outer edges and dark elsewhere. There are also scattered tiny black dots on the upper surface of the tail. Iris is a golden colour.

D. amaleighheadsae sp. nov. has an upper surface similar to that of *D. conspicillatus*, but differs from that species in that the darker (purplish brown) areas are not peppered light as seen in *D. conspicillatus*. Upper surfaces of the limbs are either mainly dark (purplish) in colour or heavily marked with dark. The head is all dark, mainly dark purple brown or prominently marked dark purple brown in *D. amaleighheadsae* sp. nov. versus mainly light in *D. conspicillatus* and *D. eksteini* sp. nov.. As in *D. conspicillatus* the (original) tail (upper surface) of *D. amaleighheadsae* sp. nov. has numerous well defined dark purplish brown spots of patches, scattered across the dorsal surface, with most of the tail being otherwise of the same light



colour as seen in the body blotches.

The obvious lines running from the snout along the upper labials or from snout to top of eye are thin, faded and heavily bordered with purple brown (between snout and eye) making those stripe/s most prominent.

Iris is a bluey-grey brown.

D. eksteini sp. nov. appears as a generally orangeish to orange-yellow lizard in contrast to the other four preceding species. The head is almost all light on the upper surface, with at most a tiny amount of black peppering or markings, usually randomly appearing on the upper surface. Likewise for the mainly light (original) tail which also lacks the dark spots of *D. conspicillatus* or *D. amaleighheadsae* sp. nov., or the alternative heavily darkened tails of *D. jackyhoserae* sp. nov. or *D. matteoae* sp. nov.. The upper surface of the body is mainly a lightish orange-brown, or yellow-beige to orange colour, with limited darker pigment in the form of peppering and not in the form of any distinct markings.

Upper surfaces of the limbs are of similar colour to the body and peppered with tiny black spots.

Iris is yellowish-grey.

The five preceding species are separated from all others in the subgenus *Manwellisaurus* Wells and Wellington, 1989 by the following suite of characters:

First supralabial is enlarged, contacting the ventral edge of nasal scale and there is a prominent, pale snout to eye stripe present; mid-dorsal scales are conspicuously larger than the dorsolateral scales; scales on the nape are granular, but not appreciably larger than those on side of neck; the original tail is spade-like and lacks an acute attenuated extension at the tip (modified from Oliver *et al.* 2014).

All species in the *Diplodactylus conspicillatus* group, being

the subgenus *Manwellisaurus* Wells and Wellington, 1989, can be separated from all other species within *Diplodactylus* Gray, 1832 by the following suite of characters: All or most supralabials are very small and almost granular, there is at most only one enlarged anterior (first) supralabial; terminal lamellae on fingers at most are only slightly wider than the digit; other prominent enlarged subdigital lamellae are absent; tail short, as wide or wider than the body, horizontally depressed with heterogeneous scalation, usually bearing large plate-like scales and/or conical tubercles arranged in transverse rows; and dorsal colouration is extremely variable, but never consisting of large clearly defined transverse bands or similarly arranged blotches (also modified from Oliver *et al.* 2014).

D. conspicillatus in life is depicted online at:

<https://www.inaturalist.org/observations/93393701> (at type locality)

and

<https://www.inaturalist.org/observations/2384424>

and

<https://www.inaturalist.org/observations/89312071>

D. amaleighheadsae sp. nov. in life is at the top of page 15 in this paper. Habitat for the same animal south of Coober Pedy in South Australia is depicted on top of page 14 in this paper. More specimens of *D. amaleighheadsae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/152681459>

and

<https://www.inaturalist.org/observations/149960679>

and

<https://www.inaturalist.org/observations/70922583>

D. eksteini sp. nov. in life is depicted online at:



<https://www.inaturalist.org/observations/67992452>
and

<https://www.inaturalist.org/observations/150385784>

Distribution: *D. amaleighheadsae* sp. nov. occurs throughout most arid parts of the interior of South Australia and likewise for the southern interior of Western Australia. Due to the wide distribution of the taxon, it is not regarded as being of any conservation significance, as in it is of "least concern".

Etymology: *D. amaleighheadsae* sp. nov. is named in honour of Amaleigh Heads, of Croydon, Victoria, Australia, in recognition of her contributions to wildlife conservation and education in Australia, working as part of the team at Reptile Parties®.

DIPLODACTYLUS (MANWELLISAURUS) EKSTEINI SP. NOV.

LSIDurn:lsid:zoobank.org:act:73CBB8C5-1AF6-483A-B1AD-0DC5C44CC6E3

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R157640 collected from Newman, Western Australia, Australia, Latitude -23.3097, S., Longitude 119.7569 E.

This government-owned facility allows access to its holdings.

Diagnosis: Until now, *Diplodactylus* (*Manwellisaurus*) *jackyhoserae* sp. nov. from the top end of the Northern Territory, *D. matteoae* sp. nov. from south-west Queensland, *D. amaleighheadsae* sp. nov. from south and south-west Australia and *D. eksteini* sp. nov. from the southern parts of the Pilbara in Western Australia, have all been treated as populations of *D. conspicillatus* Lucas and Frost, 1897, with a type locality of Charlotte Waters in the Northern Territory and herein confined to most parts of that "state", except for the tropical north and potentially nearby parts of north-east Western Australia, far

north-west Queensland and potentially just south of the border with South Australia.

Oliver *et al.* (2014) flagged these candidate species as divergent lineages in their interpretation of *D. conspicillatus sensu stricto* and all are morphologically diagnosed and separated herein.

They also found each of the five preceding named species to have diverged from one another at least 2.5 MYA, confirming species-level divergences.

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

D. conspicillatus has a dorsum that consists of light cream or yellowish areas, reduced to very large spots in some specimens, that are often in the form of circular or ovoid shaped areas, often joining one another. Between these areas the darker areas, usually purplish brown are heavily peppered or spotted with the alternative light colour. Peppering of the lighter areas is either non-existent or minimal. Limbs are lightish in colour and any spotting or markings on the upper surfaces, if present, are generally dull or indistinct. The (original) tail (upper surface) has numerous well defined dark purplish brown spots of patches, scattered across the dorsal surface, with most of the tail being otherwise of the same light colour as seen in the body blotches. The iris is golden brown.

D. jackyhoserae sp. nov. is a generally darker animal than *D. conspicillatus*, being mainly reddish brown to brown above and with a dorsum that is punctuated by small yellowish white spots only, which become smaller and brighter on the flanks. Upper surfaces of the limbs are barely lighter than the flanks, meaning they are dark and all have prominent small yellow spots. The white lines running along the upper labials from the snout and from snout to upper eye are especially prominent, versus only moderately so in *D. conspicillatus*. The (original) tail (upper

surface) is a dark colour in line with that of most of the dorsum and this is closely punctuated by dull orange-yellow spotting, which is indistinct and slightly more dense at the centre than towards the edges. The iris is a reddish-brown or brown colour.

D. matteoae sp. nov. has a purplish-brown dorsum interspersed with dull orange spots, blotches or other markings, often including a narrow mid-vertebral stripe (sometimes broken) and running down most of the dorsum of the body. Limbs are nearly as dark as the body being a purplish colour, but yellow spotting is generally indistinct.

The white line running along the upper labials from the snout is thin and ill defined.

The line running from snout to upper eye is broad, indistinct and yellow in colour.

The upper surface of the original tail is an indistinct combination of dark and light, in similar ratios, but not in any obvious pattern, although light predominates at the centre of the upper surface and the outer edges and dark elsewhere. There are also scattered tiny black dots on the upper surface of the tail. Iris is a golden colour.

D. amaleighheadsae sp. nov. has an upper surface similar to that of *D. conspicillatus*, but differs from that species in that the darker (purplish brown) areas are not peppered light as seen in *D. conspicillatus*. Upper surfaces of the limbs are either mainly dark (purplish) in colour or heavily marked with dark. The head is all dark, mainly dark purple brown or prominently marked dark purple brown in *D. amaleighheadsae* sp. nov. versus mainly light in *D. conspicillatus* and *D. eksteini* sp. nov.. As in *D. conspicillatus* the (original) tail (upper surface) of *D. amaleighheadsae* sp. nov. has numerous well defined dark purplish brown spots of patches, scattered across the dorsal surface, with most of the tail being otherwise of the same light colour as seen in the body blotches.

The obvious lines running from the snout along the upper labials or from snout to top of eye are thin, faded and heavily bordered with purple brown (between snout and eye) making those stripe/s most prominent.

Iris is a bluey-grey brown.

D. eksteini sp. nov. appears as a generally orangeish to orange-yellow lizard in contrast to the other four preceding species. The head is almost all light on the upper surface, with at most a tiny amount of black peppering or markings, usually randomly appearing on the upper surface. Likewise for the mainly light (original) tail which also lacks the dark spots of *D. conspicillatus* or *D. amaleighheadsae* sp. nov., or the alternative heavily darkened tails of *D. jackyhoserae* sp. nov. or *D. matteoae* sp. nov.. The upper surface of the body is mainly a lightish orange-brown, or yellow-beige to orange colour, with limited darker pigment in the form of peppering and not in the form of any distinct markings.

Upper surfaces of the limbs are of similar colour to the body and peppered with tiny black spots.

Iris is yellowish-grey.

The five preceding species are separated from all others in the subgenus *Manwellisaurus* Wells and Wellington, 1989 by the following suite of characters:

First supralabial is enlarged, contacting the ventral edge of nasal scale and there is a prominent, pale snout to eye stripe present; mid-dorsal scales are conspicuously larger than the dorsolateral scales; scales on the nape are granular, but not appreciably larger than those on side of neck; the original tail is spade-like and lacks an acute attenuated extension at the tip (modified from Oliver *et al.* 2014).

All species in the *Diplodactylus conspicillatus* group, being the subgenus *Manwellisaurus* Wells and Wellington, 1989, can be separated from all other species within *Diplodactylus* Gray, 1832 by the following suite of characters: All or most

supralabials are very small and almost granular, there is at most only one enlarged anterior (first) supralabial; terminal lamellae on fingers at most are only slightly wider than the digit; other prominent enlarged subdigital lamellae are absent; tail short, as wide or wider than the body, horizontally depressed with heterogeneous scalation, usually bearing large plate-like scales and/or conical tubercles arranged in transverse rows; and dorsal colouration is extremely variable, but never consisting of large clearly defined transverse bands or similarly arranged blotches (also modified from Oliver *et al.* 2014).

D. conspicillatus in life is depicted online at:

<https://www.inaturalist.org/observations/93393701> (at type locality)

and

<https://www.inaturalist.org/observations/2384424>

and

<https://www.inaturalist.org/observations/89312071>

D. amaleighheadsae sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/152681459>

and

<https://www.inaturalist.org/observations/149960679>

and

<https://www.inaturalist.org/observations/70922583>

D. eksteini sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/67992452>

and

<https://www.inaturalist.org/observations/150385784>

Distribution: *D. eksteini* sp. nov. occurs in the southern Pilbara Region of Western Australia.

Due to the remoteness of where the taxon occurs and the little human activity in the region outside of extraction mining, it is not regarded as being of any conservation significance, as in it is of "least concern".

Etymology: *D. eksteini* sp. nov. is named in honour of Robert Michael Ekstein, originally of Sydney, New South Wales, Australia and now based in the Goldfields in Western Australia, south-west Australia in recognition of his contributions to herpetology and the geological sciences.

DIPLODACTYLUS (MANWELLISAURUS) DORISIOI SP. NOV.

LSIDurn: [lsid:zoobank.org:act:49D807A8-FE93-4501-B473-47676D5ACBDE](https://zoobank.org/act:49D807A8-FE93-4501-B473-47676D5ACBDE)

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R49077 collected from 1.7 km north east of Candradecka Dam, South Australia, Australia, Latitude -27.2011 S., Longitude 140.8783 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R49081 collected from 1.7 km north east of Candradecka Dam, South Australia, Australia, Latitude -27.2011 S., Longitude 140.8783 E.

Diagnosis: Until now, *Diplodactylus dorisioi* sp. nov. from the Channel Country region of south-west Queensland and far north-east South Australia has been treated as an eastern outlier population of *D. laevis* (Sternfeld, 1924), type locality of Hermannsburg Mission, Northern Territory, *sensu* Oliver *et al.* (2014), herein confined to central Australia or as *D. conspicillatus* Lucas and Frost, 1897 *sensu* Cogger *et al.* (1983). Likewise for *D. altmani* sp. nov. being found throughout most parts of arid Western Australia, except for most of the far west coast, far south and the Kimberley district, also until now being treated as *D. laevis sensu* Oliver *et al.* (2014).

However with a divergence in excess of 2 MYA from the

centralian type population (Oliver *et al.* 2014), allopatric distribution (Oliver *et al.* 2014) and morphological differences defined herein, it is appropriate that both western and eastern populations of putative *D. laevis* as defined by Oliver *et al.* (2014) are now formally named as two new species that are easily separated from one another (as a trio).

D. dorisioi sp. nov. and *D. altmani* sp. nov. are readily separated from *D. laevis* by dorsal colouration.

The patterning of *D. laevis* is light brown or creamish with a series of irregular dark brown peppering, and tiny to small darker spots that tend to form a vague reticulum. On some specimens, the flanks may also have tiny yellow spots and on the rest these spots are present, but faded to be indistinct.

By contrast *D. dorisioi* sp. nov. instead has a dorsum with scattered darker spots of medium size that do not form a reticulum and in addition to this the dorsal surface also has numerous smallish to medium sized white spots, which are also on the flanks (as are the darker spots). These darker spots on the dorsum and flanks are not circular or square, but instead are of an irregular shape.

The mainly light (original) tail of *D. laevis* only has darker spots or markings of irregular shape on a mainly light background colour, versus a generally somewhat darker brown tail in *D. dorisioi* sp. nov. which in addition, also has both darker spots or markings of irregular shape as well as obvious white spots, also tending to be irregular in shape, as well.

Iris of *D. laevis* is brown, with a slight bluish-grey tinge, versus similar, but without the bluish-grey tinge in *D. dorisioi* sp. nov..

D. altmani sp. nov. is similar in most respects to *D. laevis* is described above, but separated from that species by the fact that the dark peppering, spots or markings on the dorsum are more coalesced and form larger semi-distinct spots or incomplete bars on the upper surface (meaning a less dense dorsal patterning). These dark areas are also themselves heavily infused light.

The dorsal colour is commonly, though not always, strongly infused orange or reddish.

There are no tiny yellow spots on the flanks or faded white equivalents (as seen in *D. laevis*).

On the original tail, the dark irregularly shaped spots on the tail are large, versus small in *D. laevis*, this perhaps being the easiest way to tell both species apart at a glance (as seen in the photos cited below). Eye colour is orange-brown.

Both *D. dorisioi* sp. nov. and *D. laevis* are separated from all other species in the subgenus *Manwellisaurus* Wells and Wellington, 1989 by the following suite of characters:

First supralabial is enlarged, contacting the ventral edge of nasal scale; there is a prominent, pale stripe present from tip of snout to upper eye; mid-dorsal scales are conspicuously larger than the dorsolateral scales; scales on the nape and top of head are plate-like and appreciably larger than those on side of neck; the original tail terminates with an acute attenuated extension at the tip (modified from Oliver *et al.* 2014).

All species in the *Diplodactylus conspicillatus* group, being the subgenus *Manwellisaurus* Wells and Wellington, 1989, can be separated from all other species within *Diplodactylus* Gray, 1832 by the following suite of characters: All or most supralabials are very small and almost granular, there is at most only one enlarged anterior (first) supralabial; terminal lamellae on fingers at most are only slightly wider than the digit; other prominent enlarged subdigital lamellae are absent; tail short, as wide or wider than the body, horizontally depressed with heterogeneous scalation, usually bearing large plate-like scales and/or conical tubercles arranged in transverse rows; and dorsal colouration is extremely variable, but never consisting of large clearly defined transverse bands or similarly arranged blotches (also modified from Oliver *et al.* 2014).

D. dorisioi sp. nov. is depicted in life in Wilson and Swan (2021) on page 99, second from top (as *D. laevis*) and online at: https://www.flickr.com/photos/zimny_anders/50384750836/ *D. laevis* is depicted in life is depicted in Oliver *et al.* (2014), Fig 7, photo D, and also online at:

<https://www.flickr.com/photos/moloch05/45461501064/> and

<https://www.flickr.com/photos/reptileshots/51425351163/>

D. altmani sp. nov. is depicted in life online at:

https://www.flickr.com/photos/zimny_anders/41064892085/ and

<https://www.flickr.com/photos/reptileshots/10643453883/> and

<https://www.flickr.com/photos/euprepiosaur/7208623824/> and

<https://www.flickr.com/photos/171250498@N08/52496618213/>

Distribution: *D. dorisioi* sp. nov. is only known from an isolated pocket near the Channel Country of South-west Queensland and north-west South Australia.

It presumably became isolated from the main centralian population of *D. laevis* about 2 MYA due to the effects of competing species within the genus in the intervening areas of north-eastern South Australia.

D. laevis occurs principally around the Macdonnell Ranges district of Central Australia and slightly north and also across to immediately adjacent parts of central Western Australia.

Throughout most of Western Australia excluding the far south, tropics and far west coast one finds *D. altmani* sp. nov., also formerly treated as *D. laevis*.

Etymology: *D. dorisioi* sp. nov. is named in honour of Morrie Dorisio, of Bulleen, Victoria, Australia in recognition for his many contributions to herpetology in Australia as well as the ongoing battle against government-sponsored crime and corruption in Australia.

DIPLODACTYLUS (MANWELLISAURUS) ALTMANI SP. NOV.

LSIDurn:lsid:zoobank.org:act:9090799C-0BCF-4B9E-9B0F-1424383422CF

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R108856 collected from Mount Spinifex, Western Australia, Australia, Latitude -20.783333 S., Longitude 118.116667 E.

This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R102048 collected from 10 km north of Strelley Homestead, Western Australia, Latitude -20.366667 S., Longitude 119.016667 E., and specimen number R87017 collected from 9 km north of Strelley Homestead, Western Australia, Latitude -20.35 S., Longitude 119.033333 E.

Diagnosis: Until now, *Diplodactylus dorisioi* sp. nov. from the Channel Country region of south-west Queensland and far north-east South Australia has been treated as an eastern outlier population of *D. laevis* (Sternfeld, 1924), type locality of Hermannsberg Mission, Northern Territory, *sensu* Oliver *et al.* (2014), herein confined to central Australia or as *D. conspicillatus* Lucas and Frost, 1897 *sensu* Cogger *et al.* (1983).

Likewise for *D. altmani* sp. nov. being found throughout most parts of arid Western Australia, except for most of the far west coast, far south and the Kimberley district, also until now being treated as *D. laevis sensu* Oliver *et al.* (2014).

However with a divergence in excess of 2 MYA from the centralian type population (Oliver *et al.* 2014), allopatric distribution (Oliver *et al.* 2014) and morphological differences defined herein, it is appropriate that both western and eastern populations of putative *D. laevis* as defined by Oliver *et al.*

(2014) are now formally named as two new species that are easily separated from one another (as a trio).

D. dorisioi sp. nov. and *D. altmani* sp. nov. are readily separated from *D. laevis* by dorsal colouration.

The patterning of *D. laevis* is light brown or creamish with a series of irregular dark brown peppering, and tiny to small darker spots that tend to form a vague reticulum. On some specimens, the flanks may also have tiny yellow spots and on the rest these spots are present, but faded to be indistinct.

By contrast *D. dorisioi* sp. nov. instead has a dorsum with scattered darker spots of medium size that do not form a reticulum and in addition to this the dorsal surface also has numerous smallish to medium sized white spots, which are also on the flanks (as are the darker spots). These darker spots on the dorsum and flanks are not circular or square, but instead are of an irregular shape.

The mainly light (original) tail of *D. laevis* only has darker spots or markings of irregular shape on a mainly light background colour, versus a generally somewhat darker brown tail in *D. dorisioi* sp. nov. which in addition, also has both darker spots or markings of irregular shape as well as obvious white spots, also tending to be irregular in shape, as well.

Iris of *D. laevis* is brown, with a slight bluish-grey tinge, versus similar, but without the bluish-grey tinge in *D. dorisioi* sp. nov..

D. altmani sp. nov. is similar in most respects to *D. laevis* is described above, but separated from that species by the fact that the dark peppering, spots or markings on the dorsum are more coalesced and form larger semi-distinct spots or incomplete bars on the upper surface (meaning a less dense dorsal patterning). These dark areas are also themselves heavily infused light.

The dorsal colour is commonly, though not always, strongly infused orange or reddish.

There are no tiny yellow spots on the flanks or faded white equivalents (as seen in *D. laevis*).

On the original tail, the dark irregularly shaped spots on the tail are large, versus small in *D. laevis*, this perhaps being the easiest way to tell both species apart at a glance (as seen in the photos cited below). Eye colour is orange-brown.

Both *D. dorisioi* sp. nov. and *D. laevis* are separated from all other species in the subgenus *Manwellisaurus* Wells and Wellington, 1989 by the following suite of characters:

First supralabial is enlarged, contacting the ventral edge of nasal scale; there is a prominent, pale stripe present from tip of snout to upper eye; mid-dorsal scales are conspicuously larger than the dorsolateral scales; scales on the nape and top of head are plate-like and appreciably larger than those on side of neck; the original tail terminates with an acute attenuated extension at the tip (modified from Oliver *et al.* 2014).

All species in the *Diplodactylus conspicillatus* group, being the subgenus *Manwellisaurus* Wells and Wellington, 1989, can be separated from all other species within *Diplodactylus* Gray, 1832 by the following suite of characters: All or most supralabials are very small and almost granular, there is at most only one enlarged anterior (first) supralabial; terminal lamellae on fingers at most are only slightly wider than the digit; other prominent enlarged subdigital lamellae are absent; tail short, as wide or wider than the body, horizontally depressed with heterogeneous scalation, usually bearing large plate-like scales and/or conical tubercles arranged in transverse rows; and dorsal colouration is extremely variable, but never consisting of large clearly defined transverse bands or similarly arranged blotches (also modified from Oliver *et al.* 2014).

D. dorisioi sp. nov. is depicted in life in Wilson and Swan (2021) on page 99, second from top (as *D. laevis*) and online at: https://www.flickr.com/photos/zimny_anders/50384750836/ *D. laevis* is depicted in life is depicted in Oliver *et al.* (2014), Fig

7, photo D, and also online at:

<https://www.flickr.com/photos/moloch05/45461501064/> and

<https://www.flickr.com/photos/reptileshots/51425351163/>

D. altmani sp. nov. is depicted in life online at:

https://www.flickr.com/photos/zimny_anders/41064892085/ and

<https://www.flickr.com/photos/reptileshots/10643453883/> and

<https://www.flickr.com/photos/euprepiosaur/7208623824/> and

<https://www.flickr.com/photos/171250498@N08/52496618213/>

Distribution: *D. altmani* sp. nov. occurs throughout most of Western Australia excluding the far south, tropics and far west coast, south of the Pilbara.

D. dorisioi sp. nov. is only known from an isolated pocket near the Channel Country of South-west Queensland and north-west South Australia.

D. laevis occurs principally around the Macdonnell Ranges district of Central Australia and slightly north and also across to immediately adjacent hillier and elevated parts of central Western Australia.

Etymology: *D. altmani* sp. nov. is named in honour of David Altman originally of Glasgow, Scotland, UK, but having spent most of his life in Sydney, New South Wales, Australia and now of Chirside Park, Victoria, Australia in recognition of his many contributions to herpetology in the 1980's.

DIPLODACTYLUS (DIPLODACTYLUS) SWEDOSHORUM SP. NOV.

LSIDurn:lsid:zoobank.org:act:944A562D-13DB-40B9-9F1D-1F199C4144D7

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.102445 collected from near Maud Hill, just North of Coral Bay, Western Australia, Australia, Latitude -23.133 S., Longitude 113.833 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.101815 and R.101816 both collected from near Maud Hill, just North of Coral Bay, Western Australia, Australia, Latitude -23.133 S., Longitude 113.833 E.

Diagnosis: Until now, *Diplodactylus swedoshorum* sp. nov. has been treated as a northern population of *D. ornatus* Gray, 1845 with a type locality from near Champion Bay, Western Australia, Australia and otherwise known as the southern form of the putative species.

D. swedoshorum from north of the Victoria Plateau (Western Australia), a well-known biogeographical break, occurs in the general coastal region from Womerangee Hill in the south (Latitude -27.008333 S., Longitude 113.908333 E.) along the coastal fringe northwards to near Maud Hill, just North of Coral Bay, Western Australia, Australia, (Latitude -23.133 S., Longitude 113.833 E.) and has until now been treated as a divergent northern form of *D. ornatus sensu* Edwards *et al.* (2012).

However the phylogeny of Oliver *et al.* (2007a) demonstrates species-level divergence and so the morphologically distinguishable, allopatric population in the north is formally named herein as a new species.

D. swedoshorum sp. nov. is readily separated from *D. ornatus* by the relatively wide mid-dorsal line, (in most specimens) versus a relatively narrow one in *D. ornatus*, 8-9 triangular extrusions of the mid dorsal line along each side on the body, versus only 4-6 in *D. ornatus*, expansion of size and number of white spots and/or upwards intrusions on the mid-flanks, being

prominent in *D. swedoshorum sp. nov.*, versus not so in *D. ornatus* where the spotting is indistinct and only consists of tiny irregularly shaped white spots in most specimens or if enlarged at all, there are only 4-6 such spots on either side of the body, versus 8-9 in *D. swedoshorum sp. nov.* The number of spots or intrusions corresponds with the triangular extrusions of the mid-dorsal line in both species. The lighter markings on the dorsum of *D. swedoshorum sp. nov.* are yellowish-brown, versus grey brown in *D. ornatus*.

On the original tail, there is a similar expansion of light areas in *D. swedoshorum sp. nov.* as compared to that seen in *D. ornatus*. Most obvious is that the sides of the tail of *D. swedoshorum sp. nov.* has large and obvious yellowish-white spots, blobs, or similar markings versus only tiny and indistinct spots or peppering in *D. ornatus*.

Both *D. swedoshorum sp. nov.* and *D. ornatus* are separated from all other species within the genus *Diplodactylus* Gray, 1832 *sensu lato* (*sensu* Hoser (2017b) = Cogger 2014) by the following unique combination of characters:

Dorsum has a continuous vertebral stripe and a somewhat dark ground colour on the back away from the vertebral line and also on the upper flanks; lower flanks with tiny to large spots or blotches, generally 4-9 in number (exact number depending on the species), corresponding with the triangular extrusions from the mid-dorsal line (again the exact number depending on the species).

There are no obvious large enclosed pale diamonds or circles on the dorsal surface. Belly uniformly whitish. Mid dorsal scales not enlarged or plate-like, being usually only slightly larger than the ventrals; 23-38 interorbitals; length of (original) tail is more than 50% of the snout-vent length; mental lanceolate and is equal in size or slightly larger than the first infralabial; anterior nasal is absent; labials are noticeably larger than the adjacent loreals; dorsal eyelid is well differentiated; postocular band present but does not meet behind the head as the light of the upper surface of the back of the head continues to form the bold mid-dorsal line; tail is round in cross-section; snout is rounded in shape (modified from Cogger 2014 and the preceding part of the description).

D. swedoshorum sp. nov. in life is depicted in Cogger (2014) on page 300 at bottom and online at:

<https://www.inaturalist.org/observations/352151>

and

<https://www.inaturalist.org/observations/172912926>

and

<https://www.inaturalist.org/observations/172912212>

D. ornatus is depicted in life in Wilson and Swan (2021) on page 101 in the middle image and online at:

<https://www.inaturalist.org/observations/145264585>

and

<https://www.inaturalist.org/observations/84489724>

Distribution: *D. swedoshorum sp. nov.* occurs from north of the Victoria Plateau (Western Australia) in the general coastal region from Womerangee Hill in the south (Latitude -27.008333 S., Longitude 113.908333 E.) along the coastal fringe northwards to near Maud Hill, just North of Coral Bay, Western Australia, Australia, (Latitude -23.133 S., Longitude 113.833 E.).

D. ornatus is herein restricted and confined to the general coastal region of Western Australia between Mount Curious, Western Australia in the north Latitude -27.466667 S., Longitude 114.366667 E. and south to Jurien Bay, Western Australia, Latitude -30.257086 S., Longitude 115.05919748 E.

Both species appear to be common within their range and are not of conservation concern in the short term at least, but the relevant comments of Hoser (1989, 1991, 1993, 1996, 2007, 2019a, 2019b) apply.

Etymology: *D. swedoshorum sp. nov.* is named in honour of Greg and Tori Swedosh of Warrandyte, Victoria, Australia in recognition of their services and sacrifices to herpetology in Australia, refugee victims of imperialist wars in third world nations and to the arts and entertainment.

DIPLODACTYLUS (DIPLODACTYLUS) AUSTENI SP. NOV.

LSIDurn:lsid:zoobank.org:act:41C63FAE-7DB7-405B-92F3-A2123AC3C772

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R26495 collected from 11 km north east of the Border Village, (far west) South Australia, Australia, Latitude -31.5917 S., Longitude 129.1222 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R25382 collected from the Ifould campsite number 2, located 62 km north of Colona Homestead, Latitude -30.93 S., Longitude 132.08 E.

Diagnosis: The two species *Diplodactylus austeni sp. nov.* and *D. bulliardi sp. nov.* have both been treated as divergent populations of *D. calcicolus* Hutchinson, Doughty and Oliver, 2009 by all Australian herpetologists since the original description, even though all three species are genetically divergent (Oliver *et al.* 2007a), allopatric and separated by known biogeographical barriers and very distinctive from one another morphologically, and so I have had no hesitation at all in formally naming the two previously unnamed forms in this paper.

The three species, *D. calcicolus* with a type locality of the Hambidge Conservation Park, Eyre Peninsula, South Australia, Australia, (Latitude 33.260 S., Longitude 136.0230 E.) is herein confined to the near coastal region bound by Venus Bay on the Eyre Peninsula, South Australia in the west and most of the lower Eyre Peninsula, east of there and potentially also a few isolated locations in the east of this land form area; *D. austeni sp. nov.*, found across the centre of the Great Australian Bight again along the coast and near coastal areas, from about St. Peter Island South Australia, in the east, (Latitude -32.25 S., Longitude 133.62 E.) and west to at least Eucla, Western Australia, (Latitude -31.6751 S., Longitude 128.8835° E.) and probably up to 500 km further west and *D. bulliardi sp. nov.* from at least Tower Peak, Western Australia (Latitude -33.4447 S., Longitude 123.4750 E.) in the east, along the coast and near coastal areas west to about Narrogin, Western Australia (Latitude -32.9310 S., Longitude 117.1782 E.), are all readily separated from one another by colouration.

The three species are separated from one another by the following suites of characters as seen in adult specimens:

D. calcicolus is a greyish brown coloured gecko with a series of 5-7 pairs of irregularly shaped blotches, beige in colour, running down either side of the middle of the back of the body, on the dorsal surface, the blotches often joined along the midline or merged to form a series of large blotches in some specimens. In tandem with these are small, irregularly-shaped patches or spot-like markings, also beige in colour, surrounded by the otherwise darker greyish-brown of the dorsum. At the border between the dark and light markings on the dorsum, there is a slight, blackish darkening at the edges of the darker pigment. Markings on the visible surfaces of the original tail consist of 5-7 small light beige blotches (sometimes as pairs), but rarely if ever joined to form a line, on a darker but yellowish-grey, background that is lighter in colour than that of the dorsum on the body. It is not at all boldly marked.

Upper surfaces of the limbs are neither dark or light, being in-between and consist of a peppering of the colours of the other upper surfaces of the lizard.

The iris is brownish-orange.

D. austeni sp. nov. has an orange-brown background colour on the dorsum, with a series of 8-9 sets of medium sized blotches of irregular shape running across the midline of the back. These blotches are often joined. Separate to these and in tandem with them are a series of well-defined medium-sized blotches along the mid flanks which are generally circular in shape, although close inspection reveals somewhat irregular edges.

The blotches on both dorsum and flanks are a distinctive light grey to light yellow in colour, usually with a slight pinkish hue.

The darker orange-brown background colour on the dorsum does not become darker or change in intensity towards the edges where it meets the lighter blotches.

The visible surfaces of the original tail are boldly marked with the light grey circles or blotches, of the same colour as the markings that are seen on the dorsum or flanks, sometimes joined to form a bold line along the midline of the upper surface, but otherwise the tail background colour is more orangeish and lighter in colour than the dorsum.

Upper surfaces of the limbs in this lizard are boldly marked with light grey (usually), being the same light grey colour as seen in the dorsum and flank markings, these markings being in the form of large spots. In some specimens these spots may be yellow in colour. The background colour of the upper surfaces of the limbs is orange or orange-brown in colour.

The iris is a bluey-grey colour.

D. bulliardi sp. nov. has anywhere from 3-9 sets of blotches running down the midline, invariably as blotches either directly across the midline, or alternating across the midline, but with each blotch, all or mainly to one side of it, this entire configuration sometimes consisting of merged spots that create a well-formed midline down the back.

The background of the dorsum and upper flank is a dark dusky black in colour, being peppered throughout with either light grey or brown, while the lighter colour of the blotches is usually a rich brown in colour, tending towards grey in some specimens.

The peppering of the blackish colour is strongest on the upper flank / sides of the dorsum in the area between the semi-distinct spotting or blotches along the side flank and the markings on the dorsum proper. Side spots or blotches are of similar colour to those on the dorsum, but both less intense (usually lighter in colour and tending to be whitish) and with ill defined outer edges.

D. bulliardi sp. nov. is the only species of the trio in which beyond the outer edge of the lighter flank markings the pigment is darkened as compared to that further from the blotches.

The visible surfaces of the original tail are boldly marked with more-or-less alternating dark and light blotches, the lighter being more prominent on the upper surfaces, while the darker is more prominent on the sides.

Upper surfaces of the limbs are neither dark or light, being in-between and consist of a peppering of the colours of the other upper surfaces of the lizard.

The iris is orange-brown at the centre, becoming grey at the outer edges.

In *D. calcicolus*, the upper surface of the head is mainly lighter in colour, but sometimes with tiny dark specks, this same marking breaking up on the upper surface of the neck, but otherwise being the same as the lighter blotches that follow down the midline of the back.

In *D. austeni* sp. nov., most of the upper surface of the head is darker, with the areas of light colour invariably only being seen in patches slightly anterior to the eye, posterior to it and as blotches around the back of the head to the top of the neck. This is the same light colour of the lighter blotches that run down the upper surface of the body.

In *D. bullardi* sp. nov., the upper surface of the head is mainly lighter in colour, but invariably punctuated with large blackish

spots or blotches, this same light marking either not breaking up on the neck, or only just so, before being the first of series of prominent blotches or line of joined blotches that follow down the midline of the back.

The three preceding species, being *D. calcicolus*, *D. austeni* sp. nov. and *D. bullardi* sp. nov. are separated from all other species within *Diplodactylus* Gray, 1832 *sensu lato* by the following suite of characters:

A highly broken and spotted pattern on dorsum and flanks, with a row of spots or blotches of some form on the flanks in tandem with those along the mid-dorsal line, which in turn is either a row of broken spots or blotches, or if merged, either irregularly shaped or with an outer boundary that reflects the merging of blotches. Venter is uniformly whitish in colour. Mid-dorsal scales are not enlarged or plate-like, being only slightly larger than the ventrals; 10-13 supralabials; 8-13 infralabials; 23-38 interorbitals; 2-5 postnasals; tail is more than 50% of the snout-vent length; post occipital band is either absent, or if present is broken behind the occipital region; lighter markings on the body are not boldly bordered.

Mental is lanceolate, not noticeably pointed, and is equal in size or slightly larger than the first infralabial; anterior nasal is absent; labials are noticeably larger than the adjacent loreals; dorsal eyelid is well differentiated (modified and amended from Cogger 2014, Hutchinson *et al.* 2009 and the above).

D. calcicolus in life is depicted online at:

<https://www.inaturalist.org/observations/83975502>

and

<https://www.inaturalist.org/observations/83975360>

D. austeni sp. nov. is depicted in life in Wilson and Swan (2021) on page 93, second image from top and online at:

<https://www.inaturalist.org/observations/146109755>

and

<https://www.inaturalist.org/observations/102165566>

and

<https://www.inaturalist.org/observations/105174190>

D. bulliardi sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/39117727>

and

<https://www.inaturalist.org/observations/154347475>

and

<https://www.inaturalist.org/observations/91497699>

and

<https://www.inaturalist.org/observations/169915946>

and

<https://www.inaturalist.org/observations/165258224>

Distribution: *D. austeni* sp. nov. is found across the centre of the Great Australian Bight along the coast and near coastal areas, from about St. Peter Island South Australia, in the east, (Latitude -32.25 S., Longitude 133.62 E.) and west to at least Eucla, Western Australia, (Latitude -31.6751 S., Longitude 128.8835° E.) and probably up to 500 km further west.

D. calcicolus with a type locality of the Hambidge Conservation Park, Eyre Peninsula, South Australia, Australia, (Latitude 33.260 S., Longitude 136.0230 E.) is herein confined to the near coastal region bound by Venus Bay on the Eyre Peninsula, South Australia in the west and most of the lower Eyre Peninsula, east of there and potentially also a few isolated locations in the east of this land form area.

The related species, *D. bulliardi* sp. nov. occurs from at least Tower Peak, Western Australia (Latitude -33.4447 S., Longitude 123.4750 E.) in the east, along the coast and near coastal areas west to about Narrogin, Western Australia (Latitude -32.9310 S., Longitude 117.1782 E.).

How far this taxon extends east of Tower Peak is not certain.

Etymology: *D. austeni* sp. nov. is named in honour of David Austen from Blackburn South / Forrest Hill, Victoria, Australia in recognition of his services to herpetology in the 1990's.

DIPLODACTYLUS (DIPLODACTYLUS) BULLIARDI SP. NOV.
LSIDDurn:lsid:zoobank.org:act:0ED75D05-B68E-4E97-BA41-C3FC6EF06CB4

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R22923 collected at Lort River, Coomalbidgup, Western Australia, Australia, Latitude -33.63 S., Longitude 121.30 E.

This government-owned facility allows access to its holdings.

Paratypes: 1/ A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R91064 collected from 7 km south-south east of Toolbrunup Peak, south-west Western Australia, Australia, Latitude -34.466667 S., Longitude 118.00 E.

2/ A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R91115 collected from 3 km south-south east of Wedge Hill, south-west Western Australia, Australia, Latitude -34.433333 S., Longitude 118.2 E.

3/ A preserved adult female specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R173099 collected at Stirling Range National Park south-west Western Australia, Australia, Latitude -34.341944 S., Longitude 118.11 E.

Diagnosis: The two species *Diplodactylus austeni* sp. nov. and *D. bulliardi* sp. nov. have both been treated as divergent populations of *D. calcicolus* Hutchinson, Doughty and Oliver, 2009 by all Australian herpetologists since the original description, even though all three species are genetically divergent (Oliver *et al.* 2007a), allopatric and separated by known biogeographical barriers and very distinctive from one another morphologically, and so I have had no hesitation at all in formally naming the two unnamed forms in this paper.

The three species, *D. calcicolus* with a type locality of the Hambidge Conservation Park, Eyre Peninsula, South Australia, Australia, (Latitude 33.260 S., Longitude 136.0230 E.) is herein confined to the near coastal region bound by Venus Bay on the Eyre Peninsula, South Australia in the west and most of the lower Eyre Peninsula, east of there and potentially also a few isolated locations in the east of this land form area; *D. austeni* sp. nov., found across the centre of the Great Australian Bight again along the coast and near coastal areas, from about St. Peter Island South Australia, in the east, (Latitude -32.25 S., Longitude 133.62 E.) and west to at least Eucla, Western Australia, (Latitude -31.6751 S., Longitude 128.8835° E.) and probably up to 500 km further west and *D. bulliardi* sp. nov. from at least Tower Peak, Western Australia (Latitude -33.4447 S., Longitude 123.4750 E.) in the east, along the coast and near coastal areas west to about Narrogin, Western Australia (Latitude -32.9310 S., Longitude 117.1782 E.), are all readily separated from one another by colouration.

The three species are separated from one another by the following suites of characters as seen in adult specimens:

D. calcicolus is a greyish brown coloured gecko with a series of 5-7 pairs of irregularly shaped blotches, beige in colour, running down either side of the middle of the back of the body, on the dorsal surface, the blotches often joined along the midline or merged to form a series of large blotches in some specimens. In tandem with these are small, irregularly-shaped patches or spot-like markings, also beige in colour, surrounded by the otherwise darker greyish-brown of the dorsum. At the border between the dark and light markings on the dorsum, there is a slight, blackish darkening at the edges of the darker pigment. Markings on the visible surfaces of the original tail consist of 5-7 small light beige blotches (sometimes as pairs), but rarely

if ever joined to form a line, on a darker but yellowish-grey, background that is lighter in colour than that of the dorsum on the body. It is not at all boldly marked.

Upper surfaces of the limbs are neither dark or light, being in-between and consist of a peppering of the colours of the other upper surfaces of the lizard.

The iris is brownish-orange.

D. austeni sp. nov. has an orange-brown background colour on the dorsum, with a series of 8-9 sets of medium sized blotches of irregular shape running across the midline of the back. These blotches are often joined. Separate to these and in tandem with them are a series of well-defined medium-sized blotches along the mid flanks which are generally circular in shape, although close inspection reveals somewhat irregular edges.

The blotches on both dorsum and flanks are a distinctive light grey to light yellow in colour, usually with a slight pinkish hue.

The darker orange-brown background colour on the dorsum does not become darker or change in intensity towards the edges where it meets the lighter blotches.

The visible surfaces of the original tail are boldly marked with the light grey circles or blotches, of the same colour as the markings that are seen on the dorsum or flanks, sometimes joined to form a bold line along the midline of the upper surface, but otherwise the tail background colour is more orangeish and lighter in colour than the dorsum.

Upper surfaces of the limbs in this lizard are boldly marked with light grey (usually), being the same light grey colour as seen in the dorsum and flank markings, these markings being in the form of large spots. In some specimens these spots may be yellow in colour. The background colour of the upper surfaces of the limbs is orange or orange-brown in colour.

The iris is a bluey-grey colour.

D. bulliardi sp. nov. has anywhere from 3-9 sets of blotches running down the midline, invariably as blotches either directly across the midline, or alternating across the midline, but with each blotch, all or mainly to one side of it, this entire configuration sometimes consisting of merged spots that create a well-formed midline down the back.

The background of the dorsum and upper flank is a dark dusky black in colour, being peppered throughout with either light grey or brown, while the lighter colour of the blotches is usually a rich brown in colour, tending towards grey in some specimens.

The peppering of the blackish colour is strongest on the upper flank / sides of the dorsum in the area between the semi-distinct spotting or blotches along the side flank and the markings on the dorsum proper. Side spots or blotches are of similar colour to those on the dorsum, but both less intense (usually lighter in colour and tending to be whitish) and with ill defined outer edges.

D. bulliardi sp. nov. is the only species of the trio in which beyond the outer edge of the lighter flank markings the pigment is darkened as compared to that further from the blotches.

The visible surfaces of the original tail are boldly marked with more-or-less alternating dark and light blotches, the lighter being more prominent on the upper surfaces, while the darker is more prominent on the sides.

Upper surfaces of the limbs are neither dark or light, being in-between and consist of a peppering of the colours of the other upper surfaces of the lizard.

The iris is orange-brown at the centre, becoming grey at the outer edges.

In *D. calcicolus*, the upper surface of the head is mainly lighter in colour, but sometimes with tiny dark specks, this same marking breaking up on the upper surface of the neck, but otherwise being the same as the lighter blotches that follow down the midline of the back.

In *D. austeni* sp. nov., most of the upper surface of the head

is darker, with the areas of light colour invariably only being seen in patches slightly anterior to the eye, posterior to it and as blotches around the back of the head to the top of the neck. This is the same light colour of the lighter blotches that run down the upper surface of the body.

In *D. bullardi sp. nov.*, the upper surface of the head is mainly lighter in colour, but invariably punctuated with large blackish spots or blotches, this same light marking either not breaking up on the neck, or only just so, before being the first of series of prominent blotches or line of joined blotches that follow down the midline of the back.

The three preceding species, being *D. calcicolus*, *D. austeni sp. nov.* and *D. bullardi sp. nov.* are separated from all other species within *Diplodactylus* Gray, 1832 *sensu lato* by the following suite of characters:

A highly broken and spotted pattern on dorsum and flanks, with a row of spots or blotches of some form on the flanks in tandem with those along the mid-dorsal line, which in turn is either a row of broken spots or blotches, or if merged, either irregularly shaped or with an outer boundary that reflects the merging of blotches. Venter is uniformly whitish in colour. Mid-dorsal scales are not enlarged or plate-like, being only slightly larger than the ventrals; 10-13 supralabials; 8-13 infralabials; 23-38 interorbitals; 2-5 postnasals; tail is more than 50% of the snout-vent length; post occipital band is either absent, or if present is broken behind the occipital region; lighter markings on the body are not boldly bordered.

Mental is lanceolate, not noticeably pointed, and is equal in size or slightly larger than the first infralabial; anterior nasal is absent; labials are noticeably larger than the adjacent loreals; dorsal eyelid is well differentiated (modified and amended from Cogger 2014, Hutchinson *et al.* 2009 and the above).

D. calcicolus in life is depicted online at:

<https://www.inaturalist.org/observations/83975502>
and

<https://www.inaturalist.org/observations/83975360>

D. austeni sp. nov. is depicted in life in Wilson and Swan (2021) on page 93, second image from top and online at:

<https://www.inaturalist.org/observations/146109755>
and

<https://www.inaturalist.org/observations/102165566>
and

<https://www.inaturalist.org/observations/105174190>

D. bullardi sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/39117727>
and

<https://www.inaturalist.org/observations/154347475>
and

<https://www.inaturalist.org/observations/91497699>
and

<https://www.inaturalist.org/observations/169915946>
and

<https://www.inaturalist.org/observations/165258224>

Distribution: *D. bullardi sp. nov.* occurs from at least Tower Peak, Western Australia (Latitude -33.4447 S., Longitude 123.4750 E.) in the east, along the coast and near coastal areas west to about Narrogin, Western Australia (Latitude -32.9310 S., Longitude 117.1782 E.).

How far this taxon extends east of Tower Peak is not certain.

The related species, *D. austeni sp. nov.* is found across the centre of the Great Australian Bight along the coast and near coastal areas, from about St. Peter Island South Australia, in the east, (Latitude -32.25 S., Longitude 133.62 E.) and west to at least Eucla, Western Australia, (Latitude -31.6751 S., Longitude 128.8835° E.) and probably up to 500 km further

west.

D. calcicolus with a type locality of the Hambidge Conservation Park, Eyre Peninsula, South Australia, Australia, (Latitude 33.260 S., Longitude 136.0230 E.) is herein confined to the near coastal region bound by Venus Bay on the Eyre Peninsula, South Australia in the west and most of the lower Eyre Peninsula, east of there and potentially also a few isolated locations in the east of this land form area.

Etymology: *D. bullardi sp. nov.* is named in honour of Kaj-erik Bulliard of Esperance, Western Australia, previously of Perth, Western Australia, and before that, of Sydney, NSW, Australia in recognition of contributions to herpetology in Australia spanning some decades.

DIPLODACTYLUS (DIPLODACTYLUS) WIRU WONGIORUM SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:70F39D55-796A-4346-BA79-4C380DB27700

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R99604 collected from Queen Victoria Spring, Western Australia, Australia, -30.233333 S., Longitude 123.683333 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R99607 collected from Queen Victoria Spring, Western Australia, Australia, -30.233333 S., Longitude 123.683333 E.

Diagnosis: *Diplodactylus wiru wongiorum subsp. nov.* from Western Australia, west of the Nullarbor Plain is readily separated from the nominate form of *D. wiru* Hutchinson, Doughty and Oliver, 2009, from north and east of the Nullarbor Plain in South Australia (type locality of 15 km south of Mount Finke, South Australia) by 1/ Having well defined light spots on the flank of even intensity in two distinct rows, versus only one row of dominant spots on either flank in *D. wiru*, 2/ The fact that on the original tail, of *D. wiru wongiorum subsp. nov.* the light markings down the midline are heavily bordered with black versus either not so, or only thinly in *D. wiru*, and 3/ On either side of the original the tail of *D. wiru wongiorum subsp. nov.* are 3-4 prominent light yellowish spots, either absent or faded in *D. wiru*.

Hutchinson *et al.* (2009) diagnosed and separated *D. wiru* from other species in the genus *Diplodactylus* Gray, 1832 as follows: "A moderate-sized member of the *D. vittatus* complex, showing relatively little variation compared with other members of the complex. Well-developed, almost straight-edged to zigzag dorsal stripe

always present, broadly bordered by black; light dorsal colour extends on to occiput as a pale cap with somewhat darker centre, but no well-defined bifurcate pattern; flanks dark grey with one or more rows of well-defined, dark-edged circular spots."

Oliver *et al.* (2017) in Fig. 3 found a divergence of over 5 MYA in populations of the two subspecies.

D. wiru wongiorum subsp. nov. is depicted in life in Brown (2014) on page 375 second from bottom on right and online at: <https://www.inaturalist.org/observations/139093568>

D. wiru of the type form from South Australia is depicted in life online at:

<https://www.inaturalist.org/observations/146313369>
and

<https://www.inaturalist.org/observations/146109961>

Distribution: *D. wiru wongiorum subsp. nov.* is only definitively known from the type locality, although there are unconfirmed reports of it being found up to 100 km east of there.

D. wiru of the type form (type subspecies) is found from just east of the South Australian / Western Australian border, within

South Australia to the north of the Nullarbor Plain, extending east in a more or less-diagonal direction in a more-or-less linear range to the western edge of the Eyre Peninsula, also in South Australia.

Etymology: *D. wiru wongiorum subsp. nov.* is named in recognition of the Wongi people, being the original native Australian inhabitants of the region (predating the British invasion) that the subspecies occurs.

DIPLODACTYLUS (DIPLODACTYLUS) OXYI SP. NOV.

LSIDurn:lsid:zoobank.org:act:6E1BAC74-F683-48D1-BBAF-11C507998454

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J59785 collected at the Dipperu National Park, North-east Queensland, Australia, Latitude -21.898611 S., Longitude 148.733611 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J59810 collected at the Dipperu National Park (via Nebo), North-east Queensland, Australia, Latitude -21.95 S., Longitude 148.7 E.

Diagnosis: Until now, *Diplodactylus vittatus* Gray, 1832, *sensu* Oliver *et al.* (2007a) (= Cogger 2014), has been treated as a wide-ranging taxon throughout most of the eastern third of Australia, excluding the hottest, driest areas, the tropics and the colder parts of southern Victoria (as well as not being found in Tasmania), with the distribution including the far south-east of South Australia.

There are in fact eight species, seven formally named for the first time in this paper and all are separated from one another as follows;

The eight species are within two main clades (*sensu* Oliver *et al.* 2017a), five in the so-called eastern clade, including the type form of *D. vittatus*, and three in the so called western clade, occupying most of the range previously outlined, including most of Queensland, the western division of New South Wales, generally away from the Great Dividing Range and into northern Victoria and South Australia.

While there is significant variation between species, the two clades are usually characterised as follows:

The eastern clade from far south-east Queensland, along the coast and nearby uplands to northern Victoria is characterised by a mid dorsal line that is composed primarily of a series of filled-in beige coloured U-shaped blotches, joined by the flat side to a mid dorsal line of the same lighter colour, that is usually thin, extremely thin or at times absent. Exceptional to this is the Sydney basin taxon *D. richardwellsi sp. nov.* which often has an expanded mid-dorsal line that tends to obscure the series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line and in which case the tips of the U-shapes become sharp edged triangle points.

The Central Victorian form, *D. dalegibbonsi sp. nov.*, is similar in most respects to *D. richardwellsi sp. nov.*, in colour and pattern (as just outlined), but is readily separated from that form by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present, at least one row with distinctively smaller spots) and dark peppering on a light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi sp. nov.*

When the lighter coloured mid-dorsal line is moderate to wide in the eastern clade species (*D. richardwellsi sp. nov.*, and *D. dalegibbonsi sp. nov.*), it invariably has black marks, spots, blotches or peppering, which is not seen in the western clade species.

The western clade species always has a thick mid-dorsal line, either straight or wavy, but never composed of an obvious

series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, and without any darkening, dark specks or blotched pigment within the midline, this effectively being diagnostic of the clade and the three species within the clade. Within the so-called western clade of species, they are separated from one another and eastern clade species by the following unique character combinations:

D. oxyi sp. nov. occurs in most parts of Queensland, except for the Granite Belt in the high altitude south-east (an area that is in this context, that which is bound by Bolivia Hill (NSW) in the south, Inglewood (Qld) in the west and Fenton/Toowoomba (Qld) in the north) and the very far south-west of the State, or the tropics and far north-west. It is readily separated from the other species in the complex by the presence of a thick mid dorsal line combined with either no white spots or flecks on the otherwise dark coloured flanks, or if any spots are present, they are tiny, widely scattered and very few in number and definitely not configured into obvious lines.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. crotalusei sp. nov. occurs in north-west New South Wales, generally west of the New England region. The exact boundaries between this species and *D. oxyi sp. nov.* to the north and *D. sloppi sp. nov.* to the south-west is not certain, but in terms of the first appears to be just north of the Queensland border and in terms of the second, somewhere just north of Dubbo, New South Wales.

Like *D. oxyi sp. nov.*, *D. crotalusei* has a a thick mid dorsal line, although the most extremely thick mid dorsal lines are seen in specimens of *D. oxyi sp. nov.*. Unlike *D. oxyi sp. nov.*, *D. crotalusei sp. nov.* has a series of 9-13 well defined small yellow spots running along the upper flank. Any other spots on the flanks, if present are tiny, ill defined and barely discernable.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. sloppi sp. nov. from southern inland New South Wales and nearby parts of northern Victoria and south-east South Australia is readily separated from all other species in the complex by its generally faded colour pattern. The contrast between dark and light is reduced, making the over-all appearance more dull.

Further separating this species from all others in the complex are that the mid-dorsal line is reduced in thickness to become moderate to thin, with the outer edge becoming jagged, but still not obviously composed of joined dots as seen in forms from the eastern clade of species.

In terms of the jagged edge, there are 12 or more jagged edges on the body (either side of the line), versus less than ten (at most), if present, in either *D. crotalusei sp. nov.* or *D. oxyi sp. nov.*. In *D. sloppi sp. nov.* the line of white spots on the upper flank has the spots enlarged in size and also reduced in colour intensity, giving the lizard overall are far more sandy colouration as compared to others in the complex.

The mid dorsal line continues onto the original tail and in many specimens is continuous to the end, although breaks are also seen in some specimens.

Consistent in this species is that the light on the tail dorsum is not boldly marked black on the edges, but is instead bordered by black peppering or marbling.

Dark of the sides of the dorsum and upper flank is greyish in colour.

Within the so-called eastern clade of five species, they are separated from one another and western clade species by the following unique character combinations:

D. roswellingtoni sp. nov. occurs in the Granite Belt of far south-east Queensland and immediately adjacent New South Wales including an area bound by Bolivia Hill, New South Wales / Stanthorpe, Queensland in the South, Fenton, Queensland in the North and Inglewood, Queensland in the west, encompassing an area of more than 100 km east to west and 200 km north to south.

It is readily separated from the other species in the complex by the effective removal of the mid-dorsal line, which is either tiny, vestigial, usually broken and otherwise not visible or indistinct. On the dorsum there are an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, these being either paired or alternating, or partially both. When they are exactly paired, the back takes on an appearance of having a series of blotches running down the spine. In addition to the preceding, on the dark coloured flanks are a large number (usually over 20) of quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Light colouration on the original tail is always in the form of spots and blotches and never runs continually down the tail in a line. It is bold in colour contrast.

D. vittatus Gray, 1832 of the type form occurs in the New England region of New South Wales, generally south of a line from Grafton, through Glen Innes and Inverell, and slightly west of these highlands, and generally north of the Hunter Valley in mid (coastal) central New South Wales.

It is similar in many respects to *D. roswellingtoni* sp. nov., but differs in that there is a narrow, but bold mid dorsal line that sits between the U-shaped blotches on either side and covers the flat side of these shapes. As a result the extensions of the midline are knob shaped, rather than triangular. On the dark coloured flanks are usually less than 15 quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Unlike *D. roswellingtoni* sp. nov., these flank spots are faded in intensity.

Light colouration on the original tail is always in the form of spots and blotches, but these are reduced and they never run continually down the tail in a line, instead being widely broken. The contrast between dark and light on the tail is reduced, with the bordering of the light with black, being strongly reduced and only partial.

D. richardwellsi sp. nov. occurs in the Sydney Basin, including the region bound by the Hunter Valley in the north, Royal National Park in the South, Blue Mountains in the west, but then extending north-west from there to hillier areas, at least as far west as Bathurst (all in New South Wales).

D. richardwellsi sp. nov. is separated from the other species in the complex by having an expanded midline, which varies between allowing the joined blotches to remain discernable to so wide that only the points extrude.

Diagnostic of this taxon and separating it from other species in the western clade of species that have a wide mid dorsal line is that in *D. richardwellsi* sp. nov. there are black spots, peppering or smudging within the mid dorsal line. That is not seen in the other species.

The flanks have about 30 evenly scattered tiny spots on either side and there are some scattered spots on the sides of the neck. This species has a very strong brown tinge throughout, including the mid-dorsal line which is brownish, as opposed to yellowish or beige in the other species. The flanks are also brownish grey or at least with a brown wash within the grey. The (original) tail is mainly brown and only has widely scattered yellow spots or blotches on the dorsum. That is, there is no continuous line running down it. The grey on the tail (mainly anteriorly) is mainly in the form of peppering over the brown.

D. fiacummingae sp. nov. appears to be restricted to the region immediately surrounding Australia's capital city, Canberra, ACT and south to about Lake Hume on the NSW and Victorian

border. Dorsally it appears very similar at a glance to *D. roswellingtoni* sp. nov..

D. fiacummingae sp. nov. has a very thin, but generally continuous line running down the midline. However this line is so thin as to not affect the general view that the dorsum consists of a series of even, uneven or partially even blotches running down the midline. While the appearance in *D. roswellingtoni* sp. nov. is of paired blotches running down the back, in *D. fiacummingae* sp. nov. the appearance is invariably of a wavy line or similar running down the back, or alternatively a series of joined or separated diamonds running down the spine (see below).

In *D. fiacummingae* sp. nov. the blotches extending from the spine are not so much U-shaped as V-shaped and often elongated and/or black etched at the tips, also changing the overall appearance of this species as opposed to the morphologically similar species in this complex.

The flanks of *D. fiacummingae* sp. nov. have medium to large yellow spots that are reasonably distinct and sometimes black etched, but not organised into any obvious line. The original tail has a series of alternating thin, wide (elongated cross-ways) blotches across the top, widely broken by areas of darker pigment, that is considerably lighter than that of the flanks. The flanks themselves are dark brown at the top, rapidly becoming light and yellow near the bottom.

D. dalegibbonsi sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., but is readily separated from that species by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present (rarely and only it seems, in specimens from north of Sydney harbour and near the coast), at least one row with distinctively smaller spots) and dark peppering on the light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov..

When the lighter coloured mid-dorsal line is moderate in width in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov. only), it invariably has black marks, spots, blotches or peppering within it, which is not seen in the western clade species, where the colouration of the mid-dorsal line is always immaculate.

The eight preceding species are separated from all other species within *Diplodactylus sensu lato*, sensu Hoser (2017) (= sensu Cogger, 2014), by the following combination of characters:

There is a prominent pale yellowish-white vertebral stripe or series of blotches (usually joined), starting from the back of the relatively uniformly coloured head, running down the midline of the body to the tail; the dorsum consists of a mid vertebral line or similar, of light colour (yellowish or white, rarely brownish) against a dark grey or grey brown background that extends to the flanks; there are usually at least some white or yellow spots on the flanks that are usually, but not always of similar size and may be arranged in lines or apparently scattered randomly; they are not dark edged, or if so, very faintly; venter is white, finely peppered dark brown. The flanks are greyish, usually all over, but at least near the upper surface of the dorsum.

Postocular band is present but it does not form an occipital band, because a distinct light line runs from the back of the head onto the midline of the body, usually onto the body, or in the alternative at least as far as the back of the neck (in *D. roswellingtoni* sp. nov.).

First supralabial slightly to markedly higher than the second; mid dorsal scales are not enlarged or plate-like and usually only slightly larger than the ventrals; interorbitals 23-38; mental scale is lanceolate, longer than wide; anterior nasal absent; labials are noticeably larger than the adjacent loreals; dorsal

and flank scales homogenous, small and barely larger than the ventrals; rostral is partly divided by a median groove above; 6-10 supralabials, being larger than the adjacent loreals; nostril contacts rostral; no pre-anal pores; 2-10 post-anal tubercles.

Digits long, slightly flattened. Underneath they have a relatively large pair of subdigital lamellae, followed by at least two series of enlarged scales, reducing in size proximally. Dorsal eyelid is well differentiated; body moderate in shape; snout rounded in shape. Tail is more than half the snout-vent length (about 60%) and more-or-less round in cross-section, being very slightly flattened and fat in shape; average snout-vent length is about 50 mm. Karyotype $2n = 38$, all acrocentric (King 1977).

D. oxyi sp. in life is depicted in Wilson and Swan (2021) on page 105, second from top and online at:

<https://www.inaturalist.org/observations/151014864>

and

<https://www.inaturalist.org/observations/150038176>

and

<https://www.inaturalist.org/observations/70184683>

and

https://www.flickr.com/photos/colonel_007/49090903473/

and

https://www.flickr.com/photos/zimny_anders/50217210566/

and

<https://www.flickr.com/photos/angusmcnab/8202463922/>

D. crotalusei sp. nov. is depicted in life in Cogger (2014) on page 305 bottom and online at:

<https://www.inaturalist.org/observations/56495320>

and

<https://www.inaturalist.org/observations/143176773>

D. sloppi sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/38053718>

and

<https://www.inaturalist.org/observations/150042635>

and

<https://www.inaturalist.org/observations/54980263>

and

<https://www.flickr.com/photos/stephenmahony/9398616550/>

D. rosswellingtoni sp. nov. is depicted in life in Wilson and Swan (2021) on page 105 at top and online at:

<https://www.flickr.com/photos/ryanfrancis/23689942519/>

and

<https://www.flickr.com/photos/ryanfrancis/23689962879/>

and

<https://www.flickr.com/photos/96574168@N02/16380936988/>

and

<https://www.inaturalist.org/observations/17546852>

D. vittatus of the type form is depicted online at:

<https://www.inaturalist.org/observations/152216245>

and

<https://www.inaturalist.org/observations/66496125>

D. richardwellsi sp. nov. is depicted in life in Hoser (1989) on page 70 bottom and online at:

<https://www.flickr.com/photos/ryanfrancis/40589220952/>

and

<https://www.inaturalist.org/observations/9052985>

and

<https://www.inaturalist.org/observations/21904112>

and

<https://www.inaturalist.org/observations/57809875>

D. fiacummingae sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/21547907>

and

<https://www.inaturalist.org/observations/124179429>

and

<https://www.inaturalist.org/observations/17736608>

and

<https://www.inaturalist.org/observations/17962040>

and

<https://www.inaturalist.org/observations/169550906>

and

<https://www.flickr.com/photos/189037423@N06/51127189544/>

and

<https://www.flickr.com/photos/189037423@N06/51168187379/>

D. dalegibbonsi sp. nov. is depicted in life online at:

<https://www.flickr.com/photos/68921296@N06/14541766696/>

and

<https://www.inaturalist.org/observations/42302215>

and

<https://www.inaturalist.org/observations/74142230>

and

<https://www.flickr.com/photos/23031163@N03/14629994784/>

Distribution: *D. oxyi* sp. nov. occurs in most parts of Queensland, Australia, except for the Granite Belt in the high altitude south-east, including nearby relatively elevated areas (Fenton in the North and Inglewood in the west) and the very far south-west of the State. *D. oxyi* sp. nov. does not occur in the tropical parts and extremely dry western parts of Queensland either.

Etymology: *D. oxyi* sp. nov. is named in honour of a Great Dane dog, named *Oxyuranus* ("Oxy" for short), who protected our research facility for more than 8 years in a lifetime of loyal service before dying from heart disease.

DIPLODACTYLUS CROTALUSEI SP. NOV.

LSIDurn:lsid:zoobank.org:act:AD6615D9-A01C-4EE7-B1F7-0E7DCAEDD039

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.152148 collected from Wallaby Flats at the Warrumbungle National Park, New South Wales, Australia, Latitude -31.29388 S., Longitude 149.00944 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.13282 collected from Coonamble, New South Wales, Australia, Latitude -30.95 S., Longitude 148.4 E.

Diagnosis: Until now, *Diplodactylus vittatus* Gray, 1832, *sensu* Oliver *et al.* (2007a) (= Cogger 2014), has been treated as a wide-ranging taxon throughout most of the eastern third of Australia, excluding the hottest, driest areas, the tropics and the colder parts of southern Victoria (as well as not in Tasmania), with the distribution including the far south-east of South Australia.

There are in fact eight species, seven formally named for the first time in this paper and all are separated from one another as follows:

The eight species are within two main clades (*sensu* Oliver *et al.* 2017a), five in the so-called eastern clade, including the type form of *D. vittatus*, and three in the so called western clade, occupying most of the range previously outlined, including most of Queensland, the western division of New South Wales and into northern Victoria and South Australia.

While there is significant variation between species, the two clades are usually characterised as follows:

The eastern clade from far south-east Queensland, along the coast and nearby uplands to northern Victoria is characterised by a mid dorsal line that is composed primarily of a series

of filled-in beige coloured U-shaped blotches, joined by the flat side to a mid dorsal line of the same lighter colour, that is usually thin, extremely thin or at times absent. Exceptional to this is the Sydney basin taxon *D. richardwellsi* sp. nov. which often has an expanded mid-dorsal line that tends to obscure the series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line and in which case the tips of the U-shapes become sharp edged triangle points. The Central Victorian form, *D. dalegibbonsi* sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., in colour, but is readily separated from that form by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present, at least one row with distinctively smaller spots) and dark peppering on a light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov.

When the lighter coloured mid-dorsal line is moderate to wide in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov.), it invariably has black marks, spots, blotches or peppering, which is not seen in the western clade species.

The western clade species always has a thick mid-dorsal line, either straight or wavy, but never composed of an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, and without any darkening, dark specks or blotched pigment within the midline, this effectively being diagnostic of the clade and the three species within the clade.

Within the so-called western clade of species, they are separated from one another and eastern clade species by the following unique character combinations:

D. oxyi sp. nov. occurs in most parts of Queensland, except for the Granite Belt in the high altitude south-east (an area that is in this context, that which is bound by Bolivia Hill (NSW) in the south, Inglewood (Qld) in the west and Fenton/Toowoomba (Qld) in the north) and the very far south-west of the State, or the tropics and far north-west. It is readily separated from the other species in the complex by the presence of a thick mid dorsal line combined with either no white spots or flecks on the otherwise dark coloured flanks, or if any spots are present, they are tiny, widely scattered and very few in number and definitely not configured into obvious lines.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. crotalusei sp. nov. occurs in north-west New South Wales, generally west of the New England region. The exact boundaries between this species and *D. oxyi* sp. nov. to the north and *D. sloppi* sp. nov. to the south-west is not certain, but in terms of the first appears to be just north of the Queensland border and in terms of the second, somewhere just north of Dubbo, New South Wales.

Like *D. oxyi* sp. nov., *D. crotalusei* has a thick mid dorsal line, although the most extremely thick mid dorsal lines are seen in specimens of *D. oxyi* sp. nov.. Unlike *D. oxyi* sp. nov., *D. crotalusei* sp. nov. has a series of 9-13 well defined small yellow spots running along the upper flank. Any other spots on the flanks, if present are tiny, ill defined and barely discernable.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. sloppi sp. nov. from southern inland New South Wales and nearby parts of northern Victoria and south-east South Australia is readily separated from all other species in the complex by its generally faded colour pattern. The contrast between dark and

light is reduced, making the over-all appearance more dull.

Further separating this species from all others in the complex are that the mid-dorsal line is reduced in thickness to become moderate to thin, with the outer edge becoming jagged, but still not obviously composed of joined dots as seen in forms from the eastern clade of species.

In terms of the jagged edge, there are 12 or more jagged edges on the body (either side of the line), versus less than ten (at most), if present, in either *D. crotalusei* sp. nov. or *D. oxyi* sp. nov.. In *D. sloppi* sp. nov. the line of white spots on the upper flank has the spots enlarged in size and also reduced in colour intensity, giving the lizard overall are far more sandy colouration as compared to others in the complex.

The mid dorsal line continues onto the original tail and in many specimens is continuous to the end, although breaks are also seen in some specimens.

Consistent in this species is that the light on the tail dorsum is not boldly marked black on the edges, but is instead bordered by black peppering or marbling.

Dark of the sides of the dorsum and upper flank is greyish in colour.

Within the so-called eastern clade of five species, they are separated from one another and western clade species by the following unique character combinations:

D. roswellingtoni sp. nov. occurs in the Granite Belt of far south-east Queensland and immediately adjacent New South Wales including an area bound by Bolivia Hill, New South Wales / Stanthorpe, Queensland in the South, Fenton, Queensland in the North and Inglewood, Queensland in the west, encompassing an area of more than 100 km east to west and 200 km north to south.

It is readily separated from the other species in the complex by the effective removal of the mid-dorsal line, which is either tiny, vestigial, usually broken and otherwise not visible or indistinct.

On the dorsum there are an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, these being either paired or alternating, or partially both. When they are exactly paired, the back takes on an appearance of having a series of blotches running down the spine. In addition to the preceding, on the dark coloured flanks are a large number (usually over 20) of quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Light colouration on the original tail is always in the form of spots and blotches and never runs continually down the tail in a line. It is bold in colour contrast.

D. vittatus Gray, 1832 of the type form occurs in the New England region of New South Wales, generally south of a line from Grafton, through Glen Innes and Inverell, and slightly west of these highlands, and generally north of the Hunter Valley in mid (coastal) central New South Wales.

It is similar in many respects to *D. roswellingtoni* sp. nov., but differs in that there is a narrow, but bold mid dorsal line that sits between the U-shaped blotches on either side and covers the flat side of these shapes. As a result the extensions of the midline are knob shaped, rather than triangular. On the dark coloured flanks are usually less than 15 quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Unlike *D. roswellingtoni* sp. nov., these flank spots are faded in intensity.

Light colouration on the original tail is always in the form of spots and blotches, but these are reduced and they never run continually down the tail in a line, instead being widely broken. The contrast between dark and light on the tail is reduced, with the bordering of the light with black, being strongly reduced and only partial.

D. richardwellsi sp. nov. occurs in the Sydney Basin, including the region bound by the Hunter Valley in the north, Royal

National Park in the South, Blue Mountains in the west, but then extending north-west from there to hillier areas, at least as far west as Bathurst (all in New South Wales).

D. richardwellsi sp. nov. is separated from the other species in the complex by having an expanded midline, which varies between allowing the joined blotches to remain discernable to so wide that only the points extrude.

Diagnostic of this taxon and separating it from other species in the western clade of species that have a wide mid dorsal line is that in *D. richardwellsi* sp. nov. there are black spots, peppering or smudging within the mid dorsal line. That is not seen in the other species.

The flanks have about 30 evenly scattered tiny spots on either side and there are some scattered spots on the sides of the neck. This species has a very strong brown tinge throughout, including the mid-dorsal line which is brownish, as opposed to yellowish or beige in the other species. The flanks are also brownish grey or at least with a brown wash within the grey. The (original) tail is mainly brown and only has widely scattered yellow spots or blotches on the dorsum. That is, there is no continuous line running down it. The grey on the tail (mainly anteriorly) is mainly in the form of peppering over the brown.

D. fiacummingae sp. nov. appears to be restricted to the region immediately surrounding Australia's capital city, Canberra, ACT and south to about Lake Hume on the NSW and Victorian border. Dorsally it appears very similar at a glance to *D. rosswellingtoni* sp. nov..

D. fiacummingae sp. nov. has a very thin, but generally continuous line running down the midline. However this line is so thin as to not affect the general view that the dorsum consists of a series of even, uneven or partially even blotches running down the midline. While the appearance in *D. rosswellingtoni* sp. nov. is of paired blotches running down the back, in *D. fiacummingae* sp. nov. the appearance is invariably of a wavy line or similar running down the back, or alternatively a series of joined or separated diamonds running down the spine (see below).

In *D. fiacummingae* sp. nov. the blotches extending from the spine are not so much U-shaped as V-shaped and often elongated and/or black etched at the tips, also changing the overall appearance of this species as opposed to the morphologically similar species in this complex.

The flanks of *D. fiacummingae* sp. nov. have medium to large yellow spots that are reasonably distinct and sometimes black etched, but not organised into any obvious line. The original tail has a series of alternating thin, wide (elongated cross-ways) blotches across the top, widely broken by areas of darker pigment, that is considerably lighter than that of the flanks. The flanks themselves are dark brown at the top, rapidly becoming light and yellow near the bottom.

D. dalegibbonsi sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., but is readily separated from that species by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present (rarely and only it seems, in specimens from north of Sydney harbour and near the coast), at least one row with distinctively smaller spots) and dark peppering on the light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov..

When the lighter coloured mid-dorsal line is moderate in width in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov. only), it invariably has black marks, spots, blotches or peppering within it, which is not seen in the western clade species, where the colouration of the mid-dorsal line is always immaculate.

The eight preceding species are separated from all other

species within *Diplodactylus sensu lato, sensu Hoser* (2017) (= *sensu* Cogger, 2014), by the following combination of characters:

There is a prominent pale yellowish-white vertebral stripe or series of blotches (usually joined), starting from the back of the relatively uniformly coloured head, running down the midline of the body to the tail; the dorsum consists of a mid vertebral line or similar, of light colour (yellowish or white, rarely brownish) against a dark grey or grey brown background that extends to the flanks; there are usually at least some white or yellow spots on the flanks that are usually, but not always of similar size and may be arranged in lines or apparently scattered randomly; they are not dark edged, or if so, very faintly; venter is white, finely peppered dark brown. The flanks are greyish, usually all over, but at least near the upper surface of the dorsum.

Postocular band is present but it does not form an occipital band, because a distinct light line runs from the back of the head onto the midline of the body, usually onto the body, or in the alternative at least as far as the back of the neck (in *D. rosswellingtoni* sp. nov.).

First supralabial slightly to markedly higher than the second; mid dorsal scales are not enlarged or plate-like and usually only slightly larger than the ventrals; interorbitals 23-38; mental scale is lanceolate, longer than wide; anterior nasal absent; labials are noticeably larger than the adjacent loreals; dorsal and flank scales homogenous, small and barely larger than the ventrals; rostral is partly divided by a median groove above; 6-10 supralabials, being larger than the adjacent loreals; nostril contacts rostral; no pre-anal pores; 2-10 post-anal tubercles.

Digits long, slightly flattened. Underneath they have a relatively large pair of subdigital lamellae, followed by at least two series of enlarged scales, reducing in size proximally. Dorsal eyelid is well differentiated; body moderate in shape; snout rounded in shape. Tail is more than half the snout-vent length (about 60%) and more-or-less round in cross-section, being very slightly flattened and fat in shape; average snout-vent length is about 50 mm. Karyotype $2n = 38$, all acrocentric (King 1977).

D. oxyi sp. in life is depicted in Wilson and Swan (2021) on page 105, second from top and online at:

<https://www.inaturalist.org/observations/151014864>

and

<https://www.inaturalist.org/observations/150038176>

and

<https://www.inaturalist.org/observations/70184683>

and

https://www.flickr.com/photos/colonel_007/49090903473/

and

https://www.flickr.com/photos/zimny_anders/50217210566/

and

<https://www.flickr.com/photos/angusmcnab/8202463922/>

D. crotalusei sp. nov. is depicted in life in Cogger (2014) on page 305 bottom and online at:

<https://www.inaturalist.org/observations/56495320>

and

<https://www.inaturalist.org/observations/143176773>

D. sloppi sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/38053718>

and

<https://www.inaturalist.org/observations/150042635>

and

<https://www.inaturalist.org/observations/54980263>

and

<https://www.flickr.com/photos/stephenmahony/9398616550/>

D. rosswellingtoni sp. nov. is depicted in life in Wilson and Swan (2021) on page 105 at top and online at:

<https://www.inaturalist.org/observations/151014864>

and

<https://www.inaturalist.org/observations/150038176>

and

<https://www.inaturalist.org/observations/70184683>

and

https://www.flickr.com/photos/colonel_007/49090903473/

<https://www.flickr.com/photos/ryanfrancis/2368994251/>
and
<https://www.flickr.com/photos/ryanfrancis/23689962879/>
and
<https://www.flickr.com/photos/96574168@N02/16380936988/>
and
<https://www.inaturalist.org/observations/17546852>
D. vittatus of the type form is depicted online at:
<https://www.inaturalist.org/observations/152216245>
and
<https://www.inaturalist.org/observations/66496125>
D. richardwellsi sp. nov. is depicted in life in Hoser (1989) on page 70 bottom and online at:
<https://www.flickr.com/photos/ryanfrancis/40589220952/>
and
<https://www.inaturalist.org/observations/9052985>
and
<https://www.inaturalist.org/observations/21904112>
and
<https://www.inaturalist.org/observations/57809875>
D. fiacummingae sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/21547907>
and
<https://www.inaturalist.org/observations/124179429>
and
<https://www.inaturalist.org/observations/17736608>
and
<https://www.inaturalist.org/observations/17962040>
and
<https://www.inaturalist.org/observations/169550906>
and
<https://www.flickr.com/photos/189037423@N06/51127189544/>
and
<https://www.flickr.com/photos/189037423@N06/51168187379/>
D. dalegibbonsi sp. nov. is depicted in life online at:
<https://www.flickr.com/photos/68921296@N06/14541766696/>
and
<https://www.inaturalist.org/observations/42302215>
and
<https://www.inaturalist.org/observations/74142230>
and
<https://www.flickr.com/photos/23031163@N03/14629994784/>

Distribution: *D. crotalusei* sp. nov. occurs in north-west New South Wales, generally west of the New England region. The exact boundaries between this species and *D. oxyi* sp. nov. to the north and *D. sloppi* sp. nov. to the south-west is not certain, but in terms of the first appears to be just north of the Queensland border and in terms of the second, somewhere just north of Dubbo, New South Wales.

Etymology: *D. crotalusei* sp. nov. is named in honour of a Great Dane / Rottweiler dog, named *Crotalus* ("Crotty" for short), who protected our research facility for about 13 years in a lifetime of loyal service before dying of a combination of age-related ailments.

DIPLODACTYLUS SLOPPI SP. NOV.

LSIDurn:lsid:zoobank.org:act:48BBBE43-3D43-41DE-816B-6FA8CB52FD0F

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R141100 collected from the Buddigower Nature Reserve, New South Wales, Australia, Latitude -34.05 S., Long. 147.016 E. This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the National Museum of Victoria, being specimen number D57534 collected from 16.4 km north east of Patchewollock, Victoria, Australia, Latitude -35.27 S., Longitude 142.32 E., and specimen number D57535 collected from 14.2 km south east of Walpeup, Victoria, Australia, Latitude -35.17 S., Longitude 142.18 E.

Diagnosis: Until now, *Diplodactylus vittatus* Gray, 1832, *sensu* Oliver *et al.* (2007a) (= Cogger 2014), has been treated as a wide-ranging taxon throughout most of the eastern third of Australia, excluding the hottest, driest areas, the tropics and the colder parts of southern Victoria (as well as not in Tasmania), with the distribution including the far south-east of South Australia.

There are in fact eight species, seven formally named for the first time in this paper and all are separated from one another as follows;

The eight species are within two main clades (*sensu* Oliver *et al.* 2017a), five in the so-called eastern clade, including the type form of *D. vittatus*, and three in the so called western clade, occupying most of the range previously outlined, including most of Queensland, the western division of New South Wales and into northern Victoria and South Australia.

While there is significant variation between species, the two clades are usually characterised as follows:

The eastern clade from far south-east Queensland, along the coast and nearby uplands to northern Victoria is characterised by a mid dorsal line that is composed primarily of a series of filled-in beige coloured U-shaped blotches, joined by the flat side to a mid dorsal line of the same lighter colour, that is usually thin, extremely thin or at times absent. Exceptional to this is the Sydney basin taxon *D. richardwellsi* sp. nov. which often has an expanded mid-dorsal line that tends to obscure the series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line and in which case the tips of the U-shapes become sharp edged triangle points. The Central Victorian form, *D. dalegibbonsi* sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., in colour, but is readily separated from that form by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present, at least one row with distinctively smaller spots) and dark peppering on a light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov..

When the lighter coloured mid-dorsal line is moderate to wide in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov.), it invariably has black marks, spots, blotches or peppering, which is not seen in the western clade species.

The western clade species always has a thick mid-dorsal line, either straight or wavy, but never composed of an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, and without any darkening, dark specks or blotched pigment within the midline, this effectively being diagnostic of the clade and the three species within the clade.

Within the so-called western clade of species, they are separated from one another and eastern clade species by the following unique character combinations:

D. oxyi sp. nov. occurs in most parts of Queensland, except for the Granite Belt in the high altitude south-east (an area that is in this context, that which is bound by Bolivia Hill (NSW) in the south, Inglewood (Qld) in the west and Fenton/Toowoomba (Qld) in the north) and the very far south-west of the State, or the tropics and far north-west. It is readily separated from the other species in the complex by the presence of a thick mid dorsal line combined with either no white spots or flecks on the otherwise dark coloured flanks, or if any spots are present, they

are tiny, widely scattered and very few in number and definitely not configured into obvious lines.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. crotalusei sp. nov. occurs in north-west New South Wales, generally west of the New England region. The exact boundaries between this species and *D. oxyi* sp. nov. to the north and *D. sloppi* sp. nov. to the south-west is not certain, but in terms of the first appears to be just north of the Queensland border and in terms of the second, somewhere just north of Dubbo, New South Wales.

Like *D. oxyi* sp. nov., *D. crotalusei* has a a thick mid dorsal line, although the most extremely thick mid dorsal lines are seen in specimens of *D. oxyi* sp. nov.. Unlike *D. oxyi* sp. nov., *D. crotalusei* sp. nov. has a series of 9-13 well defined small yellow spots running along the upper flank. Any other spots on the flanks, if present are tiny, ill defined and barely discernable.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. sloppi sp. nov. from southern inland New South Wales and nearby parts of northern Victoria and south-east South Australia is readily separated from all other species in the complex by its generally faded colour pattern. The contrast between dark and light is reduced, making the over-all appearance more dull.

Further separating this species from all others in the complex are that the mid-dorsal line is reduced in thickness to become moderate to thin, with the outer edge becoming jagged, but still not obviously composed of joined dots as seen in forms from the eastern clade of species.

In terms of the jagged edge, there are 12 or more jagged edges on the body (either side of the line), versus less than ten (at most), if present, in either *D. crotalusei* sp. nov. or *D. oxyi* sp. nov.. In *D. sloppi* sp. nov. the line of white spots on the upper flank has the spots enlarged in size and also reduced in colour intensity, giving the lizard overall are far more sandy colouration as compared to others in the complex.

The mid dorsal line continues onto the original tail and in many specimens is continuous to the end, although breaks are also seen in some specimens.

Consistent in this species is that the light on the tail dorsum is not boldly marked black on the edges, but is instead bordered by black peppering or marbling.

Dark of the sides of the dorsum and upper flank is greyish in colour.

Within the so-called eastern clade of five species, they are separated from one another and western clade species by the following unique character combinations:

D. roswellingtoni sp. nov. occurs in the Granite Belt of far south-east Queensland and immediately adjacent New South Wales including an area bound by Bolivia Hill, New South Wales / Stanthorpe, Queensland in the South, Fenton, Queensland in the North and Inglewood, Queensland in the west, encompassing an area of more than 100 km east to west and 200 km north to south.

It is readily separated from the other species in the complex by the effective removal of the mid-dorsal line, which is either tiny, vestigial, usually broken and otherwise not visible or indistinct.

On the dorsum there are an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, these being either paired or alternating, or partially both. When they are exactly paired, the back takes on an appearance of having a series of blotches running down the spine. In addition to the preceding, on the dark coloured flanks are a large number

(usually over 20) of quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Light colouration on the original tail is always in the form of spots and blotches and never runs continually down the tail in a line. It is bold in colour contrast.

D. vittatus Gray, 1832 of the type form occurs in the New England region of New South Wales, generally south of a line from Grafton, through Glen Innes and Inverell, and slightly west of these highlands, and generally north of the Hunter Valley in mid (coastal) central New South Wales.

It is similar in many respects to *D. roswellingtoni* sp. nov., but differs in that there is a narrow, but bold mid dorsal line that sits between the U-shaped blotches on either side and covers the flat side of these shapes. As a result the extensions of the midline are knob shaped, rather than triangular. On the dark coloured flanks are usually less than 15 quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Unlike *D. roswellingtoni* sp. nov., these flank spots are faded in intensity.

Light colouration on the original tail is always in the form of spots and blotches, but these are reduced and they never run continually down the tail in a line, instead being widely broken. The contrast between dark and light on the tail is reduced, with the bordering of the light with black, being strongly reduced and only partial.

D. richardwellsi sp. nov. occurs in the Sydney Basin, including the region bound by the Hunter Valley in the north, Royal National Park in the South, Blue Mountains in the west, but then extending north-west from there to hiller areas, at least as far west as Bathurst (all in New South Wales).

D. richardwellsi sp. nov. is separated from the other species in the complex by having an expanded midline, which varies between allowing the joined blotches to remain discernable to so wide that only the points extrude.

Diagnostic of this taxon and separating it from other species in the western clade of species that have a wide mid dorsal line is that in *D. richardwellsi* sp. nov. there are black spots, peppering or smudging within the mid dorsal line. That is not seen in the other species.

The flanks have about 30 evenly scattered tiny spots on either side and there are some scattered spots on the sides of the neck. This species has a very strong brown tinge throughout, including the mid-dorsal line which is brownish, as opposed to yellowish or beige in the other species. The flanks are also brownish grey or at least with a brown wash within the grey. The (original) tail is mainly brown and only has widely scattered yellow spots or blotches on the dorsum. That is, there is no continuous line running down it. The grey on the tail (mainly anteriorly) is mainly in the form of peppering over the brown.

D. fiacummingae sp. nov. appears to be restricted to the region immediately surrounding Australia's capital city, Canberra, ACT and south to about Lake Hume on the NSW and Victorian border. Dorsally it appears very similar at a glance to *D. roswellingtoni* sp. nov..

D. fiacummingae sp. nov. has a very thin, but generally continuous line running down the midline. However this line is so thin as to not affect the general view that the dorsum consists of a series of even, uneven or partially even blotches running down the midline. While the appearance in *D. roswellingtoni* sp. nov. is of paired blotches running down the back, in *D. fiacummingae* sp. nov. the appearance is invariably of a wavy line or similar running down the back, or alternatively a series of joined or separated diamonds running down the spine (see below).

In *D. fiacummingae* sp. nov. the blotches extending from the spine are not so much U-shaped as V-shaped and often elongated and/or black etched at the tips, also changing the overall appearance of this species as opposed to the

morphologically similar species in this complex.

The flanks of *D. fiacummingae* sp. nov. have medium to large yellow spots that are reasonably distinct and sometimes black etched, but not organised into any obvious line. The original tail has a series of alternating thin, wide (elongated cross-ways) blotches across the top, widely broken by areas of darker pigment, that is considerably lighter than that of the flanks. The flanks themselves are dark brown at the top, rapidly becoming light and yellow near the bottom.

D. dalegibbonsi sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., but is readily separated from that species by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present (rarely and only it seems, in specimens from north of Sydney harbour and near the coast), at least one row with distinctively smaller spots) and dark peppering on the light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov..

When the lighter coloured mid-dorsal line is moderate in width in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov. only), it invariably has black marks, spots, blotches or peppering within it, which is not seen in the western clade species, where the colouration of the mid-dorsal line is always immaculate.

The eight preceding species are separated from all other species within *Diplodactylus sensu lato*, sensu Hoser (2017) (= sensu Cogger, 2014), by the following combination of characters:

There is a prominent pale yellowish-white vertebral stripe or series of blotches (usually joined), starting from the back of the relatively uniformly coloured head, running down the midline of the body to the tail; the dorsum consists of a mid vertebral line or similar, of light colour (yellowish or white, rarely brownish) against a dark grey or grey brown background that extends to the flanks; there are usually at least some white or yellow spots on the flanks that are usually, but not always of similar size and may be arranged in lines or apparently scattered randomly; they are not dark edged, or if so, very faintly; venter is white, finely peppered dark brown. The flanks are greyish, usually all over, but at least near the upper surface of the dorsum.

Postocular band is present but it does not form an occipital band, because a distinct light line runs from the back of the head onto the midline of the body, usually onto the body, or in the alternative at least as far as the back of the neck (in *D. rosswellingtoni* sp. nov.).

First supralabial slightly to markedly higher than the second; mid dorsal scales are not enlarged or plate-like and usually only slightly larger than the ventrals; interorbitals 23-38; mental scale is lanceolate, longer than wide; anterior nasal absent; labials are noticeably larger than the adjacent loreals; dorsal and flank scales homogenous, small and barely larger than the ventrals; rostral is partly divided by a median groove above; 6-10 supralabials, being larger than the adjacent loreals; nostril contacts rostral; no pre-anal pores; 2-10 post-anal tubercles.

Digits long, slightly flattened. Underneath they have a relatively large pair of subdigital lamellae, followed by at least two series of enlarged scales, reducing in size proximally. Dorsal eyelid is well differentiated; body moderate in shape; snout rounded in shape. Tail is more than half the snout-vent length (about 60%) and more-or-less round in cross-section, being very slightly flattened and fat in shape; average snout-vent length is about 50 mm. Karyotype 2n = 38, all acrocentric (King 1977).

D. oxyi sp. in life is depicted in Wilson and Swan (2021) on page 105, second from top and online at:

<https://www.inaturalist.org/observations/151014864>
and

<https://www.inaturalist.org/observations/150038176>
and

<https://www.inaturalist.org/observations/70184683>
and

https://www.flickr.com/photos/colonel_007/49090903473/
and

https://www.flickr.com/photos/zimny_anders/50217210566/
and

<https://www.flickr.com/photos/angusmcnab/8202463922/>
D. crotalusei sp. nov. is depicted in life in Cogger (2014) on

page 305 bottom and online at:

<https://www.inaturalist.org/observations/56495320>
and

<https://www.inaturalist.org/observations/143176773>

D. sloppi sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/38053718>
and

<https://www.inaturalist.org/observations/150042635>
and

<https://www.inaturalist.org/observations/54980263>
and

<https://www.flickr.com/photos/stephenmahony/9398616550/>
D. rosswellingtoni sp. nov. is depicted in life in Wilson and

Swan (2021) on page 105 at top and online at:

<https://www.flickr.com/photos/ryanfrancis/23689942519/>
and

<https://www.flickr.com/photos/ryanfrancis/23689962879/>
and

<https://www.flickr.com/photos/96574168@N02/16380936988/>
and

<https://www.inaturalist.org/observations/17546852>

D. vittatus of the type form is depicted online at:

<https://www.inaturalist.org/observations/152216245>
and

<https://www.inaturalist.org/observations/66496125>

D. richardwellsi sp. nov. is depicted in life in Hoser (1989) on page 70 bottom and online at:

<https://www.flickr.com/photos/ryanfrancis/40589220952/>
and

<https://www.inaturalist.org/observations/9052985>
and

<https://www.inaturalist.org/observations/21904112>
and

<https://www.inaturalist.org/observations/57809875>

D. fiacummingae sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/21547907>
and

<https://www.inaturalist.org/observations/124179429>
and

<https://www.inaturalist.org/observations/17736608>
and

<https://www.inaturalist.org/observations/17962040>
and

<https://www.inaturalist.org/observations/169550906>
and

<https://www.flickr.com/photos/189037423@N06/51127189544/>
and

<https://www.flickr.com/photos/189037423@N06/51168187379/>
D. dalegibbonsi sp. nov. is depicted in life online at:

<https://www.flickr.com/photos/68921296@N06/14541766696/>
and

and

<https://www.inaturalist.org/observations/42302215>

and

<https://www.inaturalist.org/observations/74142230>

and

<https://www.flickr.com/photos/23031163@N03/14629994784/>

Distribution: *D. sloppi* sp. nov. occurs from southern inland New South Wales and nearby parts of northern Victoria to south-east South Australia, generally east of the Adelaide Hills / Flinders Ranges.

Etymology: *D. sloppi* sp. nov. is named in honour of a Great Dane dog, named *Slop* (AKA "Slopp"), who protected our research facility for nearly 12 years in a lifetime of loyal service, before dying from cancer.

DIPLODACTYLUS ROSSWELLINGTONI SP. NOV.

LSID[Durn:lsid:zoobank.org:act:FEC83149-9336-4E5F-A1FE-3DD259408AA1](https://zoobank.org/act:FEC83149-9336-4E5F-A1FE-3DD259408AA1)

Holotype: A preserved male specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R34745 collected from 18 km north of Deepwater at Bolivia Hill, far northern New South Wales, Australia, Latitude -29.33 S., Longitude 151.90 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved female specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R34746 collected from 18 km north of Deepwater at Bolivia Hill, far northern New South Wales, Australia, Latitude -29.33 S., Longitude 151.90 E.

Diagnosis: Until now, *Diplodactylus vittatus* Gray, 1832, *sensu* Oliver *et al.* (2007a) (= Cogger 2014), has been treated as a wide-ranging taxon throughout most of the eastern third of Australia, excluding the hottest, driest areas, the tropics and the colder parts of southern Victoria (as well as not in Tasmania), with the distribution including the far south-east of South Australia.

There are in fact eight species, seven formally named for the first time in this paper and all are separated from one another as follows:

The eight species are within two main clades (*sensu* Oliver *et al.* 2017a), five in the so-called eastern clade, including the type form of *D. vittatus*, and three in the so called western clade, occupying most of the range previously outlined, including most of Queensland, the western division of New South Wales and into northern Victoria and South Australia.

While there is significant variation between species, the two clades are usually characterised as follows:

The eastern clade from far south-east Queensland, along the coast and nearby uplands to northern Victoria is characterised by a mid dorsal line that is composed primarily of a series of filled-in beige coloured U-shaped blotches, joined by the flat side to a mid dorsal line of the same lighter colour, that is usually thin, extremely thin or at times absent. Exceptional to this is the Sydney basin taxon *D. richardwellsi* sp. nov. which often has an expanded mid-dorsal line that tends to obscure the series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line and in which case the tips of the U-shapes become sharp edged triangle points. The Central Victorian form, *D. dalegibbonsi* sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., in colour, but is readily separated from that form by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present, at least one row with distinctively smaller spots) and dark peppering on a light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov.

When the lighter coloured mid-dorsal line is moderate to wide

in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov.), it invariably has black marks, spots, blotches or peppering, which is not seen in the western clade species.

The western clade species always has a thick mid-dorsal line, either straight or wavy, but never composed of an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, and without any darkening, dark specks or blotched pigment within the midline, this effectively being diagnostic of the clade and the three species within the clade. Within the so-called western clade of species, they are separated from one another and eastern clade species by the following unique character combinations:

D. oxyi sp. nov. occurs in most parts of Queensland, except for the Granite Belt in the high altitude south-east (an area that is in this context, that which is bound by Bolivia Hill (NSW) in the south, Inglewood (Qld) in the west and Fenton/Toowoomba (Qld) in the north) and the very far south-west of the State, or the tropics and far north-west. It is readily separated from the other species in the complex by the presence of a thick mid dorsal line combined with either no white spots or flecks on the otherwise dark coloured flanks, or if any spots are present, they are tiny, widely scattered and very few in number and definitely not configured into obvious lines.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged. Dark of the sides of the dorsum is blackish in colour.

D. crotalusei sp. nov. occurs in north-west New South Wales, generally west of the New England region. The exact boundaries between this species and *D. oxyi* sp. nov. to the north and *D. sloppi* sp. nov. to the south-west is not certain, but in terms of the first appears to be just north of the Queensland border and in terms of the second, somewhere just north of Dubbo, New South Wales.

Like *D. oxyi* sp. nov., *D. crotalusei* has a thick mid dorsal line, although the most extremely thick mid dorsal lines are seen in specimens of *D. oxyi* sp. nov.. Unlike *D. oxyi* sp. nov., *D. crotalusei* sp. nov. has a series of 9-13 well defined small yellow spots running along the upper flank. Any other spots on the flanks, if present are tiny, ill defined and barely discernable.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged. Dark of the sides of the dorsum is blackish in colour.

D. sloppi sp. nov. from southern inland New South Wales and nearby parts of northern Victoria and south-east South Australia is readily separated from all other species in the complex by its generally faded colour pattern. The contrast between dark and light is reduced, making the over-all appearance more dull.

Further separating this species from all others in the complex are that the mid-dorsal line is reduced in thickness to become moderate to thin, with the outer edge becoming jagged, but still not obviously composed of joined dots as seen in forms from the eastern clade of species.

In terms of the jagged edge, there are 12 or more jagged edges on the body (either side of the line), versus less than ten (at most), if present, in either *D. crotalusei* sp. nov. or *D. oxyi* sp. nov.. In *D. sloppi* sp. nov. the line of white spots on the upper flank has the spots enlarged in size and also reduced in colour intensity, giving the lizard overall are far more sandy colouration as compared to others in the complex.

The mid dorsal line continues onto the original tail and in many specimens is continuous to the end, although breaks are also seen in some specimens.

Consistent in this species is that the light on the tail dorsum is not boldly marked black on the edges, but is instead bordered

by black peppering or marbling.

Dark of the sides of the dorsum and upper flank is greyish in colour.

Within the so-called eastern clade of five species, they are separated from one another and western clade species by the following unique character combinations:

D. roswellingtoni sp. nov. occurs in the Granite Belt of far south-east Queensland and immediately adjacent New South Wales including an area bound by Bolivia Hill, New South Wales / Stanthorpe, Queensland in the South, Fenton, Queensland in the North and Inglewood, Queensland in the west, encompassing an area of more than 100 km east to west and 200 km north to south.

It is readily separated from the other species in the complex by the effective removal of the mid-dorsal line, which is either tiny, vestigial, usually broken and otherwise not visible or indistinct.

On the dorsum there are an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, these being either paired or alternating, or partially both. When they are exactly paired, the back takes on an appearance of having a series of blotches running down the spine. In addition to the preceding, on the dark coloured flanks are a large number (usually over 20) of quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Light colouration on the original tail is always in the form of spots and blotches and never runs continually down the tail in a line. It is bold in colour contrast.

D. vittatus Gray, 1832 of the type form occurs in the New England region of New South Wales, generally south of a line from Grafton, through Glen Innes and Inverell, and slightly west of these highlands, and generally north of the Hunter Valley in mid (coastal) central New South Wales.

It is similar in many respects to *D. roswellingtoni* sp. nov., but differs in that there is a narrow, but bold mid dorsal line that sits between the U-shaped blotches on either side and covers the flat side of these shapes. As a result the extensions of the midline are knob shaped, rather than triangular. On the dark coloured flanks are usually less than 15 quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Unlike *D. roswellingtoni* sp. nov., these flank spots are faded in intensity.

Light colouration on the original tail is always in the form of spots and blotches, but these are reduced and they never run continually down the tail in a line, instead being widely broken. The contrast between dark and light on the tail is reduced, with the bordering of the light with black, being strongly reduced and only partial.

D. richardwellsi sp. nov. occurs in the Sydney Basin, including the region bound by the Hunter Valley in the north, Royal National Park in the South, Blue Mountains in the west, but then extending north-west from there to hilly areas, at least as far west as Bathurst (all in New South Wales).

D. richardwellsi sp. nov. is separated from the other species in the complex by having an expanded midline, which varies between allowing the joined blotches to remain discernable to so wide that only the points extrude.

Diagnostic of this taxon and separating it from other species in the western clade of species that have a wide mid dorsal line is that in *D. richardwellsi* sp. nov. there are black spots, peppering or smudging within the mid dorsal line. That is not seen in the other species.

The flanks have about 30 evenly scattered tiny spots on either side and there are some scattered spots on the sides of the neck. This species has a very strong brown tinge throughout, including the mid-dorsal line which is brownish, as opposed to yellowish or beige in the other species. The flanks are also brownish grey or at least with a brown wash within the grey. The (original) tail is mainly brown and only has widely scattered

yellow spots or blotches on the dorsum. That is, there is no continuous line running down it. The grey on the tail (mainly anteriorly) is mainly in the form of peppering over the brown.

D. fiacummingae sp. nov. appears to be restricted to the region immediately surrounding Australia's capital city, Canberra, ACT and south to about Lake Hume on the NSW and Victorian border. Dorsally it appears very similar at a glance to *D. roswellingtoni* sp. nov..

D. fiacummingae sp. nov. has a very thin, but generally continuous line running down the midline. However this line is so thin as to not affect the general view that the dorsum consists of a series of even, uneven or partially even blotches running down the midline. While the appearance in *D. roswellingtoni* sp. nov. is of paired blotches running down the back, in *D. fiacummingae* sp. nov. the appearance is invariably of a wavy line or similar running down the back, or alternatively a series of joined or separated diamonds running down the spine (see below).

In *D. fiacummingae* sp. nov. the blotches extending from the spine are not so much U-shaped as V-shaped and often elongated and/or black etched at the tips, also changing the overall appearance of this species as opposed to the morphologically similar species in this complex.

The flanks of *D. fiacummingae* sp. nov. have medium to large yellow spots that are reasonably distinct and sometimes black etched, but not organised into any obvious line. The original tail has a series of alternating thin, wide (elongated cross-ways) blotches across the top, widely broken by areas of darker pigment, that is considerably lighter than that of the flanks. The flanks themselves are dark brown at the top, rapidly becoming light and yellow near the bottom.

D. dalegibbonsi sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., but is readily separated from that species by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present (rarely and only it seems, in specimens from north of Sydney harbour and near the coast), at least one row with distinctively smaller spots) and dark peppering on the light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov..

When the lighter coloured mid-dorsal line is moderate in width in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov. only), it invariably has black marks, spots, blotches or peppering within it, which is not seen in the western clade species, where the colouration of the mid-dorsal line is always immaculate.

The eight preceding species are separated from all other species within *Diplodactylus sensu lato*, *sensu* Hoser (2017) (= *sensu* Cogger, 2014), by the following combination of characters:

There is a prominent pale yellowish-white vertebral stripe or series of blotches (usually joined), starting from the back of the relatively uniformly coloured head, running down the midline of the body to the tail; the dorsum consists of a mid vertebral line or similar, of light colour (yellowish or white, rarely brownish) against a dark grey or grey brown background that extends to the flanks; there are usually at least some white or yellow spots on the flanks that are usually, but not always of similar size and may be arranged in lines or apparently scattered randomly; they are not dark edged, or if so, very faintly; venter is white, finely peppered dark brown. The flanks are greyish, usually all over, but at least near the upper surface of the dorsum.

Postocular band is present but it does not form an occipital band, because a distinct light line runs from the back of the head onto the midline of the body, usually onto the body, or in the alternative at least as far as the back of the neck (in *D.*

rosswellingtoni sp. nov.).

First supralabial slightly to markedly higher than the second; mid dorsal scales are not enlarged or plate-like and usually only slightly larger than the ventrals; interorbitals 23-38; mental scale is lanceolate, longer than wide; anterior nasal absent; labials are noticeably larger than the adjacent loreals; dorsal and flank scales homogenous, small and barely larger than the ventrals; rostral is partly divided by a median groove above; 6-10 supralabials, being larger than the adjacent loreals; nostril contacts rostral; no pre-anal pores; 2-10 post-anal tubercles.

Digits long, slightly flattened. Underneath they have a relatively large pair of subdigital lamellae, followed by at least two series of enlarged scales, reducing in size proximally. Dorsal eyelid is well differentiated; body moderate in shape; snout rounded in shape. Tail is more than half the snout-vent length (about 60%) and more-or-less round in cross-section, being very slightly flattened and fat in shape; average snout-vent length is about 50 mm. Karyotype $2n = 38$, all acrocentric (King 1977).

D. oxyi sp. in life is depicted in Wilson and Swan (2021) on page 105, second from top and online at:

<https://www.inaturalist.org/observations/151014864>

and

<https://www.inaturalist.org/observations/150038176>

and

<https://www.inaturalist.org/observations/70184683>

and

https://www.flickr.com/photos/colonel_007/49090903473/

and

https://www.flickr.com/photos/zimny_anders/50217210566/

and

<https://www.flickr.com/photos/angusmcnab/8202463922/>

D. crotalusei sp. nov. is depicted in life in Cogger (2014) on page 305 bottom and online at:

<https://www.inaturalist.org/observations/56495320>

and

<https://www.inaturalist.org/observations/143176773>

D. sloppi sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/38053718>

and

<https://www.inaturalist.org/observations/150042635>

and

<https://www.inaturalist.org/observations/54980263>

and

<https://www.flickr.com/photos/stephenmahony/9398616550/>

D. rosswellingtoni sp. nov. is depicted in life in Wilson and Swan (2021) on page 105 at top and online at:

<https://www.flickr.com/photos/ryanfrancis/23689942519/>

and

<https://www.flickr.com/photos/ryanfrancis/23689962879/>

and

<https://www.flickr.com/photos/96574168@N02/16380936988/>

and

<https://www.inaturalist.org/observations/17546852>

D. vittatus of the type form is depicted online at:

<https://www.inaturalist.org/observations/152216245>

and

<https://www.inaturalist.org/observations/66496125>

D. richardwellsi sp. nov. is depicted in life in Hoser (1989) on page 70 bottom and online at:

<https://www.flickr.com/photos/ryanfrancis/40589220952/>

and

<https://www.inaturalist.org/observations/9052985>

and

<https://www.inaturalist.org/observations/21904112>

and

<https://www.inaturalist.org/observations/57809875>

D. fiacummingae sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/21547907>

and

<https://www.inaturalist.org/observations/124179429>

and

<https://www.inaturalist.org/observations/17736608>

and

<https://www.inaturalist.org/observations/17962040>

and

<https://www.inaturalist.org/observations/169550906>

and

<https://www.flickr.com/photos/189037423@N06/51127189544/>

and

<https://www.flickr.com/photos/189037423@N06/51168187379/>

D. dalegibbonsi sp. nov. is depicted in life online at:

<https://www.flickr.com/photos/68921296@N06/14541766696/>

and

<https://www.inaturalist.org/observations/42302215>

and

<https://www.inaturalist.org/observations/74142230>

and

<https://www.flickr.com/photos/23031163@N03/14629994784/>

Distribution: *D. rosswellingtoni* sp. nov. occurs in the upland Granite Belt of far south-east Queensland and immediately adjacent New South Wales in an area bound by Bolivia Hill (NSW) to the south, Fenton/Toowoomba (Qld) in the north and Inglewood (Qld) to the west, and area of about 100 km straight line east-west and 200 km north-south. It is surrounded by populations of *D. oxyi* sp. nov. to the near north and *D. vittatus* to the near south and should therefore be treated as a range-restricted and potentially vulnerable species.

Etymology: *D. rosswellingtoni* sp. nov. is named in honour Cliff Ross Wellington of Ramornie, New South Wales, Australia in recognition of a lifetime's work as a professional herpetologist, for services to wildlife conservation, taxonomy of reptiles in Australia and New Zealand, as well as combating egregious taxonomic vandalism by Richard Shine, Jodi Rowley and others.

DIPLODACTYLUS RICHARDWELLSI SP. NOV.

LSIDurn:lsid:zoobank.org:act:4780F717-10F4-43B9-8B56-7A363FC150C1

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.93923, collected by Richard Wells at Lower Portland, Hawkesbury, New South Wales, Australia, Latitude -33.45 S., Longitude 150.883 E.

This government-owned facility allows access to its holdings.

Paratypes: Seven preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, being 1/ Specimen number R.158588 collected at the Firing Range at the Holsworthy Army Base, New South Wales, Australia, Latitude -34.04666 S., Longitude 150.90666 E., 2/ Specimen number R.103712 collected 3.5 km north west of Warragamba Dam, New South Wales, Australia, Latitude -33.87638 S., Longitude 150.62138 E., 3/ Specimen number R.99366 collected from the Colo Area, New South Wales, Australia, Latitude -33.433 S., Longitude 150.816 E., 4/ Specimen number R.123979 collected from near the lookout facing Cattai Creek, at Lower Portland, Hawkesbury, New South Wales, Australia, Latitude -33.45 S., Longitude 150.9 E., 5/ Specimen number R.75163 collected from Lower Portland, Hawkesbury, New South Wales, Australia, Latitude -33.45 S., Longitude



150.883 E., 6 and 7/ Specimen numbers R.103529 and R.103530 both collected from 14.5 km north east of Windsor, New South Wales, Australia, Latitude -33.5 S., Longitude 150.9 E.

Diagnosis: Until now, *Diplodactylus vittatus* Gray, 1832, *sensu* Oliver *et al.* (2007a) (= Cogger 2014), has been treated as a wide-ranging taxon throughout most of the eastern third of Australia, excluding the hottest, driest areas, the tropics and the colder parts of southern Victoria (as well as not in Tasmania), with the distribution including the far south-east of South Australia.

There are in fact eight species, seven formally named for the first time in this paper and all are separated from one another as follows:

The eight species are within two main clades (*sensu* Oliver *et al.* 2017a), five in the so-called eastern clade, including the type form of *D. vittatus*, and three in the so called western clade, occupying most of the range previously outlined, including most of Queensland, the western division of New South Wales and into northern Victoria and South Australia.

While there is significant variation between species, the two clades are usually characterised as follows:

The eastern clade from far south-east Queensland, along the coast and nearby uplands to northern Victoria is characterised by a mid dorsal line that is composed primarily of a series of filled-in beige coloured U-shaped blotches, joined by the flat side to a mid dorsal line of the same lighter colour, that is usually thin, extremely thin or at times absent. Exceptional to this is the Sydney basin taxon *D. richardwellsi sp. nov.* which often has an expanded mid-dorsal line that tends to obscure the series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line and in which case the tips of the U-shapes become sharp edged triangle points. The Central Victorian form, *D. dalegibbonsi sp. nov.*, is similar in most respects to *D. richardwellsi sp. nov.*, in colour, but is readily separated from that form by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present, at least one row with distinctively smaller spots) and dark peppering on a light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi sp. nov.*

When the lighter coloured mid-dorsal line is moderate to wide in the eastern clade species (*D. richardwellsi sp. nov.*, and *D. dalegibbonsi sp. nov.*), it invariably has black marks, spots, blotches or peppering, which is not seen in the western clade species.

The western clade species always has a thick mid-dorsal line,

either straight or wavy, but never composed of an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, and without any darkening, dark specks or blotched pigment within the midline, this effectively being diagnostic of the clade and the three species within the clade.

Within the so-called western clade of species, they are separated from one another and eastern clade species by the following unique character combinations:

D. oxyi sp. nov. occurs in most parts of Queensland, except for the Granite Belt in the high altitude south-east (an area that is in this context, that which is bound by Bolivia Hill (NSW) in the south, Inglewood (Qld) in the west and Fenton/Toowoomba (Qld) in the north) and the very far south-west of the State, or the tropics and far north-west. It is readily separated from the other species in the complex by the presence of a thick mid dorsal line combined with either no white spots or flecks on the otherwise dark coloured flanks, or if any spots are present, they are tiny, widely scattered and very few in number and definitely not configured into obvious lines.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. crotalusei sp. nov. occurs in north-west New South Wales, generally west of the New England region. The exact boundaries between this species and *D. oxyi sp. nov.* to the north and *D. sloppi sp. nov.* to the south-west is not certain, but in terms of the first appears to be just north of the Queensland border and in terms of the second, somewhere just north of Dubbo, New South Wales.

Like *D. oxyi sp. nov.*, *D. crotalusei* has a a thick mid dorsal line, although the most extremely thick mid dorsal lines are seen in specimens of *D. oxyi sp. nov.*. Unlike *D. oxyi sp. nov.*, *D. crotalusei sp. nov.* has a series of 9-13 well defined small yellow spots running along the upper flank. Any other spots on the flanks, if present are tiny, ill defined and barely discernable.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. sloppi sp. nov. from southern inland New South Wales and nearby parts of northern Victoria and south-east South Australia is readily separated from all other species in the complex by its generally faded colour pattern. The contrast between dark and light is reduced, making the over-all appearance more dull.

Further separating this species from all others in the complex are that the mid-dorsal line is reduced in thickness to become moderate to thin, with the outer edge becoming jagged, but still not obviously composed of joined dots as seen in forms from the eastern clade of species.

In terms of the jagged edge, there are 12 or more jagged edges on the body (either side of the line), versus less than ten (at most), if present, in either *D. crotalusei sp. nov.* or *D. oxyi sp. nov.*. In *D. sloppi sp. nov.* the line of white spots on the upper flank has the spots enlarged in size and also reduced in colour intensity, giving the lizard overall are far more sandy colouration as compared to others in the complex.

The mid dorsal line continues onto the original tail and in many specimens is continuous to the end, although breaks are also seen in some specimens.

Consistent in this species is that the light on the tail dorsum is not boldly marked black on the edges, but is instead bordered by black peppering or marbling.

Dark of the sides of the dorsum and upper flank is greyish in colour.

Within the so-called eastern clade of five species, they are separated from one another and western clade species by the

following unique character combinations:

D. roswellingtoni sp. nov. occurs in the Granite Belt of far south-east Queensland and immediately adjacent New South Wales including an area bound by Bolivia Hill, New South Wales / Stanthorpe, Queensland in the South, Fenton, Queensland in the North and Inglewood, Queensland in the west, encompassing an area of more than 100 km east to west and 200 km north to south.

It is readily separated from the other species in the complex by the effective removal of the mid-dorsal line, which is either tiny, vestigial, usually broken and otherwise not visible or indistinct.

On the dorsum there are an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, these being either paired or alternating, or partially both. When they are exactly paired, the back takes on an appearance of having a series of blotches running down the spine. In addition to the preceding, on the dark coloured flanks are a large number (usually over 20) of quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Light colouration on the original tail is always in the form of spots and blotches and never runs continually down the tail in a line. It is bold in colour contrast.

D. vittatus Gray, 1832 of the type form occurs in the New England region of New South Wales, generally south of a line from Grafton, through Glen Innes and Inverell, and slightly west of these highlands, and generally north of the Hunter Valley in mid (coastal) central New South Wales.

It is similar in many respects to *D. roswellingtoni* sp. nov., but differs in that there is a narrow, but bold mid dorsal line that sits between the U-shaped blotches on either side and covers the flat side of these shapes. As a result the extensions of the midline are knob shaped, rather than triangular. On the dark coloured flanks are usually less than 15 quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Unlike *D. roswellingtoni* sp. nov., these flank spots are faded in intensity.

Light colouration on the original tail is always in the form of spots and blotches, but these are reduced and they never run continually down the tail in a line, instead being widely broken. The contrast between dark and light on the tail is reduced, with the bordering of the light with black, being strongly reduced and only partial.

D. richardwellsi sp. nov. occurs in the Sydney Basin, including the region bound by the Hunter Valley in the north, Royal National Park in the South, Blue Mountains in the west, but then extending north-west from there to hillier areas, at least as far west as Bathurst (all in New South Wales).

D. richardwellsi sp. nov. is separated from the other species in the complex by having an expanded midline, which varies between allowing the joined blotches to remain discernable to so wide that only the points extrude.

Diagnostic of this taxon and separating it from other species in the western clade of species that have a wide mid dorsal line is that in *D. richardwellsi* sp. nov. there are black spots, peppering or smudging within the mid dorsal line. That is not seen in the other species.

The flanks have about 30 evenly scattered tiny spots on either side and there are some scattered spots on the sides of the neck. This species has a very strong brown tinge throughout, including the mid-dorsal line which is brownish, as opposed to yellowish or beige in the other species. The flanks are also brownish grey or at least with a brown wash within the grey. The (original) tail is mainly brown and only has widely scattered yellow spots or blotches on the dorsum. That is, there is no continuous line running down it. The grey on the tail (mainly anteriorly) is mainly in the form of peppering over the brown.

D. fiacummingae sp. nov. appears to be restricted to the region immediately surrounding Australia's capital city, Canberra,

ACT and south to about Lake Hume on the NSW and Victorian border. Dorsally it appears very similar at a glance to *D. roswellingtoni* sp. nov..

D. fiacummingae sp. nov. has a very thin, but generally continuous line running down the midline. However this line is so thin as to not affect the general view that the dorsum consists of a series of even, uneven or partially even blotches running down the midline. While the appearance in *D. roswellingtoni* sp. nov. is of paired blotches running down the back, in *D. fiacummingae* sp. nov. the appearance is invariably of a wavy line or similar running down the back, or alternatively a series of joined or separated diamonds running down the spine (see below).

In *D. fiacummingae* sp. nov. the blotches extending from the spine are not so much U-shaped as V-shaped and often elongated and/or black etched at the tips, also changing the overall appearance of this species as opposed to the morphologically similar species in this complex.

The flanks of *D. fiacummingae* sp. nov. have medium to large yellow spots that are reasonably distinct and sometimes black etched, but not organised into any obvious line. The original tail has a series of alternating thin, wide (elongated cross-ways) blotches across the top, widely broken by areas of darker pigment, that is considerably lighter than that of the flanks. The flanks themselves are dark brown at the top, rapidly becoming light and yellow near the bottom.

D. dalegibbonsi sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., but is readily separated from that species by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present (rarely and only it seems, in specimens from north of Sydney harbour and near the coast), at least one row with distinctively smaller spots) and dark peppering on the light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov..

When the lighter coloured mid-dorsal line is moderate in width in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov. only), it invariably has black marks, spots, blotches or peppering within it, which is not seen in the western clade species, where the colouration of the mid-dorsal line is always immaculate.

The eight preceding species are separated from all other species within *Diplodactylus sensu lato*, *sensu* Hoser (2017) (= *sensu* Cogger, 2014), by the following combination of characters:

There is a prominent pale yellowish-white vertebral stripe or series of blotches (usually joined), starting from the back of the relatively uniformly coloured head, running down the midline of the body to the tail; the dorsum consists of a mid vertebral line or similar, of light colour (yellowish or white, rarely brownish) against a dark grey or grey brown background that extends to the flanks; there are usually at least some white or yellow spots on the flanks that are usually, but not always of similar size and may be arranged in lines or apparently scattered randomly; they are not dark edged, or if so, very faintly; venter is white, finely peppered dark brown. The flanks are greyish, usually all over, but at least near the upper surface of the dorsum.

Postocular band is present but it does not form an occipital band, because a distinct light line runs from the back of the head onto the midline of the body, usually onto the body, or in the alternative at least as far as the back of the neck (in *D. roswellingtoni* sp. nov.).

First supralabial slightly to markedly higher than the second; mid dorsal scales are not enlarged or plate-like and usually only slightly larger than the ventrals; interorbitals 23-38; mental scale is lanceolate, longer than wide; anterior nasal absent;

labials are noticeably larger than the adjacent loreals; dorsal and flank scales homogenous, small and barely larger than the ventrals; rostral is partly divided by a median groove above; 6-10 supralabials, being larger than the adjacent loreals; nostril contacts rostral; no pre-anal pores; 2-10 post-anal tubercles.

Digits long, slightly flattened. Underneath they have a relatively large pair of subdigital lamellae, followed by at least two series of enlarged scales, reducing in size proximally. Dorsal eyelid is well differentiated; body moderate in shape; snout rounded in shape. Tail is more than half the snout-vent length (about 60%) and more-or-less round in cross-section, being very slightly flattened and fat in shape; average snout-vent length is about 50 mm. Karyotype $2n = 38$, all acrocentric (King 1977).

D. oxyi sp. in life is depicted in Wilson and Swan (2021) on page 105, second from top and online at:

<https://www.inaturalist.org/observations/151014864>

and

<https://www.inaturalist.org/observations/150038176>

and

<https://www.inaturalist.org/observations/70184683>

and

https://www.flickr.com/photos/colonel_007/49090903473/

and

https://www.flickr.com/photos/zimny_anders/50217210566/

and

<https://www.flickr.com/photos/angusmcnab/8202463922/>

D. crotalusei sp. nov. is depicted in life in Cogger (2014) on page 305 bottom and online at:

<https://www.inaturalist.org/observations/56495320>

and

<https://www.inaturalist.org/observations/143176773>

D. sloppi sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/38053718>

and

<https://www.inaturalist.org/observations/150042635>

and

<https://www.inaturalist.org/observations/54980263>

and

<https://www.flickr.com/photos/stephenmahony/9398616550/>

D. rosswellingtoni sp. nov. is depicted in life in Wilson and Swan (2021) on page 105 at top and online at:

<https://www.flickr.com/photos/ryanfrancis/23689942519/>

and

<https://www.flickr.com/photos/ryanfrancis/23689962879/>

and

<https://www.flickr.com/photos/96574168@N02/16380936988/>

and

<https://www.inaturalist.org/observations/17546852>

D. vittatus of the type form is depicted online at:

<https://www.inaturalist.org/observations/152216245>

and

<https://www.inaturalist.org/observations/66496125>

D. richardwellsi sp. nov. is depicted in life on top of page 34 of this paper, also in Hoser (1989) on page 70 bottom and online at:

<https://www.flickr.com/photos/ryanfrancis/40589220952/>

and

<https://www.inaturalist.org/observations/9052985>

and

<https://www.inaturalist.org/observations/21904112>

and

<https://www.inaturalist.org/observations/57809875>

D. fiacummingae sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/21547907>

and

<https://www.inaturalist.org/observations/124179429>

and

<https://www.inaturalist.org/observations/17736608>

and

<https://www.inaturalist.org/observations/17962040>

and

<https://www.inaturalist.org/observations/169550906>

and

<https://www.flickr.com/photos/189037423@N06/51127189544/>

and

<https://www.flickr.com/photos/189037423@N06/51168187379/>

D. dalegibbonsi sp. nov. is depicted in life online at:

<https://www.flickr.com/photos/68921296@N06/14541766696/>

and

<https://www.inaturalist.org/observations/42302215>

and

<https://www.inaturalist.org/observations/74142230>

and

<https://www.flickr.com/photos/23031163@N03/14629994784/>

Distribution: *D. richardwellsi* sp. nov. occurs in the Sydney Basin, including the region bound by the Hunter Valley in the north, Royal National Park in the South, Blue Mountains in the west, but then extending north-west from there to hillier areas, at least as far west as Bathurst (all in New South Wales).

Etymology: *D. richardwellsi* sp. nov. is named in honour of Richard Wells originally of Sydney, New South Wales, Australia, but most recently of Drake in far northern New South Wales, Australia in recognition of a lifetime's work as a professional herpetologist, for services to wildlife conservation, taxonomy of reptiles in Australia and New Zealand, and assisting in combating egregious taxonomic vandalism by Richard Shine, Jodi Rowley and others. Wells in years past collected many thousands of reptile specimens for the Australian Museum in Sydney, Australia, making him by far its biggest benefactor in terms of herpetology ever.

In 1974, Richard Wells travelled to Darwin in the Northern Territory and virtually single-handedly saved the priceless collection of reptile specimens at the Museum and Art Gallery of the Northern Territory in the wake of the devastation of tropical cyclone Tracy in December 1974, that literally flattened the city, Wells being one of the few people to travel to Darwin at a time when thousands of people were fleeing the devastation.

DIPLODACTYLUS FIACUMMINGAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:5582A4B7-8043-4C9D-942E-D30C87FCA4EF

Holotype: A preserved specimen at the Australian National Wildlife Collection, controlled by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Canberra, ACT, Australia, specimen number R02384 collected from Mount Ainslie, Canberra, ACT, Australia, Latitude -35.2667 S., Longitude 149.1667 E.

This government-owned facility allows access to its holdings.

Paratypes: Three preserved specimens at the Australian National Wildlife Collection, controlled by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Canberra, ACT, Australia, 1/ Specimen number number R02335 collected from Coppins Crossing, Canberra, ACT, Australia, Latitude -35.2889 S., Longitude 149.0222 E., 2/ Specimen number R02993 collected from Queanbeyan, New South Wales, Australia, Latitude -35.35 S., Longitude 149.2333 E., 3/ Specimen number R02381 collected from Bungendore, New South Wales, Australia, Latitude -35.25 S., Longitude 149.45 E.

Diagnosis: Until now, *Diplodactylus vittatus* Gray, 1832, *sensu* Oliver *et al.* (2007a) (= Cogger 2014), has been treated as a wide-ranging taxon throughout most of the eastern third of Australia, excluding the hottest, driest areas, the tropics and the colder parts of southern Victoria (as well as not in Tasmania), with the distribution including the far south-east of South Australia.

There are in fact eight species, seven formally named for the first time in this paper and all are separated from one another as follows:

The eight species are within two main clades (*sensu* Oliver *et al.* 2017a), five in the so-called eastern clade, including the type form of *D. vittatus*, and three in the so called western clade, occupying most of the range previously outlined, including most of Queensland, the western division of New South Wales and into northern Victoria and South Australia.

While there is significant variation between species, the two clades are usually characterised as follows:

The eastern clade from far south-east Queensland, along the coast and nearby uplands to northern Victoria is characterised by a mid dorsal line that is composed primarily of a series of filled-in beige coloured U-shaped blotches, joined by the flat side to a mid dorsal line of the same lighter colour, that is usually thin, extremely thin or at times absent. Exceptional to this is the Sydney basin taxon *D. richardwellsi* *sp. nov.* which often has an expanded mid-dorsal line that tends to obscure the series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line and in which case the tips of the U-shapes become sharp edged triangle points. The Central Victorian form, *D. dalegibbonsi* *sp. nov.*, is similar in most respects to *D. richardwellsi* *sp. nov.*, in colour, but is readily separated from that form by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present, at least one row with distinctively smaller spots) and dark peppering on a light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* *sp. nov.*

When the lighter coloured mid-dorsal line is moderate to wide in the eastern clade species (*D. richardwellsi* *sp. nov.*, and *D. dalegibbonsi* *sp. nov.*), it invariably has black marks, spots, blotches or peppering, which is not seen in the western clade species.

The western clade species always has a thick mid-dorsal line, either straight or wavy, but never composed of an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, and without any darkening, dark specks or blotched pigment within the midline, this effectively being diagnostic of the clade and the three species within the clade.

Within the so-called western clade of species, they are separated from one another and eastern clade species by the following unique character combinations:

D. oxyi *sp. nov.* occurs in most parts of Queensland, except for the Granite Belt in the high altitude south-east (an area that is in this context, that which is bound by Bolivia Hill (NSW) in the south, Inglewood (Qld) in the west and Fenton/Toowoomba (Qld) in the north) and the very far south-west of the State, or the tropics and far north-west. It is readily separated from the other species in the complex by the presence of a thick mid dorsal line combined with either no white spots or flecks on the otherwise dark coloured flanks, or if any spots are present, they are tiny, widely scattered and very few in number and definitely not configured into obvious lines.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. crotalusei *sp. nov.* occurs in north-west New South Wales, generally west of the New England region. The exact boundaries between this species and *D. oxyi* *sp. nov.* to the north and *D. sloppi* *sp. nov.* to the south-west is not certain, but in terms of the first appears to be just north of the Queensland border and in terms of the second, somewhere just north of Dubbo, New South Wales.

Like *D. oxyi* *sp. nov.*, *D. crotalusei* has a thick mid dorsal line, although the most extremely thick mid dorsal lines are seen in specimens of *D. oxyi* *sp. nov.*. Unlike *D. oxyi* *sp. nov.*, *D. crotalusei* *sp. nov.* has a series of 9-13 well defined small yellow spots running along the upper flank. Any other spots on the flanks, if present are tiny, ill defined and barely discernable.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. sloppi *sp. nov.* from southern inland New South Wales and nearby parts of northern Victoria and south-east South Australia is readily separated from all other species in the complex by its generally faded colour pattern. The contrast between dark and light is reduced, making the over-all appearance more dull.

Further separating this species from all others in the complex are that the mid-dorsal line is reduced in thickness to become moderate to thin, with the outer edge becoming jagged, but still not obviously composed of joined dots as seen in forms from the eastern clade of species.

In terms of the jagged edge, there are 12 or more jagged edges on the body (either side of the line), versus less than ten (at most), if present, in either *D. crotalusei* *sp. nov.* or *D. oxyi* *sp. nov.*. In *D. sloppi* *sp. nov.* the line of white spots on the upper flank has the spots enlarged in size and also reduced in colour intensity, giving the lizard overall are far more sandy colouration as compared to others in the complex.

The mid dorsal line continues onto the original tail and in many specimens is continuous to the end, although breaks are also seen in some specimens.

Consistent in this species is that the light on the tail dorsum is not boldly marked black on the edges, but is instead bordered by black peppering or marbling.

Dark of the sides of the dorsum and upper flank is greyish in colour.

Within the so-called eastern clade of five species, they are separated from one another and western clade species by the following unique character combinations:

D. roswellingtoni *sp. nov.* occurs in the Granite Belt of far south-east Queensland and immediately adjacent New South Wales including an area bound by Bolivia Hill, New South Wales / Stanthorpe, Queensland in the South, Fenton, Queensland in the North and Inglewood, Queensland in the west, encompassing an area of more than 100 km east to west and 200 km north to south.

It is readily separated from the other species in the complex by the effective removal of the mid-dorsal line, which is either tiny, vestigial, usually broken and otherwise not visible or indistinct.

On the dorsum there are an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, these being either paired or alternating, or partially both. When they are exactly paired, the back takes on an appearance of having a series of blotches running down the spine. In addition to the preceding, on the dark coloured flanks are a large number (usually over 20) of quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Light colouration on the original tail is always in the form of spots and blotches and never runs continually down the tail in a line. It is bold in colour contrast.

D. vittatus Gray, 1832 of the type form occurs in the New

England region of New South Wales, generally south of a line from Grafton, through Glen Innes and Inverell, and slightly west of these highlands, and generally north of the Hunter Valley in mid (coastal) central New South Wales.

It is similar in many respects to *D. roswellingtoni* sp. nov., but differs in that there is a narrow, but bold mid dorsal line that sits between the U-shaped blotches on either side and covers the flat side of these shapes. As a result the extensions of the midline are knob shaped, rather than triangular. On the dark coloured flanks are usually less than 15 quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Unlike *D. roswellingtoni* sp. nov., these flank spots are faded in intensity.

Light colouration on the original tail is always in the form of spots and blotches, but these are reduced and they never run continually down the tail in a line, instead being widely broken. The contrast between dark and light on the tail is reduced, with the bordering of the light with black, being strongly reduced and only partial.

D. richardwellsi sp. nov. occurs in the Sydney Basin, including the region bound by the Hunter Valley in the north, Royal National Park in the South, Blue Mountains in the west, but then extending north-west from there to hillier areas, at least as far west as Bathurst (all in New South Wales).

D. richardwellsi sp. nov. is separated from the other species in the complex by having an expanded midline, which varies between allowing the joined blotches to remain discernable to so wide that only the points extrude.

Diagnostic of this taxon and separating it from other species in the western clade of species that have a wide mid dorsal line is that in *D. richardwellsi* sp. nov. there are black spots, peppering or smudging within the mid dorsal line. That is not seen in the other species.

The flanks have about 30 evenly scattered tiny spots on either side and there are some scattered spots on the sides of the neck. This species has a very strong brown tinge throughout, including the mid-dorsal line which is brownish, as opposed to yellowish or beige in the other species. The flanks are also brownish grey or at least with a brown wash within the grey. The (original) tail is mainly brown and only has widely scattered yellow spots or blotches on the dorsum. That is, there is no continuous line running down it. The grey on the tail (mainly anteriorly) is mainly in the form of peppering over the brown.

D. fiacummingae sp. nov. appears to be restricted to the region immediately surrounding Australia's capital city, Canberra, ACT and south to about Lake Hume on the NSW and Victorian border. Dorsally it appears very similar at a glance to *D. roswellingtoni* sp. nov..

D. fiacummingae sp. nov. has a very thin, but generally continuous line running down the midline. However this line is so thin as to not affect the general view that the dorsum consists of a series of even, uneven or partially even blotches running down the midline. While the appearance in *D. roswellingtoni* sp. nov. is of paired blotches running down the back, in *D. fiacummingae* sp. nov. the appearance is invariably of a wavy line or similar running down the back, or alternatively a series of joined or separated diamonds running down the spine (see below).

In *D. fiacummingae* sp. nov. the blotches extending from the spine are not so much U-shaped as V-shaped and often elongated and/or black etched at the tips, also changing the overall appearance of this species as opposed to the morphologically similar species in this complex.

The flanks of *D. fiacummingae* sp. nov. have medium to large yellow spots that are reasonably distinct and sometimes black etched, but not organised into any obvious line. The original tail has a series of alternating thin, wide (elongated cross-ways) blotches across the top, widely broken by areas of darker

pigment, that is considerably lighter than that of the flanks. The flanks themselves are dark brown at the top, rapidly becoming light and yellow near the bottom.

D. dalegibbonsi sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., but is readily separated from that species by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present (rarely and only it seems, in specimens from north of Sydney harbour and near the coast), at least one row with distinctively smaller spots) and dark peppering on the light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov..

When the lighter coloured mid-dorsal line is moderate in width in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov. only), it invariably has black marks, spots, blotches or peppering within it, which is not seen in the western clade species, where the colouration of the mid-dorsal line is always immaculate.

The eight preceding species are separated from all other species within *Diplodactylus sensu lato, sensu* Hoser (2017) (= *sensu* Cogger, 2014), by the following combination of characters:

There is a prominent pale yellowish-white vertebral stripe or series of blotches (usually joined), starting from the back of the relatively uniformly coloured head, running down the midline of the body to the tail; the dorsum consists of a mid vertebral line or similar, of light colour (yellowish or white, rarely brownish) against a dark grey or grey brown background that extends to the flanks; there are usually at least some white or yellow spots on the flanks that are usually, but not always of similar size and may be arranged in lines or apparently scattered randomly; they are not dark edged, or if so, very faintly; venter is white, finely peppered dark brown. The flanks are greyish, usually all over, but at least near the upper surface of the dorsum.

Postocular band is present but it does not form an occipital band, because a distinct light line runs from the back of the head onto the midline of the body, usually onto the body, or in the alternative at least as far as the back of the neck (in *D. roswellingtoni* sp. nov.).

First supralabial slightly to markedly higher than the second; mid dorsal scales are not enlarged or plate-like and usually only slightly larger than the ventrals; interorbitals 23-38; mental scale is lanceolate, longer than wide; anterior nasal absent; labials are noticeably larger than the adjacent loreals; dorsal and flank scales homogenous, small and barely larger than the ventrals; rostral is partly divided by a median groove above; 6-10 supralabials, being larger than the adjacent loreals; nostril contacts rostral; no pre-anal pores; 2-10 post-anal tubercles.

Digits long, slightly flattened. Underneath they have a relatively large pair of subdigital lamellae, followed by at least two series of enlarged scales, reducing in size proximally. Dorsal eyelid is well differentiated; body moderate in shape; snout rounded in shape. Tail is more than half the snout-vent length (about 60%) and more-or-less round in cross-section, being very slightly flattened and fat in shape; average snout-vent length is about 50 mm. Karyotype 2n = 38, all acrocentric (King 1977).

D. oxyi sp. in life is depicted in Wilson and Swan (2021) on page 105, second from top and online at:

<https://www.inaturalist.org/observations/151014864>

and

<https://www.inaturalist.org/observations/150038176>

and

<https://www.inaturalist.org/observations/70184683>

and

https://www.flickr.com/photos/colonel_007/49090903473/

and
https://www.flickr.com/photos/zimny_anders/50217210566/
 and
<https://www.flickr.com/photos/angusmcnab/8202463922/>
D. crotalusei sp. nov. is depicted in life in Cogger (2014) on page 305 bottom and online at:
<https://www.inaturalist.org/observations/56495320>
 and
<https://www.inaturalist.org/observations/143176773>
D. sloppi sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/38053718>
 and
<https://www.inaturalist.org/observations/150042635>
 and
<https://www.inaturalist.org/observations/54980263>
 and
<https://www.flickr.com/photos/stephenmahony/9398616550/>
D. rosswellingtoni sp. nov. is depicted in life in Wilson and Swan (2021) on page 105 at top and online at:
<https://www.flickr.com/photos/ryanfrancis/23689942519/>
 and
<https://www.flickr.com/photos/ryanfrancis/23689962879/>
 and
<https://www.flickr.com/photos/96574168@N02/16380936988/>
 and
<https://www.inaturalist.org/observations/17546852>
D. vittatus of the type form is depicted online at:
<https://www.inaturalist.org/observations/152216245>
 and
<https://www.inaturalist.org/observations/66496125>
D. richardwellsi sp. nov. is depicted in life in Hoser (1989) on page 70 bottom and online at:
<https://www.flickr.com/photos/ryanfrancis/40589220952/>
 and
<https://www.inaturalist.org/observations/9052985>
 and
<https://www.inaturalist.org/observations/21904112>
 and
<https://www.inaturalist.org/observations/57809875>
D. fiacummingae sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/21547907>
 and
<https://www.inaturalist.org/observations/124179429>
 and
<https://www.inaturalist.org/observations/17736608>
 and
<https://www.inaturalist.org/observations/17962040>
 and
<https://www.inaturalist.org/observations/169550906>
 and
<https://www.flickr.com/photos/189037423@N06/51127189544/>
 and
<https://www.flickr.com/photos/189037423@N06/51168187379/>
D. dalegibbonsi sp. nov. is depicted in life online at:
<https://www.flickr.com/photos/68921296@N06/14541766696/>
 and
<https://www.inaturalist.org/observations/42302215>
 and
<https://www.inaturalist.org/observations/74142230>
 and
<https://www.flickr.com/photos/23031163@N03/14629994784/>

Distribution: *D. fiacummingae* sp. nov. appears to be restricted to the region immediately surrounding Australia's capital city, Canberra, ACT and south to at least Lake Hume on the NSW, Victoria border (straight line distance of about 150 km), being the known minimum range for this species. This includes the populations found south of Canberra around the Cooma district in New South Wales.

Where this species is most abundant coincides with areas of human habitation in the form of housing or agriculture and therefore it should be treated as vulnerable.

This is a similar situation as seen for the species within the same region in the genus *Tympanocryptis* Peters, 1863, namely *T. lineata* Peters, 1863 (Cooma plain) and *T. telecom*, Wells and Wellington, 1985. *Tympanocryptis osbornei* Melville, Chaplin, Hutchinson, Sumner, MacDonald and Sarre, 2019 is a junior synonym of *T. lineata* and so the later 2019 name should not be used. See Hoser (2019a, 2019b) for further details relevant to these species and the Victorian taxon, *T. pinguicollis* Mitchell, 1948.

In terms of *Diplodactylus fiacummingae* sp. nov., most habitat within the putative range of the species is unsuitable for it and not inhabited by it, underscoring why it may be a species vulnerable to extinction.

Etymology: *D. fiacummingae* sp. nov. is named in honour of former investigative journalist, Fia Cumming of Lyons, ACT, Australia, in recognition for her services to wildlife conservation in Australia. See Hoser (1996) for the details.

DIPLODACTYLUS DALEGIBBONSI SP. NOV.

LSIDurn:lsid:zoobank.org:act:692A5434-536F-46AD-BFF4-1D263F1E277E

Holotype: A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number 15339 collected from 8.8 km north-north-east of Eaglehawk, Victoria, Australia, Latitude -36.65 S., Longitude 144.28 E.

This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D15340, D15341 both collected from 8.8 km north-north-east of Eaglehawk, Victoria, Australia, Latitude -36.65 S., Longitude 144.28 E.

Diagnosis: Until now, *Diplodactylus vittatus* Gray, 1832, *sensu* Oliver *et al.* (2007a) (= Cogger 2014), has been treated as a wide-ranging taxon throughout most of the eastern third of Australia, excluding the hottest, driest areas, the tropics and the colder parts of southern Victoria (as well as not in Tasmania), with the distribution including the far south-east of South Australia.

There are in fact eight species, seven formally named for the first time in this paper and all are separated from one another as follows;

The eight species are within two main clades (*sensu* Oliver *et al.* 2017a), five in the so-called eastern clade, including the type form of *D. vittatus*, and three in the so called western clade, occupying most of the range previously outlined, including most of Queensland, the western division of New South Wales and into northern Victoria and South Australia.

While there is significant variation between species, the two clades are usually characterised as follows:

The eastern clade from far south-east Queensland, along the coast and nearby uplands to northern Victoria is characterised by a mid dorsal line that is composed primarily of a series of filled-in beige coloured U-shaped blotches, joined by the flat side to a mid dorsal line of the same lighter colour, that is usually thin, extremely thin or at times absent. Exceptional to this is the Sydney basin taxon *D. richardwellsi* sp. nov. which often has an expanded mid-dorsal line that tends to obscure the series of filled-in U-shaped blotches, joined by the flat side

to a mid dorsal line and in which case the tips of the U-shapes become sharp edged triangle points. The Central Victorian form, *D. dalegibbonsi* sp. nov., is similar in most respects to *D. richardwellsi* sp. nov., in colour, but is readily separated from that form by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present, at least one row with distinctively smaller spots) and dark peppering on a light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov.

When the lighter coloured mid-dorsal line is moderate to wide in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov.), it invariably has black marks, spots, blotches or peppering, which is not seen in the western clade species.

The western clade species always has a thick mid-dorsal line, either straight or wavy, but never composed of an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, and without any darkening, dark specks or blotched pigment within the midline, this effectively being diagnostic of the clade and the three species within the clade.

Within the so-called western clade of species, they are separated from one another and eastern clade species by the following unique character combinations:

D. oxyi sp. nov. occurs in most parts of Queensland, except for the Granite Belt in the high altitude south-east (an area that is in this context, that which is bound by Bolivia Hill (NSW) in the south, Inglewood (Qld) in the west and Fenton/Toowoomba (Qld) in the north) and the very far south-west of the State, or the tropics and far north-west. It is readily separated from the other species in the complex by the presence of a thick mid dorsal line combined with either no white spots or flecks on the otherwise dark coloured flanks, or if any spots are present, they are tiny, widely scattered and very few in number and definitely not configured into obvious lines.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. crotalusei sp. nov. occurs in north-west New South Wales, generally west of the New England region. The exact boundaries between this species and *D. oxyi* sp. nov. to the north and *D. sloppi* sp. nov. to the south-west is not certain, but in terms of the first appears to be just north of the Queensland border and in terms of the second, somewhere just north of Dubbo, New South Wales.

Like *D. oxyi* sp. nov., *D. crotalusei* has a a thick mid dorsal line, although the most extremely thick mid dorsal lines are seen in specimens of *D. oxyi* sp. nov.. Unlike *D. oxyi* sp. nov., *D. crotalusei* sp. nov. has a series of 9-13 well defined small yellow spots running along the upper flank. Any other spots on the flanks, if present are tiny, ill defined and barely discernable.

The mid dorsal line runs continuously down the top of the (original) tail and if there is a break, it is always at the distal end. The light on the dorsum of the tail is boldly black edged.

Dark of the sides of the dorsum is blackish in colour.

D. sloppi sp. nov. from southern inland New South Wales and nearby parts of northern Victoria and south-east South Australia is readily separated from all other species in the complex by its generally faded colour pattern. The contrast between dark and light is reduced, making the over-all appearance more dull.

Further separating this species from all others in the complex are that the mid-dorsal line is reduced in thickness to become moderate to thin, with the outer edge becoming jagged, but still not obviously composed of joined dots as seen in forms from the eastern clade of species.

In terms of the jagged edge, there are 12 or more jagged edges on the body (either side of the line), versus less than ten (at most), if present, in either *D. crotalusei* sp. nov. or *D. oxyi* sp. nov.. In *D. sloppi* sp. nov. the line of white spots on the upper flank has the spots enlarged in size and also reduced in colour intensity, giving the lizard overall are far more sandy colouration as compared to others in the complex.

The mid dorsal line continues onto the original tail and in many specimens is continuous to the end, although breaks are also seen in some specimens.

Consistent in this species is that the light on the tail dorsum is not boldly marked black on the edges, but is instead bordered by black peppering or marbling.

Dark of the sides of the dorsum and upper flank is greyish in colour.

Within the so-called eastern clade of five species, they are separated from one another and western clade species by the following unique character combinations:

D. roswellingtoni sp. nov. occurs in the Granite Belt of far south-east Queensland and immediately adjacent New South Wales including an area bound by Bolivia Hill, New South Wales / Stanthorpe, Queensland in the South, Fenton, Queensland in the North and Inglewood, Queensland in the west, encompassing an area of more than 100 km east to west and 200 km north to south.

It is readily separated from the other species in the complex by the effective removal of the mid-dorsal line, which is either tiny, vestigial, usually broken and otherwise not visible or indistinct.

On the dorsum there are an obvious series of filled-in U-shaped blotches, joined by the flat side to a mid dorsal line, these being either paired or alternating, or partially both. When they are exactly paired, the back takes on an appearance of having a series of blotches running down the spine. In addition to the preceding, on the dark coloured flanks are a large number (usually over 20) of quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Light colouration on the original tail is always in the form of spots and blotches and never runs continually down the tail in a line. It is bold in colour contrast.

D. vittatus Gray, 1832 of the type form occurs in the New England region of New South Wales, generally south of a line from Grafton, through Glen Innes and Inverell, and slightly west of these highlands, and generally north of the Hunter Valley in mid (coastal) central New South Wales.

It is similar in many respects to *D. roswellingtoni* sp. nov., but differs in that there is a narrow, but bold mid dorsal line that sits between the U-shaped blotches on either side and covers the flat side of these shapes. As a result the extensions of the midline are knob shaped, rather than triangular. On the dark coloured flanks are usually less than 15 quite distinct medium sized yellow spots not organised into a single line, but instead scattered across the flank. Unlike *D. roswellingtoni* sp. nov., these flank spots are faded in intensity.

Light colouration on the original tail is always in the form of spots and blotches, but these are reduced and they never run continually down the tail in a line, instead being widely broken. The contrast between dark and light on the tail is reduced, with the bordering of the light with black, being strongly reduced and only partial.

D. richardwellsi sp. nov. occurs in the Sydney Basin, including the region bound by the Hunter Valley in the north, Royal National Park in the South, Blue Mountains in the west, but then extending north-west from there to hiller areas, at least as far west as Bathurst (all in New South Wales).

D. richardwellsi sp. nov. is separated from the other species in the complex by having an expanded midline, which varies between allowing the joined blotches to remain discernable to so wide that only the points extrude.

Diagnostic of this taxon and separating it from other species in the western clade of species that have a wide mid dorsal line is that in *D. richardwellsi* sp. nov. there are black spots, peppering or smudging within the mid dorsal line. That is not seen in the other species.

The flanks have about 30 evenly scattered tiny spots on either side and there are some scattered spots on the sides of the neck. This species has a very strong brown tinge throughout, including the mid-dorsal line which is brownish, as opposed to yellowish or beige in the other species. The flanks are also brownish grey or at least with a brown wash within the grey. The (original) tail is mainly brown and only has widely scattered yellow spots or blotches on the dorsum. That is, there is no continuous line running down it. The grey on the tail (mainly anteriorly) is mainly in the form of peppering over the brown.

D. fiacummingae sp. nov. appears to be restricted to the region immediately surrounding Australia's capital city, Canberra, ACT and south to about Lake Hume on the NSW and Victorian border. Dorsally it appears very similar at a glance to *D. rosswellingtoni* sp. nov..

D. fiacummingae sp. nov. has a very thin, but generally continuous line running down the midline. However this line is so thin as to not affect the general view that the dorsum consists of a series of even, uneven or partially even blotches running down the midline. While the appearance in *D. rosswellingtoni* sp. nov. is of paired blotches running down the back, in *D. fiacummingae* sp. nov. the appearance is invariably of a wavy line or similar running down the back, or alternatively a series of joined or separated diamonds running down the spine (see below).

In *D. fiacummingae* sp. nov. the blotches extending from the spine are not so much U-shaped as V-shaped and often elongated and/or black etched at the tips, also changing the overall appearance of this species as opposed to the morphologically similar species in this complex.

The flanks of *D. fiacummingae* sp. nov. have medium to large yellow spots that are reasonably distinct and sometimes black etched, but not organised into any obvious line. The original tail has a series of alternating thin, wide (elongated cross-ways) blotches across the top, widely broken by areas of darker pigment, that is considerably lighter than that of the flanks. The flanks themselves are dark brown at the top, rapidly becoming light and yellow near the bottom.

D. dalegibbonsi sp. nov., occurs in the central Victorian goldfields, with a centre of distribution on the town of Bendigo. It is not found in the far north-east or far north-west of Victoria, or in the south of the State either. *D. dalegibbonsi* sp. nov. is similar in most respects to *D. richardwellsi* sp. nov., but is readily separated from that species by the presence of strong blackening at the edges of the light midline markings, as in on the border of the outer edge (versus weak or absent), two well-defined rows of white-yellowish spots along the side of either flank, (versus none, or if present (rarely and only it seems, in specimens from north of Sydney harbour and near the coast), at least one row with distinctively smaller spots) and dark peppering on the light surface of the anterior of the upper surface of the head, versus mainly unicolour in *D. richardwellsi* sp. nov..

When the lighter coloured mid-dorsal line is moderate in width in the eastern clade species (*D. richardwellsi* sp. nov., and *D. dalegibbonsi* sp. nov. only), it invariably has black marks, spots, blotches or peppering within it, which is not seen in the western clade species, where the colouration of the mid-dorsal line is always immaculate.

The eight preceding species are separated from all other species within *Diplodactylus sensu lato*, sensu Hoser (2017) (= sensu Cogger, 2014), by the following combination of characters:

There is a prominent pale yellowish-white vertebral stripe or series of blotches (usually joined), starting from the back of the relatively uniformly coloured head, running down the midline of the body to the tail; the dorsum consists of a mid vertebral line or similar, of light colour (yellowish or white, rarely brownish) against a dark grey or grey brown background that extends to the flanks; there are usually at least some white or yellow spots on the flanks that are usually, but not always of similar size and may be arranged in lines or apparently scattered randomly; they are not dark edged, or if so, very faintly; venter is white, finely peppered dark brown. The flanks are greyish, usually all over, but at least near the upper surface of the dorsum.

Postocular band is present but it does not form an occipital band, because a distinct light line runs from the back of the head onto the midline of the body, usually onto the body, or in the alternative at least as far as the back of the neck (in *D. rosswellingtoni* sp. nov.).

First supralabial slightly to markedly higher than the second; mid dorsal scales are not enlarged or plate-like and usually only slightly larger than the ventrals; interorbitals 23-38; mental scale is lanceolate, longer than wide; anterior nasal absent; labials are noticeably larger than the adjacent loreals; dorsal and flank scales homogenous, small and barely larger than the ventrals; rostral is partly divided by a median groove above; 6-10 supralabials, being larger than the adjacent loreals; nostril contacts rostral; no pre-anal pores; 2-10 post-anal tubercles.

Digits long, slightly flattened. Underneath they have a relatively large pair of subdigital lamellae, followed by at least two series of enlarged scales, reducing in size proximally. Dorsal eyelid is well differentiated; body moderate in shape; snout rounded in shape. Tail is more than half the snout-vent length (about 60%) and more-or-less round in cross-section, being very slightly flattened and fat in shape; average snout-vent length is about 50 mm. Karyotype 2n = 38, all acrocentric (King 1977).

D. oxyi sp. in life is depicted in Wilson and Swan (2021) on page 105, second from top and online at:

<https://www.inaturalist.org/observations/151014864>

and

<https://www.inaturalist.org/observations/150038176>

and

<https://www.inaturalist.org/observations/70184683>

and

https://www.flickr.com/photos/colonel_007/49090903473/

and

https://www.flickr.com/photos/zimny_anders/50217210566/

and

<https://www.flickr.com/photos/angusmcnab/8202463922/>

D. crotalusei sp. nov. is depicted in life in Cogger (2014) on page 305 bottom and online at:

<https://www.inaturalist.org/observations/56495320>

and

<https://www.inaturalist.org/observations/143176773>

D. sloppi sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/38053718>

and

<https://www.inaturalist.org/observations/150042635>

and

<https://www.inaturalist.org/observations/54980263>

and

<https://www.flickr.com/photos/stephenmahony/9398616550/>

D. rosswellingtoni sp. nov. is depicted in life in Wilson and Swan (2021) on page 105 at top and online at:

<https://www.flickr.com/photos/ryanfrancis/23689942519/>

and

<https://www.flickr.com/photos/ryanfrancis/23689962879/>

and
<https://www.flickr.com/photos/96574168@N02/16380936988/>
 and
<https://www.inaturalist.org/observations/17546852>
D. vittatus of the type form is depicted online at:
<https://www.inaturalist.org/observations/152216245>
 and
<https://www.inaturalist.org/observations/66496125>
D. richardwellsi sp. nov. is depicted in life in Hoser (1989) on page 70 bottom and online at:
<https://www.flickr.com/photos/ryanfrancis/40589220952/>
 and
<https://www.inaturalist.org/observations/9052985>
 and
<https://www.inaturalist.org/observations/21904112>
 and
<https://www.inaturalist.org/observations/57809875>
D. fiacummingae sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/21547907>
 and
<https://www.inaturalist.org/observations/124179429>
 and
<https://www.inaturalist.org/observations/17736608>
 and
<https://www.inaturalist.org/observations/17962040>
 and
<https://www.inaturalist.org/observations/169550906>
 and
<https://www.flickr.com/photos/189037423@N06/51127189544/>
 and
<https://www.flickr.com/photos/189037423@N06/51168187379/>
D. dalegibbonsi sp. nov. is depicted in life online at:
<https://www.flickr.com/photos/68921296@N06/14541766696/>
 and
<https://www.inaturalist.org/observations/42302215>
 and
<https://www.inaturalist.org/observations/74142230>
 and
<https://www.flickr.com/photos/23031163@N03/14629994784/>

Distribution: *D. dalegibbonsi* sp. nov., occurs in the central Victorian goldfields, with a centre of distribution on the town of Bendigo. It is not found in the far north-east or far north-west of Victoria, or in the south of the State either.

Etymology: *D. dalegibbonsi* sp. nov. is named in honour of Dale Gibbons, of Maiden Gully, (Bendigo) in recognition of a lifetime's services to herpetology and fighting systemic corruption in the Victorian Police.

I note that in Bendigo in particular, the illicit drug trade is rife, controlled by the corrupt Victorian police, with the support of a cocaine addicted judiciary (including both magistrates and judges, all of whom are appointed in a corrupt and secretive nepotistic manner), and that this nefarious illicit drug business caused the premature loss of the life of the daughter of Dale Gibbons.

JOHNPAT SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:6C16FAD6-EC9A-4DF2-AD2C-A0B087B5C797

Type species: *Diplodactylus (Johnpat) johnpati* sp. nov. (this paper).

Diagnosis: The three species within this divergent subgenus are readily separated from all other species within *Diplodactylus* Gray, 1832 *sensu lato*, *sensu* Hoser (2017b) (= *sensu* Cogger 2014), by having labials reduced to the size of

granules, being more or less equal in size to, or smaller than the adjacent loreals; undifferentiated dorsal eyelid; spheroidal mental shield; strongly depressed (original) tail; 6-7 lamellae under the fourth finger and 6-9 lamellae under the fourth toe; large apical plates and a dorsal colouration consisting of white spotting (sometimes joined) on an otherwise plain coloured background (modified from Cogger, 2014).

The phylogeny published by Pepper *et al.* (2006) confirmed the divergence of the relevant species from others within *Diplodactylus sensu lato*, *sensu* Cogger (2014) and in effect the sensibility of the action of erecting the subgenus herein.

Distribution: Confined to the Pilbara and immediately adjacent rocky regions to the north, south or east in north-west Western Australia, Australia.

Etymology: Both subgenus *Johnpat* subgen. nov. and the species *Diplodactylus (Johnpat) johnpati* sp. nov. are named in memory and honour of John Pat.

John Peter Pat (31 October 1966 - 28 September 1983) was an Aboriginal Australian boy from Roeburne in Western Australia, who, at the age of 16 years and 11 months, died after being bashed to death in an unprovoked attack by a gang of five racist Western Australian Police Officers.

A subsequent autopsy revealed a fractured skull, haemorrhage and swelling, as well as bruising and tearing of the brain. Pat had sustained a number of massive blows to the head. One bruise at the back of his head was the size of the palm of a hand and many other bruises were visible on his head. In addition to the head injuries, he had two broken ribs and a torn aorta, the major blood vessel leading from the heart.

See more detail at:

<https://ia.anu.edu.au/biography/pat-john-peter-15031> (Olive, 2012).

Content: *Diplodactylus (Johnpat) johnpati* sp. nov. (type species) (this paper); *D. (Johnpat) galaxias* Doughty, Pepper and Keogh, 2010; *D. savagei* Kluge, 1963.

DIPLODACTYLUS (JOHNPAT) JOHNPATI SP. NOV.

LSIDurn:lsid:zoobank.org:act:AB63E27E-0B0E-4A1B-AABC-7CD7FB99BCFA

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R145253 collected from 5 km south of the Mount Tom Price mine site, Pilbara District, Western Australia, Australia, Latitude -22.815 S., Longitude 117.776944 E.

This government-owned facility allows access to its holdings.

Paratypes: 1/ Two preserved specimens at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R151171 collected from the Tom Price area, Pilbara District, Western Australia, Australia, Latitude -22.488056 S., Longitude 117.729167 E. and specimen number R135425 collected from Mount Brockman, Pilbara District, Western Australia, Australia, Latitude -22.45 S., Longitude 117.29 E.

Diagnosis: Until now, *Diplodactylus (Johnpat) johnpati* sp. nov. has been treated as part of the main population of *D. savagei* Kluge, 1963, essentially a Pilbara endemic, and as a single species.

However previously published molecular evidence (see comment below), as well as biogeographical evidence demonstrates otherwise and hence it is formally named herein. The two forms are morphologically divergent and diagnosable and the hitherto unnamed one is formally named herein as *D. johnpati* sp. nov..

D. johnpati sp. nov. from south of the Fortescue River drainage in the Pilbara Region of Western Australia is readily separated from *D. savagei* from the north of the Fortescue River drainage, as well as from *D. galaxias* Doughty, Pepper and Keogh, 2010, by the following character differences:

D. savagei is densely spotted yellow on a reddish-brown back, versus moderately spotted in *D. johnpati* sp. nov. also on a reddish-brown back, versus lightly spotted with tiny spots on a more purplish brown dorsum in *D. galaxias*, noting that the three preceding species form the entirety of the subgenus *Johnpat* subgen. nov..

The eye of *D. savagei* is brown with a bluish-grey tinge, versus brown with a light orange tinge in *D. johnpati* sp. nov., versus mainly bluey grey in *D. galaxias*.

There are a limited number of tiny white or yellow flecks on the back of the head, posterior to the eyes in *D. savagei*, versus none in *D. johnpati* sp. nov., versus many in *D. galaxias*.

D. johnpati sp. nov. has a dorsum that has a greyish-black tinge on the upper surfaces and becomes strongly yellowish on the lateral surfaces, versus consistently reddish-orange-brown on both dorsum and upper sides in *D. savagei*. The dorsum and upper flanks of *D. galaxias* are of similar colouration.

In all three species, the size of the spots is smaller on the flanks than on the dorsum, but this is usually only noticeable on a close inspection.

D. savagei is depicted in life in Wilson and Swan (2021) page 103, second from bottom and online at:

<https://www.flickr.com/photos/171250498@N08/52513374974/>

and

<https://www.inaturalist.org/observations/46070030>

and

<https://www.inaturalist.org/observations/117715783>

D. johnpati sp. nov. is depicted in life in Cogger (2014) on page 303 top, Brown (2014) on page 375 bottom left and online at:

<https://www.flickr.com/photos/128365570@N04/42027903974/>

and

<https://www.flickr.com/photos/124699310@N06/50024211026/>

and

<https://www.flickr.com/photos/125083697@N03/24159057017/>

D. galaxias is depicted in life in Wilson and Swan (2021) on page 95 at bottom, Cogger (2014) on page 297 at top and online at:

<https://www.flickr.com/photos/euprepiosaur/40228379143/>

and

<https://www.flickr.com/photos/124699310@N06/14440936956/>

The three species within the divergent subgenus *Johnpat* subgen. nov. are readily separated from all other species within *Diplodactylus* Gray, 1832 *sensu lato*, *sensu* Hoser (2017b) (= *sensu* Cogger 2014), by having labials reduced to the size of granules, being more or less equal in size to, or smaller than the adjacent loreals; undifferentiated dorsal eyelid; spheroidal mental shield; strongly depressed (original) tail; 6-7 lamellae under the fourth finger and 6-9 lamellae under the fourth toe; large apical plates and a dorsal colouration consisting of white spotting (sometimes joined) on an otherwise plain coloured background (modified from Cogger, 2014).

The phylogeny published by Pepper *et al.* (2006) confirmed the divergence of the relevant species from others within *Diplodactylus sensu lato*, *sensu* Cogger (2014) and in effect the sensibility of the action of erecting the subgenus in this paper.

Comment: In the notorious PRINO (peer reviewed in name only) online "journal", "Zootaxa" (often called "Zootoxic") Doughty *et al.* (2010) published results of their lavishly expensive tax-payer funded molecular study of the putative taxon *D. savagei*.

While their results clearly demonstrated three valid species (all of similar divergences from one another and crudely estimated herein at about 4 MYA, based on divergences measured and other species divergences across the same biogeographical barrier, being the Fortescue River), the authors only named one of those.

That one was *D. galaxias* Doughty, Pepper and Keogh, 2010, which morphologically at least, was definitely the most divergent of the three. That taxon is unusual among broken Pilbara taxa, in that it appears to have established itself principally within the biogeographic barrier that otherwise separates the usually broken up species, being the Fortescue River basin and/or floodplains.

The typical situation is of two species (as a pair of similar forms) occupying north and south of the Fortescue River and absence of any in between.

The type specimen of *D. savagei* came from Marble Bar, Western Australia, being well north of the Fortescue River, *D. galaxias* has a distribution centred on and almost entirely confined to the Fortescue River drainage and appears to be a block on gene flow between the specimens from the south of the there and the type form to the north.

This in effect means that the isolated southern population has not until now, had a scientific name.

This situation involving the Fortescue drainage basin is not an uncommon situation for species or subspecies pairs in the Pilbara, including for example *Wellsopus robwatsoni* Hoser, 2017 (Hoser 2017b) from north of the Fortescue River and *W. elegans* (Kluge, 1974) from south of there; *Vermicella sloppi* Hoser, 2020 (Hoser, 2020b) from north of the Fortescue River and *V. snelli* (Storr, 1967) from south of there, or *Acanthophis wellsei* Hoser, 1998 (south of the Fortescue River) and *A. wellsei hoseriae* Hoser, 2014 (Hoser, 2014a) from north of it.

In their paper that was either not peer reviewed or (at best) not by anyone with knowledge of the subject matter (sham peer review), Doughty *et al.* (2010) made reference to their two populations of putative *D. savagei* from north and south of the Fortescue River basin in the Pilbara coming "into contact near the headwaters of the Fortescue River."

The statement was of course ridiculous and would have been removed from the online paper, had the online paper in fact been peer reviewed in any proper sense of the word.

It is common knowledge and findable by way of reference to any relevant map, that the Fortescue River is unique among the major watercourses in the Pilbara in that it cuts through the region from east to west (as opposed to simply draining from the hills) and therefore the Fortescue River does not have headwaters in the region that putative *D. savagei* occur, allowing an easy crossing of the biogeographical barrier.

As the taxpayer funded genetic evidence obtained by Doughty *et al.* (2010) shows divergence of the two populations of putative *D. savagei* being 8.6 to 10.5% in uncorrected pairwise distance (crudely estimated at about 4 MYA by comparison with other Australian reptile species with calibrated phylogenies) in the same context and there is no obvious contact between the populations or admixture, the argument for recognising both as separate species (as done herein) is compelling.

Distribution: *D. johnpati* sp. nov. occurs in the Pilbara region of Western Australia as an endemic form, with outlier populations slightly south, south of the Fortescue River.

Etymology: Both subgenus *Johnpat* subgen. nov. and the species *Diplodactylus (Johnpat) johnpati* sp. nov. are named in memory and honour of John Pat (see subgenus etymology in this paper for more detail).

YANKUNYTJATJARAGECKO SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:784EBE7B-CA83-4747-923D-130BA595426C

Type Species: *Diplodactylus (Yankunytjatjaragecko) aah* sp. nov. (this paper)

Diagnosis: The three divergent *Diplodactylus* Gray, 1842 species within the subgenus *Yankunytjatjaragecko* subgen. nov. (two formally named in this paper for the first time) are separated from all other species within *Diplodactylus sensu*

lato, sensu Hoser (2017b) (= sensu Cogger 2014), by the following suite of characters:

Average adult size is about 50 mm snout-vent. Length of tail is usually a fraction less than half the snout-vent length or in the alternative, no more than 50% of it (measured on underside from vent in a straight line); there is a dark postocular band that is continuous behind the occipital region; the dorsum has an obvious colour pattern, including four to six largish pale diamond or circular like irregular shapes across the midline of the dorsum against a relatively uniform background colour ranging from orange to red; white venter; dorsal eyelid is well differentiated; snout rounded; 23 or more interorbitals; mental scale is lanceolate in shape, equal to or only slightly larger than the first infralabial in size; nasal contacts rostral; anterior nasal absent; the 8-10 upper labials are noticeably larger than the adjacent loreals; moderately built body; original tail is more or less round in cross-section, but very slightly flattened anteriorly. Dorsal and flank scales are relatively large, low, juxtaposed or separated by tiny granules; no preanal pores; 5-8 post-anal tubercles in males (only). Digits are long, narrow and depressed below with a large pair of apical lamellae followed by moderately enlarged lamellae in two groups (modified from Cogger 2014 with additions).

Distribution: The three species are confined to the ranges of central Australia in the south of the Northern Territory and northern and central South Australia, where they inhabit rocky areas and associated gibber plains in three discrete areas separated from one another by sand dunes or river channels, where there appears to be an absence of contact between the relevant morphologically divergent populations.

Etymology: *Yankunytjatjaragecko* subgen. nov. is named in recognition of the original native inhabitants of the region (predating the British invasion of the continent), the Yankunytjatjara people and the "gecko" suffix identifies the type of animal named in the English language, now effectively used universally in Australia.

Content: *Diplodactylus* (*Yankunytjatjaragecko*) *aah* sp. nov. (type species) (this paper); *D.* (*Yankunytjatjaragecko*) *galeatus* Kluge, 1963; *D.* (*Yankunytjatjaragecko*) *ooh* sp. nov..

DIPLODACTYLUS (YANKUNYTJATJARAGECKO) AAH SP. NOV.

LSIDurn:lsid:zoobank.org:act:E65759FD-3664-4080-A5E6-7B7690B6C1E4

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.178147 collected from Namatjira Drive, 5.4 km east of Ellery Creek Big Hole turnoff, being west of Alice Springs, Northern Territory, Australia, Latitude -23.7976 S., Longitude 133.12902 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.178148 collected from Namatjira Drive, 5.4 km east of Ellery Creek Big Hole turnoff, being west of Alice Springs, Northern Territory, Australia, Latitude -23.7976 S., Longitude 133.12902 E., 2/ A preserved specimen at the Museum and Art Gallery of the Northern Territory, Darwin, Northern territory, Australia, specimen number R15534 collected from Chalet Camp, Owen Springs Station, Northern Territory, Australia, Latitude -23.733 S., Longitude 132.917 E., 3/ A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R38848 collected from 39 km west of the junction of Namatjira and Larapinta Drives, west of Alice Springs, Northern Territory, Australia, Latitude -23.77 S., Longitude 133.15 E.

Diagnosis: The two species, *Diplodactylus* (*Yankunytjatjaragecko*) *aah* sp. nov. from the Macdonell Ranges of central Australia and *D.* (*Yankunytjatjaragecko*)

ooh sp. nov. from the Bagot and Beddome Ranges in northern South Australia have until now been treated as northern populations of *D. galeatus* Kluge, 1963 with a type locality of Stuart Range, South Australia (adjacent to Coober Pedy).

The molecular phylogeny of Oliver *et al.* (2007a) indicated three main population groups, all diverging from one another somewhere between 5 and 10 MYA (see Fig. 3 in Oliver *et al.* 2007a), all populations of which also appear to be allopatric, being separated by zones of unsuitable habitat in the form of either (watercourse) channel country (flood plains) (between the southern two populations), or sand dunes (between the two more northern populations), hence prohibiting gene flow between any of the three.

As they are morphologically divergent, anciently separated and evolving separately, it is appropriate that they are treated as separate species.

The three species are separated from one another as follows: On the flank of the body, *D. galeatus* has obvious large yellow to yellow-white blotches on the upper flank and in some specimens a limited number of faded and scattered yellow spots below, but not extending to the upper flank. By contrast *D. ooh* sp. nov. has medium-sized faded yellow spots on the upper flank with moderately well-defined tiny yellow to yellow-white spots below on the lower flank, not extending to the upper flank. *D. aah* sp. nov. is readily separated from the other two species by the absence of any large or medium blotches or spots on the upper flank, but instead has numerous well defined tiny yellow or yellow white spots on the flanks (upper and lower), the number of such spots being obvious and far exceeding that seen in the other two species.

In terms of *D. aah* sp. nov. it is most easily separated from the other two species by the significantly reduced size and width of the four mid dorsal blotches between the fore and hind legs. While they are irregularly shaped and vary between specimens, these blotches are smaller in *D. aah* sp. nov. and the distance between the third and fourth blotches is much greater than that of the width of the blotches (measured down the longitudinal line), versus only slightly more in *D. galeatus* or roughly equal in *D. ooh* sp. nov. which invariably has wide (measured longitudinally) dorsal blotches.

Both *D. ooh* sp. nov. and *D. galeatus*, which as a pair are more similar to one another than the more divergent *D. aah* sp. nov. are further separated from *D. aah* sp. nov. by generally broken black encircling the outer edges of the pale beige coloured body blotches (which in turn sit against the uniform orange background colour).

In *D. aah* sp. nov. the black is somewhat thickened to more completely encircle the blotches.

Both *D. galeatus* and *D. ooh* sp. nov. have a deep orange-red dorsum, versus a somewhat more faded orange to orange-yellow dorsum in *D. aah* sp. nov. and without the obvious reddish hue seen in the other two species.

On upper surfaces of the (original) tail in both *D. galeatus* and *D. ooh* sp. nov. there are 3-4 lighter patches either without borders, or at best very widely separated black spots on the edges. By contrast on upper surfaces of the (original) tail the 2-3 light coloured tail blotches are boldly bordered black in *D. aah* sp. nov..

It should be noted that tail blotches in some specimens sometimes break up into two or more smaller ones, but are invariably connected, so in terms of the above are treated as one each.

The three divergent *Diplodactylus* Gray, 1842 species within the subgenus *Yankunytjatjaragecko* subgen. nov., being *D. galeatus*, *D. aah* sp. nov. and *D. ooh* sp. nov. are separated from all other species within *Diplodactylus* sensu lato, sensu Hoser (2017b) (= sensu Cogger 2014), by the following suite of characters:

Average adult size is about 50 mm snout-vent. Length of tail is usually a fraction less than half the snout-vent length or in the alternative, no more than 50% of it (measured on underside from vent in a straight line); there is a dark postocular band that is continuous behind the occipital region; the dorsum has an obvious colour pattern, including four to six largish pale diamond or circular like irregular shapes across the midline of the dorsum against a relatively uniform background colour ranging from orange to red; white venter; dorsal eyelid is well differentiated; snout rounded; 23 or more interorbitals; mental scale is lanceolate in shape, equal to or only slightly larger than the first infralabial in size; nasal contacts rostral; anterior nasal absent; the 8-10 upper labials are noticeably larger than the adjacent loreals; moderately built body; original tail is more or less round in cross-section, but very slightly flattened anteriorly. Dorsal and flank scales are relatively large, low, juxtaposed or separated by tiny granules; no preanal pores; 5-8 post-anal tubercles in males (only). Digits are long, narrow and depressed below with a large pair of apical lamellae followed by moderately enlarged lamellae in two groups (modified from Cogger 2014 with additions).

D. galeatus is depicted in life online at:

<https://www.flickr.com/photos/126237772@N07/38823057674/>
and

<https://www.inaturalist.org/observations/89307802>
and

<https://www.flickr.com/photos/189037423@N06/52363936950/>
and

<https://www.flickr.com/photos/189037423@N06/52363900799/>
D. aah sp. nov. is depicted in life in Brown (2014) on page 373, two photos in second row from top, Cogger (2014) on page 298 at top, Wilson and Swan (2021) on page 97 at top and online at:

<https://www.flickr.com/photos/mattsummerville/49018379752/>
and

<https://www.flickr.com/photos/58349528@N02/51124889246/>
and

https://www.flickr.com/photos/dan_lynch/5954119334/
and

<https://www.inaturalist.org/observations/145354494>
and

<https://www.inaturalist.org/observations/34202689>
and

<https://www.inaturalist.org/observations/128126419>
and

<https://www.inaturalist.org/observations/114792>

Distribution: *D. aah* sp. nov. is restricted the Macdonnell Ranges (AKA Tjoritja in Arrernte), central Australia (Northern Territory), Australia. It is separated from the more southern species *D. ooh* sp. nov. by sand dune habitat between the Macdonnell Ranges and the South Australian / Northern Territory border.

Etymology: When finding these geckos crossing roads at night, my Arrernte guide exclaimed "aah" when he saw one crossing the bitumen road. The Arrernte peoples are the original inhabitants of Central Australia, being in the area pre-dating the British invasion of the 1700's and 1800's.

DIPLODACTYLUS (YANKUNYTJATJARAGECKO) OOH SP. NOV.

LSIDDurn:lsid:zoobank.org:act:1304C976-E1DF-40ED-924C-72B3A5AE8335

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R47003 collected from 10 km west-south west of Mosquito Camp Dam on the New Crown Station, South

Australia, Australia, Latitude -26.1606 S., Longitude 134.3997 E.

This government-owned facility allows access to its holdings.

Paratypes: 1/ A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R47002 collected from 10 km west-south west of Mosquito Camp Dam on the New Crown Station, South Australia, Australia, Latitude -26.1606 S., Longitude 134.3997 E., 2/ Two preserved specimens at the South Australian Museum, Adelaide, South Australia, Australia, specimen numbers R25851 and R25852 both collected from Eringa Station, South Australia, Australia, Latitude -26.28 S., Longitude 134.72 E.

Diagnosis: The two species, *Diplodactylus (Yankunyjtjaragecko) aah* sp. nov. from the Macdonnell Ranges of central Australia and *D. (Yankunyjtjaragecko) ooh* sp. nov. from the Bagot and Beddoma Ranges in northern South Australia have until now been treated as northern populations of *D. galeatus* Kluge, 1963 with a type locality of Stuart Range, South Australia (adjacent to Coober Pedy).

The molecular phylogeny of Oliver *et al.* (2007a) indicated three main population groups, all diverging from one another somewhere between 5 and 10 MYA (see Fig. 3 in Oliver *et al.* 2007a), all populations of which also appear to be allopatric, being separated by zones of unsuitable habitat in the form of either (watercourse) channel country (flood plains) (between the southern two populations), or sand dunes (between the two more northern populations), hence prohibiting gene flow between any of the three.

As they are morphologically divergent, anciently separated and evolving separately, it is appropriate that they are treated as separate species.

The three species are separated from one another as follows:

On the flank of the body, *D. galeatus* has obvious large yellow to yellow-white blotches on the upper flank and in some specimens a limited number of faded and scattered yellow spots below, but not extending to the upper flank. By contrast *D. ooh* sp. nov. has medium-sized faded yellow spots on the upper flank with moderately well-defined tiny yellow to yellow-white spots below on the lower flank, not extending to the upper flank. *D. aah* sp. nov. is readily separated from the other two species by the absence of any large or medium blotches or spots on the upper flank, but instead has numerous well defined tiny yellow or yellow white spots on the flanks (upper and lower), the number of such spots being obvious and far exceeding that seen in the other two species.

In terms of *D. aah* sp. nov. it is most easily separated from the other two species by the significantly reduced size and width of the four mid dorsal blotches between the fore and hind legs. While they are irregularly shaped and vary between specimens, these blotches are smaller in *D. aah* sp. nov. and the distance between the third and fourth blotches is much greater than that of the width of the blotches (measured down the longitudinal line), versus only slightly more in *D. galeatus* or roughly equal in *D. ooh* sp. nov. which invariably has wide (measured longitudinally) dorsal blotches.

Both *D. ooh* sp. nov. and *D. galeatus*, which as a pair are more similar to one another than the more divergent *D. aah* sp. nov. are further separated from *D. aah* sp. nov. by generally broken black encircling the outer edges of the pale beige coloured body blotches (which in turn sit against the uniform orange background colour).

In *D. aah* sp. nov. the black is somewhat thickened to more completely encircle the blotches.

Both *D. galeatus* and *D. ooh* sp. nov. have a deep orange-red dorsum, versus a somewhat more faded orange to orange-yellow dorsum in *D. aah* sp. nov. and without the obvious reddish hue seen in the other two species.

On upper surfaces of the (original) tail in both *D. galeatus* and *D. ooh sp. nov.* there are 3-4 lighter patches either without borders, or at best very widely separated black spots on the edges. By contrast on upper surfaces of the (original) tail the 2-3 light coloured tail blotches are boldly bordered black in *D. aah sp. nov.*

It should be noted that tail blotches in some specimens sometimes break up into two or more smaller ones, but are invariably connected, so in terms of the above are treated as one each.

The three divergent *Diplodactylus* Gray, 1842 species within the subgenus *Yankunytjatjaragecko subgen. nov.*, being *D. galeatus*, *D. aah sp. nov.* and *D. ooh sp. nov.* are separated from all other species within *Diplodactylus sensu lato*, *sensu* Hoser (2017b) (= *sensu* Cogger 2014), by the following suite of characters:

Average adult size is about 50 mm snout-vent. Length of tail is usually a fraction less than half the snout-vent length or in the alternative, no more than 50% of it (measured on underside from vent in a straight line); there is a dark postocular band that is continuous behind the occipital region; the dorsum has an obvious colour pattern, including four to six largish pale diamond or circular like irregular shapes across the midline of the dorsum against a relatively uniform background colour ranging from orange to red; white venter; dorsal eyelid is well differentiated; snout rounded; 23 or more interorbitals; mental scale is lanceolate in shape, equal to or only slightly larger than the first infralabial in size; nasal contacts rostral; anterior nasal absent; the 8-10 upper labials are noticeably larger than the adjacent loreals; moderately built body; original tail is more or less round in cross-section, but very slightly flattened anteriorly. Dorsal and flank scales are relatively large, low, juxtaposed or separated by tiny granules; no preanal pores; 5-8 post-anal tubercles in males (only). Digits are long, narrow and depressed below with a large pair of apical lamellae followed by moderately enlarged lamellae in two groups (modified from Cogger 2014 with additions).

D. galeatus is depicted in life online at:

<https://www.flickr.com/photos/126237772@N07/38823057674/>
and

<https://www.inaturalist.org/observations/89307802>
and

<https://www.flickr.com/photos/189037423@N06/52363936950/>
and

<https://www.flickr.com/photos/189037423@N06/52363900799/>

D. aah sp. nov. is depicted in life in Brown (2014) on page 373, two photos in second row from top, Cogger (2014) on page 298 at top, Wilson and Swan (2021) on page 97 at top and online at:

<https://www.flickr.com/photos/mattsummerville/49018379752/>
and

<https://www.flickr.com/photos/58349528@N02/51124889246/>
and

https://www.flickr.com/photos/dan_lynych/5954119334/
and

<https://www.inaturalist.org/observations/145354494>
and

<https://www.inaturalist.org/observations/34202689>
and

<https://www.inaturalist.org/observations/128126419>
and

<https://www.inaturalist.org/observations/114792>

Distribution: *D. ooh sp. nov.* is as far as is known, restricted the Bagot and Beddoma Ranges in northern South Australia. It may also occur in the ranges to the immediate west, but none

are recorded from this area yet.

However the Everard Ranges, west of where this species is known to occur are both 1/ Off any main roads and so rarely collected by herpetologists and 2/ Granite hills and there is a chance that the rock type may preclude the taxon.

D. ooh sp. nov. is separated from the more northern species *D. aah sp. nov.* of the Macdonnell Ranges by sand dune habitat between the Macdonnell Ranges and the South Australian / Northern Territory border. *D. ooh sp. nov.* is separated from the more southern species *D. galeatus* Kluge, 1963 from further south in South Australia by river channel country (floodplain habitat), generally rock free, being situated between areas of suitable rock or gibber habitat where they occur.

Etymology: When first being shown a specimen of this taxon, a Pitjantjatjara elder exclaimed "ooh", giving this taxon its name. The Pitjantjatjara are the original inhabitants of central Australia (predating the British invasion of the 1700's and 1800's) in the vicinity of the South Australia / Northern Territory border, which is where this taxon occurs.

MARTUGECKO SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:B1BFC1CF-12ED-435C-982C-CE7E6D64FF83

Type species: *Diplodactylus fulleri* Storr, 1978.

Diagnosis: This monotypic subgenus is separated from all other species within *Diplodactylus* Gray, 1832 *sensu lato*, *sensu* Hoser (2017b) (= *sensu* Cogger 2014), by the following suite of characters:

Dorsum and flanks are a combination of yellowish background colour and reddish brown spots, blotches or short lines, generally of one colour, as in without borders or peppering, not with any obvious pattern, save for a very obscure reticulatum; the head is pale and spotted reddish, being on the whole slightly lighter than the dorsum, but the nape is mainly dark. Venter is white.

The mid dorsal scales are not enlarged or plate-like and only slightly larger than the ventral scales; but the caudal scales are large, rectangular and plate-like. 23-38 interorbitals. The nine supralabials are larger than the adjoining loreals. Rostral contacts nostril. Mental scale is not noticeably pointed and is equal to or slightly larger than the infralabial in size; anterior nasal absent and snout is round.

Length of the (original) tail is about 2/3 the snout-vent length; tail is round in cross section. Post-ocular band is present, but barely distinct and present, as well as being patchy around the occipital region. Dorsal eyelid is well differentiated. Digits long, slightly depressed and slender. Subdigital lamellae are small and granular with small terminal plates. No preanal pores. Five post anal tubercles (derived and modified from multiple sources).

Distribution: Known only from the type locality of the single species in the subgenus, being Lake Disappointment, Western Australia, Australia (Latitude 23.4383 S., Longitude 122.8310 E.).

Etymology: Named in reflection of the Martu people, being the original native Australian inhabitants of the area, predating the British invasion on the 1700's and 1800's. The suffix "gecko" reflects the kind of reptile it is.

Content: *Diplodactylus (Martugecko) fulleri* Storr, 1978.

PITJANTJATJARAGECKO SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:72E61195-EE4E-45D4-A68E-6B833537C165

Type species: *Diplodactylus (Pitjantjatjaragecko) lenhoseri sp. nov.* (this paper).

Diagnosis: *Pitjantjatjaragecko subgen. nov.* are readily separated from all other species within *Diplodactylus* Gray, 1832 *sensu* Hoser (2017b) (= *sensu* Cogger 2014), by the following unique suite of characters:

Average adult snout vent length is about 50 mm. Dorsal base colouration varies significantly with location, substrate and other factors and ranges from pale grey to blackish, or rich red-brown. Dorsal body surfaces with at most an obscure body pattern; although sometimes with yellowish and blackish spots, commonly paired along the mid-dorsal region of body and tail, or sometimes with irregular darker markings forming obscure reticulations or marbling; ventral body surfaces almost always covered with moderately large patches of dark colour; snout rounded in shape; labials noticeably larger than the adjacent loreals; dorsal eyelid is well differentiated; mental scale not noticeably pointed, longer than broad and equal to or only slightly larger than the first infralabial; anterior nasal absent; 25 or less interorbitals; 6-8 supralabials that are larger than the adjacent loreals; tail (original) very slightly flattened in cross section and less than half the snout-vent length; tail has heterogenous scalation with regular rings of large conical scales. No preanal pores; 4-13 post anal tubercles. Digits are long, narrow, slightly depressed, below with a large pair of apical lamellae, followed by slightly enlarged but otherwise undifferentiated scales, karyotype of $2n = 30$ or $2n = 28$ (modified from Cogger 2014 and Oliver *et al.* 2007a).

Various published phylogenies have shown this species group, the so-called "tessellatus group" to have diverged from congeners in previously named subgenera more than 10 MYA, and about 15 MYA in Oliver *et al.* (2007a) in Fig. 3, warranting this species group to also be recognized at the genus or subgenus level, with the latter position taken in this paper.

Distribution: *Pitjantjatjaragecko* subgen. nov. species are distributed across most of the drier parts of the eastern two thirds of Australia, including far north-west Victoria, although there are considerable areas of absence in the driest more sandy parts of the Northern Territory and western South Australia. The subgenus is not in Western Australia.

Etymology: *Pitjantjatjaragecko* subgen. nov. is named in recognition of the Pitjantjatjara tribe, of first Australian settlers, who actually arrived on the continent some thousands of years before the British invaders. I note that a significant portion of the range of the genus is not in areas traditionally inhabited by the Pitjantjatjara people. The suffix "gecko" identifies the said lizards by common name for most contemporary Australian residents.

Content: *Diplodactylus* (*Pitjantjatjaragecko*) *lenhoseri* sp. nov. (this paper) (type species); *D.* (*Pitjantjatjaragecko*) *tessellatus* (Günther, 1875) including the three subspecies formally named in this paper.

DIPLODACTYLUS (PITJANTJATJARAGECKO) LENHOSERI SP. NOV.

LSIDurn:lsid:zoobank.org:act:D6F895F5-EFC8-4419-AC05-6D5A20D63511

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R30400 collected from Breakaways Reserve, 25 km north-north-west of Coober Pedy, South Australia, Australia, Latitude -28.8436 S., Longitude 134.6861 E.

This government-owned facility allows access to its holdings.

Paratypes: Three preserved specimens at the Australian Museum in Sydney, New South Wales, Australia, being, A/ Specimen number R48474 collected from 8.2 km south west of NASA Bore, Arckaringa Station, South Australia, Australia, Latitude -27.8625 S., Longitude 135.1228 E., B/ Specimen number R60849 collected from 10.9 km east-north east of Condarloo Hill, South Australia, Australia, Latitude -28.2147 S., Longitude 135.2617 E., C/ Specimen number R62671 collected from 6.9 km east-south east of Neckeena Waterhole, South Australia, Australia, Latitude -27.5181 S., Longitude 136.05 E.

Diagnosis: Until now *Diplodactylus* (*Pitjantjatjaragecko*) *lenhoseri* sp. nov. from the Lake Eyre drainage basin of

northern South Australia and western Queensland, has been treated as a western population of *D. tessellatus* (Günther, 1875), with a type locality of Brewarrina, New South Wales and inhabiting the Murray / Darling River basins generally (Queensland, New South Wales, North-west Victoria and south-east South Australia).

In terms of the preceding, this also includes for the subspecies *D. tessellatus moseselfahkrii* subsp. nov. found west of this region, with the main population of that subspecies being found in the lower areas between the Flinders Ranges (South Australia) and the Barrier Range (New South Wales) to the east, *D. lenhoseri dannyelfahkrii* subsp. nov. from the Barkly Tableland in the Northern Territory, generally west of the Georgina River drainage in far north-west Queensland and *D. lenhoseri akramelfahkrii* subsp. nov. from the area of the Flinders River drainage system, lower Gulf of Carpentaria region, north Queensland, Australia, as well as the morphologically similar but not particularly closely related species *D. (Maralinga) nuked* sp. nov. from the Woomera area of inland South Australia.

Each of the preceding named taxa are consistently morphologically different to one another, the three relevant species being very divergent lineages, estimated at more than 10 MYA by Oliver *et al.* (2007a) with the relevant subspecies all believed to have diverged from their nearest relatives at least 1.5 MYA based on molecular evidence relevant to species pairs affected by the same biogeographical constraints and the known ages of formation of these relevant biogeographical barriers.

The relevant six species and subspecies (3 of each) are separated from one another by the following unique combinations of characters:

D. tessellatus is a whitish grey or whitish brown in overall dorsal colour, being formed by a combination of alternating darker and lighter mottling, the lighter being light grey to beige and the darker greyish to dull grey brown. The bordering of the markings is not distinct or highly contrasting, giving the lizards a distinctly drab appearance. Any spotting, light or dark markings on the back are not distinct, often appear as smudges and without well defined boundaries and as a rule do not tend to form bands or pattern, although sometimes blotches running more-or-less down the sides of the dorsum may be paired or alternating. There are numerous darker blotches or flecks on the top of the head, with the head overall of similar colour to that of the dorsal surface of the body. Markings on the original tail are slightly better defined than those of the body.

The tubercles on the dorsum are mainly large and well scattered. The larger ones on the side of the flank are only slightly larger than the rest.

The occipital band is usually unbroken, but sometimes narrows slightly between side and middle of the back of the head.

D. tessellatus moseselfahkrii subsp. nov. is readily separated from nominate *D. tessellatus* as just defined, by being a very different colour, in this case a light orange background colour, instead of greyish or brown.

Unlike *D. tessellatus* which obviously has contrasting darker and lighter markings on the dorsum, these are so indistinct as to be almost invisible in *D. tessellatus moseselfahkrii* subsp. nov..

Separate to the preceding however is that distinctive in this is taxon is that along the back of the dorsum are about 4 yellow spots running down the midline, usually somewhat off centre, continuing as ill defined yellow blotches running along the top of the (original) tail. They commonly pair along the back.

The tubercles on the dorsum are both large and small and closely spaced. The larger ones, commonly white tipped, sometimes seen on the side of the flank in some specimens are significantly larger than the rest but widely spaced, versus more

closely spaced (and larger) in the morphologically similar taxon *D. (Maralinga) nuked sp. nov.*

The occipital band is barely distinct and has a clear break in the centre, where the light of the back of the head runs seamlessly to the light of the upper neck and body posterior to that.

D. lenhoseri sp. nov. (including the two subspecies named below) are separated from *D. tessellatus* and *D. tessellatus moseselfahkrii subsp. nov.* by having more numerous and more enlarged white-tipped tubercles along the flanks and in multiple rows and with obviously paired markings of some form running down the midline of the back, these being visible on close inspection of the lizard.

D. lenhoseri sp. nov. is separated from both subspecies of the nominate form (being *D. lenhoseri dannyelfahkrii subsp. nov.* and *D. lenhoseri akramelfahkrii subsp. nov.*) by having moderately scattered large and blunt tipped tubercles on the dorsum not entering the flanks and in having about 4 pairs of closely-spaced indistinct lighter spot-like markings running down either side of the midline of the body (dorsum), surrounded by the darker dorsal colouration. Dorsal body colour varies from grey to orange, often heavily infused yellow, red or brown, but markings are invariably so indistinct as to usually appear to be absent at a glance. This is caused by the effects of mottling of markings, pigment intermediate between dark and light also on the body as well as a similar base colour of the darkest and lightest pigment.

The head is generally unmarked, but the occipital band is fairly prominent, being the most noticeable marking on the dorsum of this taxon.

D. lenhoseri dannyelfahkrii subsp. nov. is usually a yellowish colour dorsally and characterised by a lack of obvious flecks or markings on the head, which appears unicolour on top and sides, and any occipital band is either faded, indistinct or absent. There are scattered tiny white tipped tubercles on the lower, mid and upper flanks and a dorsum that invariably has a series of about five pairs of widely to closely separated small to medium-sized whitish, yellow or orange spots, these spots being obvious, but not with clear and sharp outer edges.

Some specimens of this subspecies are relatively unusual in that they have scattered tiny white tipped tubercles running along the lower side of the head behind the eye. These are not however like the large well defined white-tipped tubercles seen in the subgenus *Maralinga subgen. nov.* (see below), which in many respects is a morphologically similar species of lizard.

D. lenhoseri akramelfahkrii subsp. nov. is readily separated from the four preceding taxa by a dorsum that is obviously banded, by way of a pattering consisting of about 4 rows of wide paired squarish in shape spots running down the midline of the spine, usually joined (completely or nearly completely) at the inner edges, giving the appearance of a banded dorsum. Ranging from greyish to yellowish or brown in overall colour on top, the contrast between darker and lighter sections of the dorsum (the spots mentioned already being the darker parts) is sufficient to ensure that the lizard has an obviously banded appearance, being the only one of the six relevant taxa described herein that is like this.

The moderately spaced, dark tipped tubercles on the dorsum extend to the flanks, where they meet the white tipped ones lower down.

The top and sides of the head have obvious flecks or blotches on them, especially on the sides.

The occipital band is distinct, but usually broken on either side of the midline, with the middle part forming a triangle with the base at the anterior edge and the point, facing posteriorly at the midline. Markings on the (original) tail are less well defined than those on the body.

Dorsal tubercles are moderately dense and small in size.

D. (Maralinga) nuked sp. nov. is readily separated from all

the preceding species and subspecies by its generally dark coloured dorsum, consisting of a mottling between dark brown grey and dark grey, and 3-5 well defined rows of closely spaced bright yellow to orange spots (sometimes faded somewhat in old specimens), as well as the presence of a row of small white markings and white-tipped tubercles commencing from under the eye, running below the ear and along the mid and lower flanks, where the single row on the back of the head splits and the tubercles are scattered across lower, mid and upper flank.

Also separating this species (and the genus it is placed in as a monotypic form) from all the preceding species and those in the *D. vittatus* Gray, 1832 species complex are the upper surfaces of the limbs that are dark greyish-black in colour and punctuated by numerous well-spaced dark edged white spots. The upper surface of the head is mottled orange-yellow and brown with small black spots, with most of the orange on the back of the occiput, but there is no occipital line or lines running from snout to eye or posterior to it. The black spots on the head become widely spaced blunt black tipped tubercles on the upper body.

The dorsal tubercles in *D. (Maralinga) nuked sp. nov.* are considerably larger and less closely spaced (there are less in number) than seen in the species within the subgenus *Pitjantjatjaragecko subgen. nov.*

The character state of the presence of the widely-scattered large blunt-edged black tipped tubercles on the back of *D. (Maralinga) nuked sp. nov.* combined with the large, pointed, white tipped tubercles in a row on the back of the lower the side of the head, and an all-acrocentric karyotype of $2n = 38$ separate this subgenus from both subgenus *Diplodactylus sensu stricto*, *sensu* Hoser (2017b) and the subgenus *Pitjantjatjaragecko subgen. nov.* (with karyotypes of either $2n = 28$ or $2n = 30$) as defined herein.

Within *Pitjantjatjaragecko subgen. nov.* *D. tessellatus* (including subspecies) has a karyotype of $2n = 28$ and *D. lenhoseri sp. nov.* has a karyotype of $2n = 30$ (Oliver *et al.* 2007c).

The six preceding species and subspecies are separated from all other species within *Diplodactylus sensu lato*, *sensu* Hoser (2017b) (= *sensu* Cogger (2014)), by having a dorsum that is as a rule without obvious markings or colour pattern, except as seen in *D. lenhoseri akramelfahkrii sp. nov.* as described above; less than 25 interorbitals; mental scale is not lanceolate, longer than broad and equal to or slightly larger than the first infralabial; anterior nasal is absent; nostril contacts rostral; 6-8 supralabials are noticeably larger than the adjacent loreals; excluding tubercles, the dorsal scales are homogenous; mid dorsals are large, low, rounded and juxtaposed; dorsal eyelid is well differentiated; tail (original) is between 40-50% of snout-vent length; tail is slightly flattened in cross section; scales on tail are heterogenous with regular rings of large conical scales becoming enlarged and pointed at the terminal end; these alternating with smaller, low conical scales; pre-anal pores absent; post anal tubercles number from 4-13; snout is rounded in shape; digits are long narrow and slightly depressed; underneath with a large pair of apical lamellae, followed by slightly enlarged but otherwise undifferentiated scales (modified from Cogger 2014).

The type form of *D. tessellatus* is depicted in life online at:

<https://www.wildsoutheasternaustralia.info/Reptiles/Geckos/Diplodactylus-tessellatus-Tess/i-2pmG9jx>

and

<https://www.flickr.com/photos/190014189@N06/51523756839/>

and

<https://www.flickr.com/photos/128497936@N03/50935265496/>

and

<https://www.flickr.com/photos/jono-dashper/51230055411/>

and

<https://www.flickr.com/photos/stephenmahony/6899789869/>
and
<https://www.flickr.com/photos/88708273@N03/50801362158/>
D. tessellatus dannyelfahkrii sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/84512139>
and
<https://www.flickr.com/photos/54876436@N08/10064252035/>
and
<https://www.inaturalist.org/observations/84512139>
D. lenhoseri sp. nov. (of the nominate form) is depicted in life online at:
<https://www.inaturalist.org/observations/89311690>
and
<https://www.flickr.com/photos/127392361@N04/44086115085/>
and
<https://www.inaturalist.org/observations/101684319>
and
<https://www.flickr.com/photos/shaneblackfnq/37627399920/>
D. lenhoseri moseselfahkrii sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/159404133>
and
<https://www.inaturalist.org/observations/141054297>
D. lenhoseri akramelfahkrii sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/18254326>
and
<https://www.inaturalist.org/observations/30225149>
and
<https://www.inaturalist.org/observations/143456803>
and
<https://www.inaturalist.org/observations/86014032>

Distribution: *Diplodactylus (Pitjantjatjaragecko) lenhoseri sp. nov.* inhabits the Lake Eyre drainage basin of northern South Australia and western Queensland.

The subspecies *D. lenhoseri dannyelfahkrii subsp. nov.* occurs in the Barkly Tableland, Northern Territory, generally west of the Georgina River drainage in far north-west Queensland and *D. lenhoseri akramelfahkrii subsp. nov.* occurs in the vicinity of the Flinders River drainage system, lower Gulf of Carpentaria region, north Queensland, Australia.

Etymology: *D. lenhoseri sp. nov.* is named in honour of my now deceased father, Leonard Donald Hoser, born in the United Kingdom, but who spent most of his adult life in Sydney, Australia, in recognition of his many services to herpetology.

DIPLODACTYLUS (PITJANTJATJARAGECKO) LENHOSERI DANNYELFAHKRII SUBSP. NOV.

LSIDDurn:lsid:zoobank.org:act:700791DA-C0F2-4981-93B3-6C40818CC7C9

Holotype: A preserved specimen at the Museum and Art Gallery of the Northern Territory, Darwin, Northern Territory, Australia, specimen number R25743 collected from 144 km south of Cape Crawford, Carpentaria Region, Northern Territory, Australia, Latitude -17.847 S., Longitude 135.646 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Museum and Art Gallery of the Northern Territory, Darwin, Northern Territory, Australia, specimen number R38912 collected from the Tablelands Highway, Walhallow, Barkly Tableland, Northern Territory, Australia, Latitude -17.83429 S., Longitude 135.65217 E.

Diagnosis: Until now *Diplodactylus (Pitjantjatjaragecko) lenhoseri sp. nov.* from the Lake Eyre drainage basin of northern South Australia and western Queensland, has been treated as a western population of *D. tessellatus* (Günther, 1875), with a type locality of Brewarrina, New South Wales

and inhabiting the Murray / Darling River basins generally (Queensland, New South Wales, North-west Victoria and south-east South Australia).

In terms of the preceding, this also includes for the subspecies *D. tessellatus moseselfahkrii subsp. nov.* found west of this region, with the main population of that subspecies being found in the lower areas between the Flinders Ranges (South Australia) and the Barrier Range (New South Wales) to the east, *D. lenhoseri dannyelfahkrii subsp. nov.* from the Barkly Tableland in the Northern Territory, generally west of the Georgina River drainage in far north-west Queensland and *D. lenhoseri akramelfahkrii subsp. nov.* from the area of the Flinders River drainage system, lower Gulf of Carpentaria region, north Queensland, Australia, as well as the morphologically similar but not particularly closely related species *D. (Maralinga) nuked sp. nov.* from the Woomera area of inland South Australia.

Each of the preceding named taxa are consistently morphologically different to one another, the three relevant species being very divergent lineages, estimated at more than 10 MYA by Oliver *et al.* (2007a) with the relevant subspecies all believed to have diverged from their nearest relatives at least 1.5 MYA based on molecular evidence relevant to species pairs affected by the same biogeographical constraints and the known ages of formation of these relevant biogeographical barriers.

The relevant six species and subspecies (3 of each) are separated from one another by the following unique combinations of characters:

D. tessellatus is a whitish grey or whitish brown in overall dorsal colour, sometimes being a more sandy colour, this colouration being formed by a combination of alternating darker and lighter mottling, the lighter being light grey to beige and the darker greyish to dull grey brown. The bordering of the markings is not distinct or highly contrasting, giving the lizards a distinctly drab appearance. Any spotting, light or dark markings on the back are not distinct, often appear as smudges and without well defined boundaries and as a rule do not tend to form bands or pattern, although sometimes vaguely distinguishable blotches running more-or less down the sides of the dorsum may be paired or alternating. There are numerous darker blotches or flecks on the top of the head, with the head overall of similar colour to that of the dorsal surface of the body. Markings on the original tail are slightly better defined than those of the body. The tubercles on the dorsum are mainly large and well scattered. The larger ones on the side of the flank are only slightly larger than the rest.

The occipital band is usually unbroken, but sometimes narrows slightly between side and middle of the back of the head (on each side).

D. tessellatus moseselfahkrii subsp. nov. is readily separated from nominate *D. tessellatus* as just defined, by being a very different colour, in this case a light orange background colour, instead of greyish or brown.

Unlike *D. tessellatus* which obviously has contrasting darker and lighter markings on the dorsum, these are so indistinct as to be almost invisible in *D. tessellatus moseselfahkrii subsp. nov.*, except in very young specimens.

Separate to the preceding however is that distinctive in this taxon is that along the back of the dorsum are about 4 yellow spots running down the midline, usually somewhat off centre, continuing as ill defined yellow blotches running along the top of the (original) tail. They commonly pair along the back.

The tubercles on the dorsum are both large and small and closely spaced. The larger ones, commonly white tipped, sometimes seen on the side of the flank in some specimens are significantly larger than the rest but widely spaced, versus more closely spaced in the morphologically similar taxon *D.*

(*Maralinga*) *nuked* sp. nov..

The occipital band is barely distinct and has a clear break in the centre, where the light of the back of the head runs seamlessly to the light of the upper neck and body posterior to that.

D. lenhoseri sp. nov. (including the two subspecies named below) are separated from *D. tessellatus* and *D. tessellatus moseselfahkrii* subsp. nov. by having more numerous and more enlarged white-tipped tubercles along the flanks and in multiple rows and with obviously paired markings of some form running down the midline of the back, these being visible on close inspection of the lizard.

D. lenhoseri sp. nov. is separated from both subspecies of the nominate form (being *D. lenhoseri dannyelfahkrii* subsp. nov. and *D. lenhoseri akramelfahkrii* subsp. nov.) by having moderately scattered large and blunt tipped tubercles on the dorsum, not entering the flanks and in having about 4 pairs of closely-spaced indistinct lighter spot-like markings running down either side of the midline of the body (dorsum), surrounded by the darker dorsal colouration. Dorsal body colour varies from grey to orange, often heavily infused yellow, red or brown, but markings are invariably so indistinct as to usually appear to be absent at a glance. This is caused by the effects of mottling of markings, pigment intermediate between dark and light also on the body and a similar base colour of the darkest and lightest pigment.

The head is generally unmarked, but the occipital band is fairly prominent, being the most noticeable marking on the dorsum of this taxon.

D. lenhoseri dannyelfahkrii subsp. nov. is usually a yellowish colour dorsally and characterised by a lack of obvious flecks or markings on the head, which appears unicolour on top and sides, and any occipital band is either faded, indistinct or absent. There are scattered tiny white tipped tubercles on the lower, mid and upper flanks and a dorsum that invariably has a series of about five pairs of widely to closely separated small to medium-sized whitish, yellow or orange spots, these spots being obvious, but not with clear and sharp outer edges.

Some specimens of this subspecies are relatively unusual in that they have scattered tiny white tipped tubercles running along the lower side of the head behind the eye. These are not however like the large well defined white-tipped tubercles seen in the subgenus *Maralinga* subgen. nov. (see below), which in many respects is a morphologically similar species of lizard.

D. lenhoseri akramelfahkrii subsp. nov. is readily separated from the four preceding taxa by a dorsum that is obviously banded, by way of a pattering consisting of about 4 rows of wide paired squarish in shape spots running down the midline of the spine, usually joined (completely or nearly completely) at the inner edges, giving the appearance of a banded dorsum. Ranging from greyish to yellowish or brown in overall colour on top, the contrast between darker and lighter sections of the dorsum (the spots mentioned already being the darker parts) is sufficient to ensure that the lizard has an obviously banded appearance, being the only one of the six relevant taxa described herein that is like this when viewed in full at a distance.

The moderately spaced, dark tipped tubercles on the dorsum extend to the flanks, where they more-or-less meet the white tipped ones lower down.

The top and sides of the head have obvious flecks or blotches on them, especially on the sides.

The occipital band is distinct, but usually broken on either side of the midline, with the middle part forming a triangle with the base at the anterior edge and the point, facing posteriorly at the midline. Markings on the (original) tail are less well defined than those on the body.

Dorsal tubercles are moderately dense and small in size.

D. (Maralinga) nuked sp. nov. is readily separated from all

the preceding species and subspecies by its generally dark coloured dorsum, consisting of a mottling between dark brown grey and dark grey, and 3-5 well defined rows of closely spaced bright yellow to orange spots (sometimes faded somewhat in old specimens), as well as the presence of a row of small white markings and white-tipped tubercles commencing from under the eye, running below the ear and along the mid and lower flanks, where the single row on the back of the head splits and the tubercles are scattered across lower, mid and upper flank.

Also separating this species (and the genus it is placed in as a monotypic form) from all the preceding species and those in the *D. vittatus* Gray, 1832 species complex are the upper surfaces of the limbs that are dark greyish-black in colour and punctuated by numerous well-spaced dark edged white spots. The upper surface of the head is mottled orange-yellow and brown with small black spots, with most of the orange on the back of the occiput, but there is no occipital line or lines running from snout to eye or posterior to it. The black spots on the head become widely spaced blunt black tipped tubercles on the upper body.

The dorsal tubercles in *D. (Maralinga) nuked* sp. nov. are considerably larger and less closely spaced (there are less in number) than seen in the species within the subgenus *Pitjantjaragecko* subgen. nov..

The character state of the presence of the widely-scattered large blunt-edged black tipped tubercles on the back of *D. (Maralinga) nuked* sp. nov. combined with the large, pointed, white tipped tubercles in a row on the back of the lower the side of the head, and an all-acrocentric karyotype of $2n = 38$ separate this subgenus from both subgenus *Diplodactylus sensu stricto*, sensu Hoser (2017b) and the subgenus *Pitjantjaragecko* subgen. nov. (with karyotypes of either $2n = 28$ or $2n = 30$) as defined herein.

Within *Pitjantjaragecko* subgen. nov., *D. tessellatus* (including subspecies) has a karyotype of $2n = 28$ and *D. lenhoseri* sp. nov. has a karyotype of $2n = 30$ (Oliver et al. 2007c).

The six preceding species and subspecies are separated from all other species within *Diplodactylus sensu lato*, sensu Hoser (2017b) (= sensu Cogger (2014), by having a dorsum that is as a rule without obvious markings or colour pattern, except as seen in *D. lenhoseri akramelfahkrii* sp. nov. as described above; less than 25 interorbitals; mental scale is not lanceolate in shape, longer than broad and equal to or slightly larger than the first infralabial; anterior nasal is absent; nostril contacts rostral; the 6-8 supralabials are noticeably larger than the adjacent loreals; excluding tubercles, the dorsal scales are homogenous; mid dorsals are large, low, rounded and juxtaposed; dorsal eyelid is well differentiated; tail (original) is between 40-50% of snout-vent length; tail is slightly flattened in cross section; scales on tail are heterogenous with regular rings of large conical scales becoming enlarged and pointed at the terminal end; these alternating with smaller, low conical scales; pre-anal pores absent; post anal tubercles number from 4-13; snout is rounded in shape; digits are long narrow and slightly depressed; underneath with a large pair of apical lamellae, followed by slightly enlarged but otherwise undifferentiated scales (modified from Cogger 2014).

The type form of *D. tessellatus* is depicted in life online at: <https://www.wildsoutheasternaustralia.info/Reptiles/Geckos/Diplodactylus-tessellatus-Tess/i-2pmG9jx>

and

<https://www.flickr.com/photos/190014189@N06/51523756839/>

and

<https://www.flickr.com/photos/128497936@N03/50935265496/>

and

<https://www.flickr.com/photos/jono-dashper/51230055411/>

and
<https://www.flickr.com/photos/stephenmahony/6899789869/>
 and
<https://www.flickr.com/photos/88708273@N03/50801362158/>
D. tessellatus dannyelfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/84512139>
 and
<https://www.flickr.com/photos/54876436@N08/10064252035/>
 and
<https://www.inaturalist.org/observations/84512139>
D. lenhoseri sp. nov. (of the nominate form) is depicted in life online at:
<https://www.inaturalist.org/observations/89311690>
 and
<https://www.flickr.com/photos/127392361@N04/44086115085/>
 and
<https://www.inaturalist.org/observations/101684319>
 and
<https://www.flickr.com/photos/shaneblackfnq/37627399920/>
D. lenhoseri moseselfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/159404133>
 and
<https://www.inaturalist.org/observations/141054297>
D. lenhoseri akramelfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/143456803>
 and
<https://www.inaturalist.org/observations/18254326>
 and
<https://www.inaturalist.org/observations/30225149>
 and
<https://www.inaturalist.org/observations/86014032>

Distribution: The subspecies *D. lenhoseri dannyelfahkri subsp. nov.* occurs in the Barkly Tableland, Northern Territory, generally west of the Georgina River drainage in far north-west Queensland.

Etymology: Named in honour of Danny El-Fahkri, brother of Moses El-Fahkri and Akram El-Fahkri, all of Northcote, Victoria, Australia in recognition of their services to herpetology over many decades. If species previously named in honour of any members of this family by myself have different spelling/s, the spelling/s should not be changed or emended by any "first reviser".

DIPLODACTYLUS (PITJANTJATJARAGECKO) LENHOSERI AKRAMELFAHKRII SUBSP. NOV.

LSIDDurn:lsid:zoobank.org:act:DA64404A-4BE2-4327-8185-F12B661C6FC7

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R55697 collected from 14.1 km north-north east of Hughenden on the Kennedy Developmental Road, Queensland, Australia, Latitude -20.7814 S., Longitude 144.3197 E.

This government-owned facility allows access to its holdings.

Paratypes: 1/ A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R55722 collected from 11.1 km north-north east of Hughenden on the Kennedy Developmental Road, Queensland, Australia, Latitude -20.7886 S., Longitude 144.3900 E.

2/ 8 preserved specimens at the Western Australian Museum, Perth, Western Australia, Australia, specimen numbers R55616, R55617, R55618, R55619, R55620, R55621, R55623 and R55626 all collected from 11 km south of Hughenden, Queensland, Australia, Latitude -20.916667 S., Longitude

144.116667 E.

Diagnosis: Until now *Diplodactylus (Pitjantjatjaragecko) lenhoseri sp. nov.* from the Lake Eyre drainage basin of northern South Australia and western Queensland, has been treated as a western population of *D. tessellatus* (Günther, 1875), with a type locality of Brewarrina, New South Wales and inhabiting the Murray / Darling River basins generally (Queensland, New South Wales, North-west Victoria and south-east South Australia).

In terms of the preceding, this also includes for the subspecies *D. tessellatus moseselfahkrii subsp. nov.* found west of this region, with the main population of that subspecies being found in the lower areas between the Flinders Ranges (South Australia) and the Barrier Range (New South Wales) to the east, *D. lenhoseri dannyelfahkrii subsp. nov.* from the Barkly Tableland in the Northern Territory, generally west of the Georgina River drainage in far north-west Queensland and *D. lenhoseri akramelfahkrii subsp. nov.* from the area of the Flinders River drainage system, lower Gulf of Carpentaria region, north Queensland, Australia, as well as the morphologically similar but not particularly closely related species *D. (Maralinga) nuked sp. nov.* from the Woomera area of inland South Australia.

Each of the preceding named taxa are consistently morphologically different to one another, the three relevant species being very divergent lineages, estimated at more than 10 MYA by Oliver *et al.* (2007a) with the relevant subspecies all believed to have diverged from their nearest relatives at least 1.5 MYA based on molecular evidence relevant to species pairs affected by the same biogeographical constraints and the known ages of formation of these relevant biogeographical barriers.

The relevant six species and subspecies (3 of each) are separated from one another by the following unique combinations of characters:

D. tessellatus is a whitish grey or whitish brown in overall dorsal colour, sometimes being a more sandy colour, this colouration being formed by a combination of alternating darker and lighter mottling, the lighter being light grey to beige and the darker greyish to dull grey brown. The bordering of the markings is not distinct or highly contrasting, giving the lizards a distinctly drab appearance. Any spotting, light or dark markings on the back are not distinct, often appear as smudges and without well defined boundaries and as a rule do not tend to form bands or pattern, although sometimes vaguely distinguishable blotches running more-or less down the sides of the dorsum may be paired or alternating. There are numerous darker blotches or flecks on the top of the head, with the head overall of similar colour to that of the dorsal surface of the body. Markings on the original tail are slightly better defined than those of the body. The tubercles on the dorsum are mainly large and well scattered. The larger ones on the side of the flank are only slightly larger than the rest.

The occipital band is usually unbroken, but sometimes narrows slightly between side and middle of the back of the head (on each side).

D. tessellatus moseselfahkrii subsp. nov. is readily separated from nominate *D. tessellatus* as just defined, by being a very different colour, in this case a light orange background colour, instead of greyish or brown.

Unlike *D. tessellatus* which obviously has contrasting darker and lighter markings on the dorsum, these are so indistinct as to be almost invisible in *D. tessellatus moseselfahkrii subsp. nov.*, except in very young specimens.

Separate to the preceding however is that distinctive in this taxon is that along the back of the dorsum are about 4 yellow spots running down the midline, usually somewhat off centre, continuing as ill defined yellow blotches running along the top

of the (original) tail. They commonly pair along the back.

The tubercles on the dorsum are both large and small and closely spaced. The larger ones, commonly white tipped, sometimes seen on the side of the flank in some specimens are significantly larger than the rest but widely spaced, versus more closely spaced in the morphologically similar taxon *D. (Maralinga) nuked sp. nov.*

The occipital band is barely distinct and has a clear break in the centre, where the light of the back of the head runs seamlessly to the light of the upper neck and body posterior to that.

D. lenhoseri sp. nov. (including the two subspecies named below) are separated from *D. tessellatus* and *D. tessellatus moseselfahkrii subsp. nov.* by having more numerous and more enlarged white-tipped tubercles along the flanks and in multiple rows and with obviously paired markings of some form running down the midline of the back, these being visible on close inspection of the lizard.

D. lenhoseri sp. nov. is separated from both subspecies of the nominate form (being *D. lenhoseri dannyelfahkrii subsp. nov.* and *D. lenhoseri akramelfahkrii subsp. nov.*) by having moderately scattered large and blunt tipped tubercles on the dorsum, not entering the flanks and in having about 4 pairs of closely-spaced indistinct lighter spot-like markings running down either side of the midline of the body (dorsum), surrounded by the darker dorsal colouration. Dorsal body colour varies from grey to orange, often heavily infused yellow, red or brown, but markings are invariably so indistinct as to usually appear to be absent at a glance. This is caused by the effects of mottling of markings, pigment intermediate between dark and light also on the body and a similar base colour of the darkest and lightest pigment.

The head is generally unmarked, but the occipital band is fairly prominent, being the most noticeable marking on the dorsum of this taxon.

D. lenhoseri dannyelfahkrii subsp. nov. is usually a yellowish colour dorsally and characterised by a lack of obvious flecks or markings on the head, which appears unicolour on top and sides, and any occipital band is either faded, indistinct or absent. There are scattered tiny white tipped tubercles on the lower, mid and upper flanks and a dorsum that invariably has a series of about five pairs of widely to closely separated small to medium-sized whitish, yellow or orange spots, these spots being obvious, but not with clear and sharp outer edges.

Some specimens of this subspecies are relatively unusual in that they have scattered tiny white tipped tubercles running along the lower side of the head behind the eye. These are not however like the large well defined white-tipped tubercles seen in the subgenus *Maralinga subgen. nov.* (see below), which in many respects is a morphologically similar species of lizard.

D. lenhoseri akramelfahkrii subsp. nov. is readily separated from the four preceding taxa by a dorsum that is obviously banded, by way of a patterning consisting of about 4 rows of wide paired squarish in shape spots running down the midline of the spine, usually joined (completely or nearly completely) at the inner edges, giving the appearance of a banded dorsum. Ranging from greyish to yellowish or brown in overall colour on top, the contrast between darker and lighter sections of the dorsum (the spots mentioned already being the darker parts) is sufficient to ensure that the lizard has an obviously banded appearance, being the only one of the six relevant taxa described herein that is like this when viewed in full at a distance.

The moderately spaced, dark tipped tubercles on the dorsum extend to the flanks, where they more-or-less meet the white tipped ones lower down.

The top and sides of the head have obvious flecks or blotches on them, especially on the sides.

The occipital band is distinct, but usually broken on either side

of the midline, with the middle part forming a triangle with the base at the anterior edge and the point, facing posteriorly at the midline. Markings on the (original) tail are less well defined than those on the body.

Dorsal tubercles are moderately dense and small in size.

D. (Maralinga) nuked sp. nov. is readily separated from all the preceding species and subspecies by its generally dark coloured dorsum, consisting of a mottling between dark brown grey and dark grey, and 3-5 well defined rows of closely spaced bright yellow to orange spots (sometimes faded somewhat in old specimens), as well as the presence of a row of small white markings and white-tipped tubercles commencing from under the eye, running below the ear and along the mid and lower flanks, where the single row on the back of the head splits and the tubercles are scattered across lower, mid and upper flank. Also separating this species (and the genus it is placed in as a monotypic form) from all the preceding species and those in the *D. vittatus* Gray, 1832 species complex are the upper surfaces of the limbs that are dark greyish-black in colour and punctuated by numerous well-spaced dark edged white spots. The upper surface of the head is mottled orange-yellow and brown with small black spots, with most of the orange on the back of the occiput, but there is no occipital line or lines running from snout to eye or posterior to it. The black spots on the head become widely spaced blunt black tipped tubercles on the upper body.

The dorsal tubercles in *D. (Maralinga) nuked sp. nov.* are considerably larger and less closely spaced (there are less in number) than seen in the species within the subgenus *Pitjantjatjaragecko subgen. nov.*

The character state of the presence of the widely-scattered large blunt-edged black tipped tubercles on the back of *D. (Maralinga) nuked sp. nov.* combined with the large, pointed, white tipped tubercles in a row on the back of the lower the side of the head, and an all-acrocentric karyotype of $2n = 38$ separate this subgenus from both subgenus *Diplodactylus sensu stricto*, *sensu* Hoser (2017b) and the subgenus *Pitjantjatjaragecko subgen. nov.* (with karyotypes of either $2n = 28$ or $2n = 30$) as defined herein.

Within *Pitjantjatjaragecko subgen. nov.*, *D. tessellatus* (including subspecies) has a karyotype of $2n = 28$ and *D. lenhoseri sp. nov.* has a karyotype of $2n = 30$ (Oliver *et al.* 2007c).

The six preceding species and subspecies are separated from all other species within *Diplodactylus sensu lato*, *sensu* Hoser (2017b) (= *sensu* Cogger (2014)), by having a dorsum that is as a rule without obvious markings or colour pattern, except as seen in *D. lenhoseri akramelfahkrii sp. nov.* as described above; less than 25 interorbitals; mental scale is not lanceolate in shape, longer than broad and equal to or slightly larger than the first infralabial; anterior nasal is absent; nostril contacts rostral; the 6-8 supralabials are noticeably larger than the adjacent loreals; excluding tubercles, the dorsal scales are homogenous; mid dorsals are large, low, rounded and juxtaposed; dorsal eyelid is well differentiated; tail (original) is between 40-50% of snout-vent length; tail is slightly flattened in cross section; scales on tail are heterogenous with regular rings of large conical scales becoming enlarged and pointed at the terminal end; these alternating with smaller, low conical scales; pre-anal pores absent; post anal tubercles number from 4-13; snout is rounded in shape; digits are long narrow and slightly depressed; underneath with a large pair of apical lamellae, followed by slightly enlarged but otherwise undifferentiated scales (modified from Cogger 2014).

The type form of *D. tessellatus* is depicted in life online at: <https://www.wildsouthernaustralia.info/Reptiles/Geckos/Diplodactylus-tessellatus-Tess/i-2pmG9jx> and

<https://www.flickr.com/photos/190014189@N06/51523756839/>
and
<https://www.flickr.com/photos/128497936@N03/50935265496/>
and
<https://www.flickr.com/photos/jono-dashper/51230055411/>
and
<https://www.flickr.com/photos/stephenmahony/6899789869/>
and
<https://www.flickr.com/photos/88708273@N03/50801362158/>
D. tessellatus dannyelfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/84512139>
and
<https://www.flickr.com/photos/54876436@N08/10064252035/>
and
<https://www.inaturalist.org/observations/84512139>
D. lenhoseri sp. nov. (of the nominate form) is depicted in life online at:
<https://www.inaturalist.org/observations/89311690>
and
<https://www.flickr.com/photos/127392361@N04/44086115085/>
and
<https://www.inaturalist.org/observations/101684319>
and
<https://www.flickr.com/photos/shaneblackfnq/37627399920/>
D. lenhoseri moseselfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/159404133>
and
<https://www.inaturalist.org/observations/141054297>
D. lenhoseri akramelfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/18254326>
and
<https://www.inaturalist.org/observations/143456803>
and
<https://www.inaturalist.org/observations/30225149>
and
<https://www.inaturalist.org/observations/86014032>

Distribution: The subspecies *D. lenhoseri akramelfahkri subsp. nov.* occurs in the Flinders River drainage basin in north-east Queensland, south of the Gulf of Carpentaria and generally north of Hughenden, Richmond, Julia Creek and Cloncurry. The exact distributional limits for the subspecies are not certain.

Etymology: Named in honour of Akram ("Ace") El-Fahkri, brother of Moses El-Fahkri and Danny El-Fahkri, all of Northcote, Victoria, Australia in recognition of their services to herpetology over many decades.

If species previously named in honour of any members of this family by myself have different spelling/s, the spelling/s should not be changed or emended by any "first reviser".

DIPLODACTYLUS (PITJANTJATJARAGECKO) TESSELLATUS MOSESELFCHKRII SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:40C0ABDF-9534-42E8-95CC-FA7A6DB71DE0

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R52001 collected from 1.3 km east of Red Hill, South Australia, Australia, Latitude -30.4819 S., Longitude 139.1825 E.

This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the South Australian Museum, Adelaide, South Australia, Australia, specimen numbers R48351 and R48352 collected 3 km south of Starvation Dam, South Australia, Australia, Latitude 30.27 S.,

Longitude 140.9447 E.

Diagnosis: Until now *Diplodactylus (Pitjantjaragecko) lenhoseri sp. nov.* from the Lake Eyre drainage basin of northern South Australia and western Queensland, has been treated as a western population of *D. tessellatus* (Günther, 1875), with a type locality of Brewarrina, New South Wales and inhabiting the Murray / Darling River basins generally (Queensland, New South Wales, North-west Victoria and south-east South Australia).

In terms of the preceding, this also includes for the subspecies *D. tessellatus moseselfahkrii subsp. nov.* found west of this region, with the main population of that subspecies being found in the lower areas between the Flinders Ranges (South Australia) and the Barrier Range (New South Wales) to the east, *D. lenhoseri dannyelfahkrii subsp. nov.* from the Barkly Tableland in the Northern Territory, generally west of the Georgina River drainage in far north-west Queensland and *D. lenhoseri akramelfahkrii subsp. nov.* from the area of the Flinders River drainage system, lower Gulf of Carpentaria region, north Queensland, Australia, as well as the morphologically similar but not particularly closely related species *D. (Maralinga) nuked sp. nov.* from the Woomera area of inland South Australia.

Each of the preceding named taxa are consistently morphologically different to one another, the three relevant species being very divergent lineages, estimated at more than 10 MYA by Oliver *et al.* (2007a) with the relevant subspecies all believed to have diverged from their nearest relatives at least 1.5 MYA based on molecular evidence relevant to species pairs affected by the same biogeographical constraints and the known ages of formation of these relevant biogeographical barriers.

The relevant six species and subspecies (3 of each) are separated from one another by the following unique combinations of characters:

D. tessellatus is a whitish grey or whitish brown in overall dorsal colour, sometimes being a more sandy colour, this colouration being formed by a combination of alternating darker and lighter mottling, the lighter being light grey to beige and the darker greyish to dull grey brown. The bordering of the markings is not distinct or highly contrasting, giving the lizards a distinctly drab appearance. Any spotting, light or dark markings on the back are not distinct, often appear as smudges and without well defined boundaries and as a rule do not tend to form bands or pattern, although sometimes vaguely distinguishable blotches running more-or less down the sides of the dorsum may be paired or alternating. There are numerous darker blotches or flecks on the top of the head, with the head overall of similar colour to that of the dorsal surface of the body. Markings on the original tail are slightly better defined than those of the body. The tubercles on the dorsum are mainly large and well scattered. The larger ones on the side of the flank are only slightly larger than the rest.

The occipital band is usually unbroken, but sometimes narrows slightly between side and middle of the back of the head (on each side).

D. tessellatus moseselfahkrii subsp. nov. is readily separated from nominate *D. tessellatus* as just defined, by being a very different colour, in this case a light orange background colour, instead of greyish or brown.

Unlike *D. tessellatus* which obviously has contrasting darker and lighter markings on the dorsum, these are so indistinct as to be almost invisible in *D. tessellatus moseselfahkrii subsp. nov.*, except in very young specimens.

Separate to the preceding however is that distinctive in this taxon is that along the back of the dorsum are about 4 yellow spots running down the midline, usually somewhat off centre, continuing as ill defined yellow blotches running along the top

of the (original) tail. They commonly pair along the back.

The tubercles on the dorsum are both large and small and closely spaced. The larger ones, commonly white tipped, sometimes seen on the side of the flank in some specimens are significantly larger than the rest but widely spaced, versus more closely spaced in the morphologically similar taxon *D. (Maralinga) nuked sp. nov.*

The occipital band is barely distinct and has a clear break in the centre, where the light of the back of the head runs seamlessly to the light of the upper neck and body posterior to that.

D. lenhoseri sp. nov. (including the two subspecies named below) are separated from *D. tessellatus* and *D. tessellatus moseselfahkrii subsp. nov.* by having more numerous and more enlarged white-tipped tubercles along the flanks and in multiple rows and with obviously paired markings of some form running down the midline of the back, these being visible on close inspection of the lizard.

D. lenhoseri sp. nov. is separated from both subspecies of the nominate form (being *D. lenhoseri dannyelfahkrii subsp. nov.* and *D. lenhoseri akramelfahkrii subsp. nov.*) by having moderately scattered large and blunt tipped tubercles on the dorsum, not entering the flanks and in having about 4 pairs of closely-spaced indistinct lighter spot-like markings running down either side of the midline of the body (dorsum), surrounded by the darker dorsal colouration. Dorsal body colour varies from grey to orange, often heavily infused yellow, red or brown, but markings are invariably so indistinct as to usually appear to be absent at a glance. This is caused by the effects of mottling of markings, pigment intermediate between dark and light also on the body and a similar base colour of the darkest and lightest pigment.

The head is generally unmarked, but the occipital band is fairly prominent, being the most noticeable marking on the dorsum of this taxon.

D. lenhoseri dannyelfahkrii subsp. nov. is usually a yellowish colour dorsally and characterised by a lack of obvious flecks or markings on the head, which appears unicolour on top and sides, and any occipital band is either faded, indistinct or absent. There are scattered tiny white tipped tubercles on the lower, mid and upper flanks and a dorsum that invariably has a series of about five pairs of widely to closely separated small to medium-sized whitish, yellow or orange spots, these spots being obvious, but not with clear and sharp outer edges.

Some specimens of this subspecies are relatively unusual in that they have scattered tiny white tipped tubercles running along the lower side of the head behind the eye. These are not however like the large well defined white-tipped tubercles seen in the subgenus *Maralinga subgen. nov.* (see below), which in many respects is a morphologically similar species of lizard.

D. lenhoseri akramelfahkrii subsp. nov. is readily separated from the four preceding taxa by a dorsum that is obviously banded, by way of a patterning consisting of about 4 rows of wide paired squarish in shape spots running down the midline of the spine, usually joined (completely or nearly completely) at the inner edges, giving the appearance of a banded dorsum. Ranging from greyish to yellowish or brown in overall colour on top, the contrast between darker and lighter sections of the dorsum (the spots mentioned already being the darker parts) is sufficient to ensure that the lizard has an obviously banded appearance, being the only one of the six relevant taxa described herein that is like this when viewed in full at a distance.

The moderately spaced, dark tipped tubercles on the dorsum extend to the flanks, where they more-or-less meet the white tipped ones lower down.

The top and sides of the head have obvious flecks or blotches on them, especially on the sides.

The occipital band is distinct, but usually broken on either side

of the midline, with the middle part forming a triangle with the base at the anterior edge and the point, facing posteriorly at the midline. Markings on the (original) tail are less well defined than those on the body.

Dorsal tubercles are moderately dense and small in size.

D. (Maralinga) nuked sp. nov. is readily separated from all the preceding species and subspecies by its generally dark coloured dorsum, consisting of a mottling between dark brown grey and dark grey, and 3-5 well defined rows of closely spaced bright yellow to orange spots (sometimes faded somewhat in old specimens), as well as the presence of a row of small white markings and white-tipped tubercles commencing from under the eye, running below the ear and along the mid and lower flanks, where the single row on the back of the head splits and the tubercles are scattered across lower, mid and upper flank. Also separating this species (and the genus it is placed in as a monotypic form) from all the preceding species and those in the *D. vittatus* Gray, 1832 species complex are the upper surfaces of the limbs that are dark greyish-black in colour and punctuated by numerous well-spaced dark edged white spots. The upper surface of the head is mottled orange-yellow and brown with small black spots, with most of the orange on the back of the occiput, but there is no occipital line or lines running from snout to eye or posterior to it. The black spots on the head become widely spaced blunt black tipped tubercles on the upper body.

The dorsal tubercles in *D. (Maralinga) nuked sp. nov.* are considerably larger and less closely spaced (there are less in number) than seen in the species within the subgenus *Pitjantjatjaragecko subgen. nov.*

The character state of the presence of the widely-scattered large blunt-edged black tipped tubercles on the back of *D. (Maralinga) nuked sp. nov.* combined with the large, pointed, white tipped tubercles in a row on the back of the lower the side of the head, and an all-acrocentric karyotype of $2n = 38$ separate this subgenus from both subgenus *Diplodactylus sensu stricto*, *sensu* Hoser (2017b) and the subgenus *Pitjantjatjaragecko subgen. nov.* (with karyotypes of either $2n = 28$ or $2n = 30$) as defined herein.

Within *Pitjantjatjaragecko subgen. nov.*, *D. tessellatus* (including subspecies) has a karyotype of $2n = 28$ and *D. lenhoseri sp. nov.* has a karyotype of $2n = 30$ (Oliver *et al.* 2007c).

The six preceding species and subspecies are separated from all other species within *Diplodactylus sensu lato*, *sensu* Hoser (2017b) (= *sensu* Cogger (2014)), by having a dorsum that is as a rule without obvious markings or colour pattern, except as seen in *D. lenhoseri akramelfahkrii sp. nov.* as described above; less than 25 interorbitals; mental scale is not lanceolate in shape, longer than broad and equal to or slightly larger than the first infralabial; anterior nasal is absent; nostril contacts rostral; the 6-8 supralabials are noticeably larger than the adjacent loreals; excluding tubercles, the dorsal scales are homogenous; mid dorsals are large, low, rounded and juxtaposed; dorsal eyelid is well differentiated; tail (original) is between 40-50% of snout-vent length; tail is slightly flattened in cross section; scales on tail are heterogenous with regular rings of large conical scales becoming enlarged and pointed at the terminal end; these alternating with smaller, low conical scales; pre-anal pores absent; post anal tubercles number from 4-13; snout is rounded in shape; digits are long narrow and slightly depressed; underneath with a large pair of apical lamellae, followed by slightly enlarged but otherwise undifferentiated scales (modified from Cogger 2014).

The type form of *D. tessellatus* is depicted in life online at: <https://www.wildsoutheasternaustralia.info/Reptiles/Geckos/Diplodactylus-tessellatus-Tess/i-2pmG9jx> and

<https://www.flickr.com/photos/190014189@N06/51523756839/>
and
<https://www.flickr.com/photos/128497936@N03/50935265496/>
and
<https://www.flickr.com/photos/jono-dashper/51230055411/>
and
<https://www.flickr.com/photos/stephenmahony/6899789869/>
and
<https://www.flickr.com/photos/88708273@N03/50801362158/>
D. tessellatus dannyelfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/84512139>
and
<https://www.flickr.com/photos/54876436@N08/10064252035/>
and
<https://www.inaturalist.org/observations/84512139>
D. lenhoseri sp. nov. (of the nominate form) is depicted in life online at:
<https://www.inaturalist.org/observations/89311690>
and
<https://www.flickr.com/photos/127392361@N04/44086115085/>
and
<https://www.inaturalist.org/observations/101684319>
and
<https://www.flickr.com/photos/shaneblackfnq/37627399920/>
D. lenhoseri moseselfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/159404133>
and
<https://www.inaturalist.org/observations/141054297>
D. lenhoseri akramelfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/18254326>
and
<https://www.inaturalist.org/observations/143456803>
and
<https://www.inaturalist.org/observations/30225149>
and
<https://www.inaturalist.org/observations/86014032>

Distribution: *D. tessellatus moseselfahkrii subsp. nov.* is found west of the Murray Darling River System basin in inland eastern Australia, with the main population of this subspecies being found in the lower areas between the Flinders Ranges (South Australia) in the west and the Barrier Range (New South Wales) to the east.

Etymology: Named in honour of Moses El-Fahkri, brother of Akram ("Ace") El-Fahkri and Danny El-Fahkri, all of Northcote, Victoria, Australia in recognition of their services to herpetology over many decades.

If species previously named in honour of any members of this family by myself have different spelling/s, the spelling/s should not be changed or emended by any "first reviser".

MARALINGA SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:D6CAB4B3-D5AA-4CB7-9E10-2187AA351000

Type species: *Diplodactylus (Maralinga) nuked sp. nov.* (this paper).

Diagnosis: Specimens within the subgenus *Maralinga subgen. nov.* monotypic for the species *Diplodactylus (Maralinga) nuked sp. nov.* are morphologically most similar to species within the subgenus *Pitjantjatjaragecko subgen. nov.* as detailed in this paper.

However they readily separated from all those species and subspecies by the generally dark coloured dorsum, consisting of a mottling between dark brown grey and dark grey, and 3-5 well defined rows of closely spaced bright yellow to orange

spots (sometimes faded somewhat in old specimens), as well as the presence of a row of small white markings and white sharp-pointed-tipped tubercles commencing from under the eye, running below the ear and along the mid and lower flanks, where the single row on the back of the head splits and the tubercles are scattered across lower, mid and upper flank.

Also separating the species (and the genus it is placed in as a monotypic form) from all the species within the subgenus *Pitjantjatjaragecko subgen. nov.* and those in the *D. vittatus* Gray, 1832 species complex are the upper surfaces of the limbs that are dark greyish-black in colour and punctuated by numerous well-spaced dark edged white spots.

The upper surface of the head is mottled orange-yellow and brown with small black spots, with most of the orange on the back of the occiput, but there is no occipital line or lines running from snout to eye or posterior to it. The black spots on the head become widely spaced blunt black tipped tubercles on the upper body.

The dorsal tubercles in *D. (Maralinga) nuked sp. nov.* are considerably larger and less closely spaced (there are less in number) than seen in the species within the subgenus *Pitjantjatjaragecko subgen. nov.*

The character state of the presence of the widely-scattered large blunt-edged black tipped tubercles on the back of *D. (Maralinga) nuked sp. nov.* combined with the large, pointed, white tipped tubercles in a row on the back of the lower the side of the head, and an all-acrocentric karyotype of $2n = 38$ separate this subgenus from both subgenus *Diplodactylus sensu stricto*, *sensu* Hoser (2017b) and the subgenus *Pitjantjatjaragecko subgen. nov.* (with karyotypes of either $2n = 28$ or $2n = 30$) as defined herein (in this paper).

The all-acrocentric karyotype of $2n = 38$ of *Maralinga subgen. nov.* is in accordance with species within the subgenus *Diplodactylus*, implying affinities between the two groups and in line with the genetic evidence of Oliver *et al.* (2009).

Within *Pitjantjatjaragecko subgen. nov.*, *D. tessellatus* (including subspecies) has a karyotype of $2n = 28$ and *D. lenhoseri sp. nov.* has a karyotype of $2n = 30$ (Oliver *et al.* 2007c).

Maralinga subgen. nov. are further readily separated from all other species within *Diplodactylus* Gray, 1832 *sensu* Hoser (2017b) (= *sensu* Cogger 2014), by the following unique suite of characters:

Average adult snout vent length is about 50 mm. Dorsal base colouration varies with location and age but is usually a dark coloured dorsum, consisting of a mottling between dark brown grey and dark grey, and 3-5 well defined rows of closely spaced bright yellow to orange spots (sometimes faded somewhat in old specimens), as well as the presence of a row of small white markings and white sharp-pointed-tipped tubercles commencing from under the eye, running below the ear and along the mid and lower flanks, where the single row on the back of the head splits and the tubercles are scattered across lower, mid and upper flank. Ventral body surfaces are either pale or sometimes covered with moderately large patches of dark colour; snout rounded in shape; labials noticeably larger than the adjacent loreals; dorsal eyelid is well differentiated; mental scale not noticeably pointed, longer than broad and equal to or only slightly larger than the first infralabial; anterior nasal absent; 25 or less interorbitals; 6-8 supralabials that are larger than the adjacent loreals; tail (original) very slightly flattened in cross section and less than half the snout-vent length; tail has heterogenous scalation with regular rings of large conical scales. No preanal pores; 4-13 post anal tubercles. Digits are long, narrow, slightly depressed, below with a large pair of apical lamellae, followed by slightly enlarged but otherwise undifferentiated scales, karyotype of $2n = 38$ (versus $2n = 30$ or $2n = 28$ in *Pitjantjatjaragecko subgen. nov.*

species) (modified from Cogger 2014, Oliver *et al.* 2007c and the preceding part of this description).

Various published phylogenies have shown this species (*Diplodactylus (Maralinga) nuked sp. nov.*), sometimes placed within within the so-called “*tessellatus* group” or “*vittatus* group” to have diverged from congeners in previously named subgenera more than 10 MYA (including the preceding “groups”), and with a divergence from all others of about 15 MYA in Oliver *et al.* (2007a) in Fig. 3 (by inference), warranting this species to also be recognized at the genus or subgenus level, with the latter position (conservatively) taken in this paper.

Distribution: *Maralinga subgen. nov.* occurs in a relatively small area of South Australia, north of the Spencer Gulf, extending from Port Augusta in the south, more or less in a line, through the relatively flat lands, north to Woomera. Based on the distribution of (almost certainly competing) *Pitjantjatjaragecko subgen. nov.* species in likely habitats to the immediate north-west, north and east, tied to other drainage basins, combined with a lack of likely habitat to the west and south-west (beyond Lake Gairdner) it is unlikely the genus occurs elsewhere.

Etymology: *Maralinga subgen. nov.* is named in recognition of the Maralinga Tjarutja, being the original native Australian people from the area this monotypic subgenus occurs, most of whom were either massacred upon the arrival of the British invaders in the 1700's and 1800's, with the survivors having to put up with British nuclear bomb testing in the area in the 1950's leading to ongoing radiation born disease, birth defects and the like among the relatively few survivors and any offspring not “still born”.

Content: *Diplodactylus (Maralinga) nuked sp. nov.* (this paper) (monotypic).

DIPLODACTYLUS (MARALINGA) NUKED SP. NOV.

LSIDurn:lsid:zoobank.org:act:823FFDA9-ECF0-41F6-BA39-3E25AA31F58C

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R60809 collected from 15 km north of Woomera, South Australia, Australia, Latitude -31.0167 S., Longitude 136.7667 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R60810 collected from 15 km north of Woomera, South Australia, Australia, Latitude -31.0167 S., Longitude 136.7667 E.

Diagnosis: *Diplodactylus (Maralinga) nuked sp. nov.* monotypic for the subgenus, is morphologically most similar to species within the subgenus *Pitjantjatjaragecko subgen. nov.* as detailed in this paper.

It is however readily separated from all those species and subspecies by its generally dark coloured dorsum, consisting of a mottling between dark brown grey and dark grey, and 3-5 well defined rows of closely spaced bright yellow to orange spots (sometimes faded somewhat in old specimens), as well as the presence of a row of small white markings and white-tipped tubercles commencing from under the eye, running below the ear and along the mid and lower flanks, where the single row on the back of the head splits and the tubercles are scattered across lower, mid and upper flank.

Also separating this species (and the genus it is placed in as a monotypic form) from all the species in *Pitjantjatjaragecko subgen. nov.* (as defined in this paper) and those in the *D. vittatus* Gray, 1832 species complex are the upper surfaces of the limbs that are dark greyish-black in colour and punctuated by numerous well-spaced dark edged white spots.

The upper surface of the head is mottled orange-yellow and

brown with small black spots, with most of the orange on the back of the occiput, but there is no occipital line or lines running from snout to eye or posterior to it. The black spots on the head become widely spaced blunt black tipped tubercles on the upper body.

The dorsal tubercles in *D. (Maralinga) nuked sp. nov.* are considerably larger and less closely spaced (there are less in number) than seen in the species within the subgenus *Pitjantjatjaragecko subgen. nov.*

The character state of the presence of the widely-scattered large blunt-edged black tipped tubercles on the back of *D. (Maralinga) nuked sp. nov.* combined with the large, pointed, white tipped tubercles in a row on the back of the lower the side of the head, and an all-acrocentric karyotype of $2n = 38$ separate this subgenus from both subgenus *Diplodactylus sensu stricto*, *sensu* Hoser (2017b) and the subgenus *Pitjantjatjaragecko subgen. nov.* (with karyotypes of either $2n = 28$ or $2n = 30$) as defined herein.

Within *Pitjantjatjaragecko subgen. nov.*, *D. tessellatus* (Günther, 1875) (including subspecies) has a karyotype of $2n = 28$ and *D. lenhoseri sp. nov.* has a karyotype of $2n = 30$ (Oliver *et al.* 2007c).

Within *Pitjantjatjaragecko subgen. nov.*, *D. tessellatus* as recognized until now (*sensu* Hoser (2017b) = Cogger 2014), has now been split into two species and an additional three highly divergent subspecies as detailed below.

Until now *Diplodactylus (Pitjantjatjaragecko) lenhoseri sp. nov.* from the Lake Eyre drainage basin of northern South Australia and western Queensland, has been treated as a western population of *D. tessellatus* (Günther, 1875), with a type locality of Brewarrina, New South Wales and herein treated as inhabiting the Murray / Darling River basins generally (Queensland, New South Wales, North-west Victoria and south-east South Australia).

In terms of the preceding, this also includes for the subspecies *D. tessellatus moseselfahkrii subsp. nov.* found west of this region, with the main population of that subspecies being found in the lower areas between the Flinders Ranges (South Australia) and the Barrier Range (New South Wales) to the east, *D. lenhoseri dannyelfahkrii subsp. nov.* from the Barkly Tableland in the Northern Territory, generally west of the Georgina River drainage in far north-west Queensland and *D. lenhoseri akramelfahkrii subsp. nov.* from the area of the Flinders River drainage system, lower Gulf of Carpentaria region, north Queensland, Australia, as well as the morphologically similar but not particularly closely related species *D. (Maralinga) nuked sp. nov.* from the Woomera area of inland South Australia.

Each of the preceding named taxa are consistently morphologically different to one another, the three relevant species being very divergent lineages, estimated at more than 10 MYA by Oliver *et al.* (2007a) with the relevant subspecies all believed to have diverged from their nearest relatives at least 1.5 MYA based on molecular evidence relevant to species pairs affected by the same biogeographical constraints and the known ages of formation of these relevant biogeographical barriers.

The relevant six species and subspecies (combined) are separated from one another by the following unique combinations of characters:

D. tessellatus is a whitish grey or whitish brown in overall dorsal colour, sometimes being a more sandy colour, this colouration being formed by a combination of alternating darker and lighter mottling, the lighter being light grey to beige and the darker greyish to dull grey brown. The bordering of the markings is not distinct or highly contrasting, giving the lizards a distinctly drab appearance. Any spotting, light or dark markings on the back are not distinct, often appear as smudges and without well

defined boundaries and as a rule do not tend to form bands or pattern, although sometimes vaguely distinguishable blotches running more-or less down the sides of the dorsum may be paired or alternating. There are numerous darker blotches or flecks on the top of the head, with the head overall of similar colour to that of the dorsal surface of the body. Markings on the original tail are slightly better defined than those of the body.

The tubercles on the dorsum are mainly large and well scattered. The larger ones on the side of the flank are only slightly larger than the rest.

The occipital band is usually unbroken, but sometimes narrows slightly between side and middle of the back of the head (on each side).

D. tessellatus moseselfahkrii subsp. nov. is readily separated from nominate *D. tessellatus* as just defined, by being a very different colour, in this case a light orange background colour, instead of greyish or brown.

Unlike *D. tessellatus* which obviously has contrasting darker and lighter markings on the dorsum, these are so indistinct as to be almost invisible in *D. tessellatus moseselfahkrii subsp. nov.*, except in very young specimens.

Separate to the preceding however is that distinctive in this taxon is that along the back of the dorsum are about 4 yellow spots running down the midline, usually somewhat off centre, continuing as ill defined yellow blotches running along the top of the (original) tail. They commonly pair along the back.

The tubercles on the dorsum are both large and small and closely spaced. The larger ones, commonly white tipped, sometimes seen on the side of the flank in some specimens are significantly larger than the rest but widely spaced, versus more closely spaced in the morphologically similar taxon *D. (Maralinga) nuked sp. nov.*

The occipital band is barely distinct and has a clear break in the centre, where the light of the back of the head runs seamlessly to the light of the upper neck and body posterior to that.

D. lenhoseri sp. nov. (including the two subspecies named below) are separated from *D. tessellatus* and *D. tessellatus moseselfahkrii subsp. nov.* by having more numerous and more enlarged white-tipped tubercles along the flanks and in multiple rows and with obviously paired markings of some form running down the midline of the back, these being visible on close inspection of the lizard.

D. lenhoseri sp. nov. is separated from both subspecies of the nominate form (being *D. lenhoseri dannyelfahkrii subsp. nov.* and *D. lenhoseri akramelfahkrii subsp. nov.*) by having moderately scattered large and blunt tipped tubercles on the dorsum, not entering the flanks and in having about 4 pairs of closely-spaced indistinct lighter spot-like markings running down either side of the midline of the body (dorsum), surrounded by the darker dorsal colouration. Dorsal body colour varies from grey to orange, often heavily infused yellow, red or brown, but markings are invariably so indistinct as to usually appear to be absent at a glance. This is caused by the effects of mottling of markings, pigment intermediate between dark and light also on the body and a similar base colour of the darkest and lightest pigment.

The head is generally unmarked, but the occipital band is fairly prominent, being the most noticeable marking on the dorsum of this taxon.

D. lenhoseri dannyelfahkrii subsp. nov. is usually a yellowish colour dorsally and characterised by a lack of obvious flecks or markings on the head, which appears unicolour on top and sides, and any occipital band is either faded, indistinct or absent. There are scattered tiny white tipped tubercles on the lower, mid and upper flanks and a dorsum that invariably has a series of about five pairs of widely to closely separated small to medium-sized whitish, yellow or orange spots, these spots being obvious, but not with clear and sharp outer edges.

Some specimens of this subspecies are relatively unusual in that they have scattered tiny white tipped tubercles running along the lower side of the head behind the eye. These are not however like the large well defined white-tipped tubercles seen in the subgenus *Maralinga subgen. nov.* (see below), which in many respects is a morphologically similar species of lizard.

D. lenhoseri akramelfahkrii subsp. nov. is readily separated from the four preceding taxa by a dorsum that is obviously banded, by way of a pattering consisting of about 4 rows of wide paired squarish in shape spots running down the midline of the spine, usually joined (completely or nearly completely) at the inner edges, giving the appearance of a banded dorsum. Ranging from greyish to yellowish or brown in overall colour on top, the contrast between darker and lighter sections of the dorsum (the spots mentioned already being the darker parts) is sufficient to ensure that the lizard has an obviously banded appearance, being the only one of the six relevant taxa described herein that is like this when viewed in full at a distance.

The moderately spaced, dark tipped tubercles on the dorsum extend to the flanks, where they more-or-less meet the white tipped ones lower down.

The top and sides of the head have obvious flecks or blotches on them, especially on the sides.

The occipital band is distinct, but usually broken on either side of the midline, with the middle part forming a triangle with the base at the anterior edge and the point, facing posteriorly at the midline. Markings on the (original) tail are less well defined than those on the body.

Dorsal tubercles are moderately dense and small in size.

The six preceding species and subspecies are separated from all other species within *Diplodactylus sensu lato, sensu Hoser (2017b)* (= *sensu Cogger (2014)*), by having a dorsum that is as a rule without obvious markings or colour pattern, except as seen in *D. lenhoseri akramelfahkrii sp. nov.* as described above; less than 25 interorbitals; mental scale is not lanceolate in shape, longer than broad and equal to or slightly larger than the first infralabial; anterior nasal is absent; nostril contacts rostral; the 6-8 supralabials are noticeably larger than the adjacent loreals; excluding tubercles, the dorsal scales are homogenous; mid dorsals are large, low, rounded and juxtaposed; dorsal eyelid is well differentiated; tail (original) is between 40-50% of snout-vent length; tail is slightly flattened in cross section; scales on tail are heterogenous with regular rings of large conical scales becoming enlarged and pointed at the terminal end; these alternating with smaller, low conical scales; pre-anal pores absent; post anal tubercles number from 4-13; snout is rounded in shape; digits are long narrow and slightly depressed; underneath with a large pair of apical lamellae, followed by slightly enlarged but otherwise undifferentiated scales (modified from Cogger 2014).

The type form of *D. tessellatus* is depicted in life online at:

<https://www.wildsoutheasternaustralia.info/Reptiles/Geckos/Diplodactylus-tessellatus-Tess/i-2pmG9jx>

and

<https://www.flickr.com/photos/190014189@N06/51523756839/>

and

<https://www.flickr.com/photos/128497936@N03/50935265496/>

and

<https://www.flickr.com/photos/jono-dashper/51230055411/>

and

<https://www.flickr.com/photos/stephenmahony/6899789869/>

and

<https://www.flickr.com/photos/88708273@N03/50801362158/>

D. tessellatus dannyelfahkrii sp. nov. is depicted in life online at:

<https://www.inaturalist.org/observations/84512139>

and
<https://www.flickr.com/photos/54876436@N08/10064252035/>
 and
<https://www.inaturalist.org/observations/84512139>
D. lenhoseri sp. nov. (of the nominate form) is depicted in life online at:
<https://www.inaturalist.org/observations/89311690>
 and
<https://www.flickr.com/photos/127392361@N04/44086115085/>
 and
<https://www.inaturalist.org/observations/101684319>
 and
<https://www.flickr.com/photos/shaneblackfnq/37627399920/>
D. lenhoseri moseselfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/159404133>
 and
<https://www.inaturalist.org/observations/141054297>
D. lenhoseri akramelfahkri sp. nov. is depicted in life online at:
<https://www.inaturalist.org/observations/18254326>
 and
<https://www.inaturalist.org/observations/143456803>
 and
<https://www.inaturalist.org/observations/30225149>
 and
<https://www.inaturalist.org/observations/86014032>

Distribution: *Diplodactylus (Maralinga) nuked* sp. nov. occurs in a relatively small area of South Australia, north of the Spencer Gulf, extending from near Port Augusta in the south, more or less in a line, through the relatively flat lands, north to just north of Woomera (about 170 km in a straight line). Based on the distribution of (almost certainly competing) *Pitjantjatjaragecko* subgen. nov. species in likely habitats to the immediate north-west, north and east, combined with a lack of likely habitat to the west and south-west (beyond Lake Gairdner) it is unlikely the species occurs elsewhere.

Etymology: The etymology is blunt nod to history. In the area to the immediate west of where this lizard is found lies the now desecrated habitat of Maralinga, where the British military did their nuclear bomb testing in the 1950's.

With the prevailing winds coming in from the west, as part of the "Roaring Forties" system, radioactive clouds moved east and smothered the few surviving native peoples of the Maralinga Tjarutja nation with radioactive dust. This in turn led to many to dying of cancer and the like and/or giving birth to stillborn children or otherwise with severe defects.

With the British Military celebrating the British Empire's victories against innocuous native people's annually, (it is called ANZAC Day in Australia) and forcing people to repeat the slogan "*lest we forget*" as some kind of perverse call to bow down and worship the perpetrators of horrific acts of genocide in the past, it is suitable that via this etymology, *people should not forget* the atrocities committed by the fascist British regimes against relatively defenceless and otherwise peaceful native peoples, or how they have used their corrupt legal system as a pretext for some of the most brutal and evil human rights abuses in human history, which continue to the present day (as in year 2023).

In summary the native people and the habitat in the region, including native species, such as this one, were nuked!

MALGANA SUBGEN. NOV.

LSIDDurn:lsid:zoobank.org:act:79D95B29-EF55-42FB-A93E-FE1282D5DC70

Type species: *Diplodactylus klugei* Aplin and Adams, 1998.

Diagnosis: The subgenus *Malgana* subgen. nov. monotypic for the species *Diplodactylus klugei* Aplin and Adams, 1998, found

along the coast of Western Australia, generally from Shark Bay in the south to Cape Range / Giralia in the north (The Canarvon Basin) is readily separated from all other species within *Diplodactylus* Gray, 1832 *sensu* Hoser (2017) (=Cogger 2014), by the following unique combination of characters:

Distinctive dorsal pattern which may be either striped, blotched or a combination of these, sometimes with an obvious mid-dorsal line, ranging to with obvious blotches across the midline (most common); background colour is brown to reddish-brown and blotches or striping is well defined and yellowish to more light or white on the flanks, the blotches often dark edged, and on the lower flanks there are usually scattered white spots; venter white; body of moderate build, tail (original) about 60% of snout-vent length, which is about 55 mm in adults; tail has 4-5 irregular blotches on the upper surface. Regrown tail lacks blotches, usually having irregular dark spotting instead. Limbs have indistinct pale spotting.

Head is elongate, narrow and moderately deep. Snout distinctly 'beaked', weakly grooved between the nostrils.

Dorsal eyelid is well differentiated, thereby separating this genus from the morphologically similar and sympatric species *Diplodactylus pulcher* (Steindachner, 1870).

Eye moderately large; supraciliary scales small, triangular except for 2-3 small conical scales at the posterior corner of the eye. Ear aperture small, horizontally ovate.

Labials are noticeable larger than the adjacent loreals; tail is essentially round in cross-section at the base; mental scale is large and triangular, much larger than the first infralabial and in long contact with the first infralabial; there are 12-13 infralabials; first supralabial does not border the margin of the nostril; anterior nasal present; first supralabial (significantly enlarged) and the rostral border the margin of the nostril; all supralabials are larger than the adjacent loreals; There is no prenasal scale which excludes both the rostral and the first labial from entering the nostril (seen in *D. pulcher*). dorsal scales are homogenous, large, flat, juxtaposed and slightly larger than the ventrals; no preanal pores; 6-10 post anal tubercles, being spinose in males; digits are long, narrow and slightly flattened. Underneath they have a pair of moderately enlarged apical lamellae followed by uniform small scales. The fine claws project well beyond the apical plates (versus barely so in *D. pulcher*).

Distribution: The subgenus *Malgana* subgen. nov. monotypic for the species *Diplodactylus klugei* Aplin and Adams, 1998, is found along the coast of Western Australia, generally from Shark Bay in the south to Cape Range / Giralia in the north (The Canarvon Basin).

Etymology: The subgenus name is taken from the name of the Malgana tribe of Aboriginals, being the original inhabitants of the region the genus occurs.

Content: *Diplodactylus (Malgana) klugei* Aplin and Adams, 1998 (monotypic).

REFERENCES CITED

- Aplin, K. P. and Adams, M. 1998. Morphological and genetic discrimination of new species and subspecies of gekkonid and scincid lizards (Squamata: Lacertilia) from the Carnarvon Basin of Western Australia. *Journal of the Royal Society of Western Australia* 81:201-223.
- Bauer, A. M. and Henle, K. 1994. *Das Tierreich 109, Familia Gekkonidae (Reptilia: Sauria). Part I. Australia and Oceania*. Walter De Gruyter Publishers, Berlin, Germany:306 pp.
- Boulenger, G. A. 1885. *Catalogue of the lizards in the British Museum (Nat. Hist.) I. Geckonidae, Eublepharidae, Uroplatidae, Pygopodidae, Agamidae*. London, UK:450 pp.
- Brown, D. 2014. *A guide to Australian Lizards in captivity*. Australian Birdkeeper Publications, Tweed Heads, New South Wales, Australia: 949 pp.

- Brygoo, E. R. 1991. Les types de gekkonidés (Reptiles, Sauriens) du Muséum national d'Histoire naturelle. Catalogue critique. *Bulletin du Muséum National d'Histoire Naturelle*, Paris (4)12:19-141.
- Ceraico, L. M. P., Aesch, E., Ah Yong, S. T., Ballerio, A., Bouchard, P., Bourgoïn, T., Dmitriev, D., Evenhius, N., Grygier, M. J., Harvey, M. S., Kottelat, M., Kluge, N., Krell, F. T., Kojima, J., Kullander, S. O., Lucinda, P., Lyal, C. H. C., Pyle, R. L., Rheindt, F. E., Scioscia, C. L., Welter-Schultes, F., Whitmore, D., Yanega, D., Zhang, Z. Q., Zhou, H. Z., Pape, T. (being a unanimous voice of the ICZN) 2023. Renaming taxa on ethical grounds threatens nomenclatural stability and scientific communication. *Zoological Journal of the Linnean Society*, 197, 283-286.
- Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh edition), CSIRO. Sydney, Australia:1064 pp.
- Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia (1): Amphibia and Reptilia*. Australian Government Publishing Service, Canberra, ACT, Australia:313 pp.
- Cotton, T. 2014. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, Elapidae): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see BZN 70: 234-237, 71: 30-38; 133-135). *Bulletin of Zoological Nomenclature* 71(3):181-182.
- Couper, P. J. and Oliver, P. M. 2016. A new species of gecko from arid inland regions of eastern Australia (*Diplodactylus*; Diplodactylidae). *Zootaxa* (PRINO) 4093(4):525-538.
- Donnellan, S. C., Hutchinson, M. N. and Saint, K. M. 1999. Molecular evidence for the phylogeny of Australian gekkonid lizards. *Biological Journal of the Linnean Society* 67:97-118.
- Doughty, P. and Hutchinson, M. N. 2008. A new species of *Lucasium* (Squamata: Diplodactylidae) from the southern deserts of Western Australia and South Australia. *Records of the Western Australian Museum*, 25:95-106.
- Doughty, P. and Oliver, P. 2013. Systematics of *Diplodactylus* (Squamata: Diplodactylidae) from the south-western Australian biodiversity hotspot: redefinition of *D. polyophthalmus* and the description of two new species. *Records of the Western Australian Museum* 28:44-65.
- Doughty, P., Pepper, M. and Scott Keogh, J. 2010. Morphological and molecular assessment of the *Diplodactylus savagei* species complex in the Pilbara region, Western Australia, with a description of a new species. *Zootaxa* (PRINO) (Online) 2393:33-45.
- Dubois, A., Bauer, A. M., Ceriaco, L. M. P., Dusouler, F., Fretey, T., Lobl, I., Lorvelec, O., Ohler, A., Stopiglia, R. and Aesch, E. 2019. The Linz Zoo code project: a set of new proposals regarding the terminology, the Principles and Rules of zoological nomenclature. First report of activities (2014-2019). *Bionomina*, 17:1-111.
- Duméril, A. M. C. and Bibron, G. 1836. *Erpetologie Générale ou Histoire Naturelle Complète des Reptiles. Vol. 3. Librairie encyclopédique de Roret*, Paris, France:528 pp.
- Edwards, D. L., Scott Keogh, J. and Knowles, L. L. 2012. Effects of vicariant barriers, habitat stability, population isolation and environmental features on species divergence in the south-western Australian coastal reptile community. *Molecular Ecology* (Online):14 pp.
- Ellis, R. J., Doughty, P. and Bauer, A. M. 2018. An annotated type catalogue of the geckos and pygopods (Squamata: Gekkota: Carphodactylidae, Diplodactylidae, Gekkonidae, Pygopodidae) in the collection of the Western Australian Museum. *Records of the Western Australian Museum* 33:51-94.
- Fry, D. B. 1914. On a collection of reptiles and batrachians from Western Australia. *Records of the Western Australian Museum* 1:174-210.
- Gamble, T., Bauer, A. M., Greenbaum, E. and Jackman, T. R. 2008. Evidence for Gondwanan vicariance in an ancient clade of gecko lizards. *Journal of Biogeography*, 35:88-104.
- Gemel, R., Gassner, G. and Schweiger, S. 2019. Katalog der Typen der Herpetologischen Sammlung des Naturhistorischen Museums Wien - 2018. *Annalen des Naturhistorischen Museums in Wien, B* 121:33-248.
- Glauert, L. 1956. Geckonidae (Part II). *Western Australian Naturalist* 5(3):49-56.
- Gray, J. E. 1832. Three new animals brought from New Holland by Mr Cunningham. *Proceedings of the Zoological Society of London* 1832:39-40.
- Gray, J. E. 1845. *Catalogue of the Specimens of Lizards in the Collection of the British Museum*. British Museum, London, UK:xxviii+289 pp.
- Günther, A. 1867. Additions to the knowledge of Australian reptiles and fishes. *Annals and Magazine of Natural History* (3)20:45-68.
- Günther, A. 1875. A list of the saurians of Australia and New Zealand. pp. 9-19. in: Richardson, J. and Gray, J. E., *The zoology of the voyage of H.M.S. Erebus and Terror, during the years 1839 to 1843. By authority of the Lords Commissioners of the Admiralty. Vol. 2.* E. W. Janson, London, UK.
- Hammer, T. A. and Thiele, K. R. 2021. Proposals to amend Articles 51 and 56 and Division III, to allow the rejection of culturally offensive and inappropriate names. *Taxon* 70(6):1392-1394.
- Han, D., Zhou, K. and Bauer, A. M. 2004. Phylogenetic relationships among gekkotan lizards inferred from C-mos nuclear DNA sequences and a new classification of the Gekkota. *Biological Journal of the Linnean Society*, 83:353-368.
- Hawkeswood, T. J. 2021. Time to end taxonomic vandalism by Wolfgang Wüster *et al.*: The Snakeman, Raymond Hoser's publications are validly published and his names available according to the ICZN: Objective investigation finds Hoser's taxonomic works as scientific best practice and in every relevant case identifies valid entities. *Calodema* 860:1-59.
- Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, 2088, Australia:238 pp.
- Hoser, R. T. 1991. *Endangered animals of Australia*. Pierson Publishing, Moss Vale, NSW, Australia:240 pp.
- Hoser, R. T. 1993. *Smuggled: The Underground Trade in Australia's Wildlife*. Apollo Books, Moss Vale, NSW, Australia:160 pp.
- Hoser, R. T. 1996. *Smuggled-2: Wildlife trafficking, crime and corruption in Australia*. Kotabi Publishing, Doncaster, Victoria, 3108, Australia:280 pp.
- Hoser, R. T. 2007. Wells and Wellington - It's time to bury the hatchet. *Calodema* Supplementary Paper 1:1-9.
- Hoser, R. T. 2009a. Creationism and contrived science: A review of recent python systematics papers and the resolution of issues of taxonomy and nomenclature. *Australasian Journal of Herpetology* 2:1-34. (3 February).
- Hoser, R. T. 2009b. Eight new taxa in the genera *Pseudonaja* Günther 1858, *Oxyuranus* Kinghorn 1923, and *Panacedechis* Wells and Wellington 1985 (Serpentes:Elapidae). *Australasian Journal of Herpetology* 4:1-27.
- Hoser, R. T. 2009c. How Fast Can You Crawl? Mobility and the Distribution of Snakes in Southeast Australia. *Bulletin of the Chicago Herpetological Society* 44(6):87-95.
- Hoser, R. T. 2012a. Exposing a fraud! *Afronaja* Wallach, Wüster and Broadley 2009, is a junior synonym of *Spracklandus* Hoser 2009! *Australasian Journal of Herpetology* 9 (3 April):1-64.
- Hoser, R. T. 2012b. The description of a new genus of west Australian snake and eight new taxa in the genera *Pseudonaja*

- Gunther, 1858, *Oxyuranus* Kinghorn, 1923 and *Panacledochis* Wells and Wellington, 1985 (Serpentes: Elapidae). *Australasian Journal of Herpetology* 11:32-50.
- Hoser, R. T. 2012c. Robust taxonomy and nomenclature based on good science escapes harsh fact-based criticism, but remains unable to escape an attack of lies and deception. *Australasian Journal of Herpetology* 14:37-64.
- Hoser, R. T. 2013. The science of herpetology is built on evidence, ethics, quality publications and strict compliance with the rules of nomenclature. *Australasian Journal of Herpetology* 18:2-79.
- Hoser, R. T. 2014a. Tidying up Death Adder taxonomy (Serpentes: Elapidae: *Acanthophis*): including descriptions of new subspecies and the first ever key to identify all recognized species and subspecies within the genus. *Australasian Journal of Herpetology* 23:22-34.
- Hoser, R. T. 2014b. A taxonomic revision of the Giant Long-necked Terrapin, *Chelodina expansa* Gray, 1857 species complex and related matters of taxonomy and nomenclature. *Australasian Journal of Herpetology* 24:3-11.
- Hoser, R. T. 2015a. Dealing with the "truth haters" ... a summary! Introduction to Issues 25 and 26 of *Australasian Journal of Herpetology*. Including "A timeline of relevant key publishing and other events relevant to Wolfgang Wüster and his gang of thieves." and a "Synonyms list". *Australasian Journal of Herpetology* 25:3-13.
- Hoser, R. T. 2015b. The Wüster gang and their proposed "Taxon Filter": How they are knowingly publishing false information, recklessly engaging in taxonomic vandalism and directly attacking the rules and stability of zoological nomenclature. *Australasian Journal of Herpetology* 25:14-38.
- Hoser, R. T. 2015c. Best Practices in herpetology: Hinrich Kaiser's claims are unsubstantiated. *Australasian Journal of Herpetology* 25:39-64.
- Hoser, R. T. 2015d. PRINO (Peer reviewed in name only) journals: When quality control in scientific publications fails. *Australasian Journal of Herpetology* 26:3-64.
- Hoser, R. T. 2015e. Rhodin *et al.* 2015, Yet more lies, misrepresentations and falsehoods by a band of thieves intent on stealing credit for the scientific works of others. *Australasian Journal of Herpetology* 27:3-36.
- Hoser, R. T. 2015f. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see *BZN* 70: 234-237; comments *BZN* 71:30-38, 133-135). *Australasian Journal of Herpetology* 27:37-54.
- Hoser, R. T. 2015g. Hitherto overlooked species of reptile from Northern Australia: A result of science, taxonomy, molecular biology, systematics, history and forensic herpetology. *Australasian Journal of Herpetology* 30:21-27.
- Hoser, R. T. 2016a. A new species of *Denisonia* from North-west Queensland, Australia (Serpentes: Elapidae). *Australasian Journal of Herpetology* 31:62-63.
- Hoser, R. T. 2016b. Carphodactylidae reviewed: Four new genera, four new subgenera, nine new species and four new subspecies within the Australian gecko family (Squamata: Sauria). *Australasian Journal of Herpetology* 32:3-25.
- Hoser, R. T. 2017a. A further break-up of the Australian gecko genus *Oedura* Gray, 1842 *sensu lato* as currently recognized, from four to seven genera, with two new subgenera defined, description of fourteen new species, four new subspecies and formalising of one tribe and five subtribes. *Australasian Journal of Herpetology* 34:3-35.
- Hoser, R. T. 2017b. A brief overview of the taxonomy and nomenclature of the genus *Diplodactylus* Gray 1832 *sensu lato*, with the formal naming of a new subgenus for the *Diplodactylus byrnei* Lucas and Frost, 1896 species group and two new species within this subgenus. *Australasian Journal of Herpetology* 34:57-63.
- Hoser, R. T. 2017c. The inevitable break-up of the Australian legless lizard genera *Delma* Gray, 1831 and *Aprasia* Gray, 1839, formal descriptions of 13 well-defined Pygopodid species, as well as a further improvement in Pygopodid taxonomy and nomenclature. *Australasian Journal of Herpetology* 35:3-32.
- Hoser, R. T. 2018. New Australian lizard taxa within the greater *Egernia* Gray, 1838 genus group of lizards and the division of *Egernia sensu lato* into 13 separate genera. *Australasian Journal of Herpetology* 36:49-64.
- Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian Journal of Herpetology* 39:23-52.
- Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian Journal of Herpetology* 39:53-63.
- Hoser, R. T. 2020a. Three new species of frog in the genus *Limnodynastes* Fitzinger, 1843 from east Australia, two new *Platyplectron* Peters, 1863 species from east Australia and three new species of *Ranaster* Macleay, 1878 from north Australia. *Australasian Journal of Herpetology* 43:3-14.
- Hoser, R. T. 2020b. A new species of the Australian Bandy Bandy *Vermicella* Gray, 1841 (Serpentes: Elapidae) from north-west Australia. *Australasian Journal of Herpetology* 47:39-41.
- Hoser, R. T. 2022a. The inevitable further break up of the monotypic Australian skink genus *Saiphos* Gray, 1831. *Australasian Journal of Herpetology* 58:6-15.
- Hoser, R. T. 2022b. The Iconic Australian Copper-tailed Skink *Ctenotus taeniolatus* (White, 1790) split. A sign of severely under-estimated species diversity in Australia's smaller lizards. *Australasian Journal of Herpetology* 59:17-20.
- Hutchinson, M. N., Adams, M. and Fricker, S. 2006. Genetic variation and taxonomy of the *Ctenotus brooksi* species complex (Squamata: Scincidae). *Transactions of the Royal Society of South Australia* 130:48-65.
- Hutchinson, M. N., Doughty, P. and Oliver, P. M. 2009. Taxonomic revision of the stone geckos (Squamata: Diplodactylidae: *Diplodactylus*) of southern Australia. *Zootaxa* (PRINO) (Online) 2167:25-46.
- International Commission of Zoological Nomenclature (ICZN) 1991b. Decision of the commission. Three works by Richard W. Wells and C. Ross Wellington: proposed suppression for nomenclatural purposes. *Bulletin of Zoological Nomenclature* 48(4):337-338.
- International Commission of Zoological Nomenclature (ICZN) 2001. Opinion 1970. *Bulletin of Zoological Nomenclature* 58(1):74, (30 March 2001).
- International Commission of Zoological Nomenclature (ICZN) 2012. Amendment of Articles 8, 9, 10, 21 and 78 of the *International Code of Zoological Nomenclature* to expand and refine methods of publication. *Zootaxa* (PRINO) (Online) 3450:1-7.
- International Commission of Zoological Nomenclature (ICZN) 2021. Opinion 2468 (Case 3601) - *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, Elapidae) and *Australasian Journal of Herpetology* issues 1-24: confirmation of availability declined; Appendix A (Code of Ethics): not adopted as a formal criterion for ruling on Cases. *Bulletin of Zoological Nomenclature* 78 (30 April 2021):42-45.

- Kaiser, H. 2012a. SPAM email sent out to numerous recipients on 5 June 2012.
- Kaiser, H. 2012b. Point of view. Hate article sent as attachment with SPAM email sent out on 5 June 2012.
- Kaiser, H. 2013. The Taxon Filter, a novel mechanism designed to facilitate the relationship between taxonomy and nomenclature, vis-à-vis the utility of the Code's Article 81 (the Commission's plenary power). *Bulletin of Zoological Nomenclature* 70(4) December 2013:293-302.
- Kaiser, H. 2014a. Comments on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, Elapidae): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published. *Bulletin of Zoological Nomenclature*, 71(1):30-35.
- Kaiser, H. 2014b. Best Practices in Herpetological Taxonomy: Errata and Addenda. *Herpetological Review*, 45(2):257-268.
- Kaiser, H., Crother, B. L., Kelly, C. M. R., Luiselli, L., O'Shea, M., Ota, H., Passos, P., Schleip, W. D. and Wüster, W. 2013. Best practices: In the 21st Century, Taxonomic Decisions in Herpetology are Acceptable Only When supported by a body of Evidence and Published via Peer-Review. *Herpetological Review* 44(1):8-23.
- King, M. 1977. Chromosomal and morphometric variation in the gecko *Diplodactylus vittatus* (Gray). *Australian Journal of Zoology*, 25:42-57.
- King, M. 1987. Chromosomal evolution in the Diplodactylinae (Gekkonidae: Reptilia). I. Evolutionary relationships and patterns of change. *Australian Journal of Zoology* 35:507-531.
- King, M. and Mengden, G. 1990. Chromosomal evolution in the Diplodactylinae (Gekkonidae: Reptilia) II. Chromosomal variability between New Caledonian species. *Australian Journal of Zoology* 38:219-226.
- Kinghorn, J. R. 1929. Herpetological notes 1. *Records of the Australian Museum* 17(2):76-84.
- Kluge, A. G. 1963a. Three new species of the gekkonid lizard genus *Diplodactylus* Gray from Australia. *Records of the South Australian Museum* 14:545-553.
- Kluge, A. G. 1963b. The systematic status of certain Australian and New Guinean gekkonid lizards. *Memoirs of the Queensland Museum* 14:77-86.
- Kluge, A. G. 1965. The systematic status of certain Australian lizards of the family Gekkonidae. *Australian Zoologist* 13(2):121-125.
- Kluge, A. G. 1967. Systematics, phylogeny and zoogeography of the lizard genus *Diplodactylus* Gray (Gekkonidae). *Australian Journal of Zoology*, 15:1007-1108.
- Laube, A. 1997. *Diplodactylus tessellatus* (Günther, 1875). *Sauria* 19 Supplement:413-416.
- Longman, H. A. 1915. Reptiles from Queensland and the Northern Territory. *Memoirs of the Queensland Museum* 3:30-34.
- Loveridge, A. 1934. Australian reptiles in the Museum of Comparative Zoology, Cambridge, Massachusetts. *Bulletin of the Museum of Comparative Zoology Harvard* 77:243-383.
- Lucas, A. H. S. and Frost, C. 1894. The lizards indigenous to Victoria. *Proceedings of the Royal Society of Victoria (new series)* 6:24-92.
- Lucas, A. H. S. and Frost, C. 1896. Reptilia. pp. 112-151 in: Spencer, W. B. (Ed.), *Report on the Work of the Horn Scientific Expedition to Central Australia, Part. II. - Zoology*. Melbourne, Mullen and Slade, Melbourne, Victoria, Australia.
- Lucas, A. H. S., and Frost, C. 1897. Description of two new species of lizards from central Australia. *Proceedings of the Royal Society of Victoria*, 9:54-56.
- Lucas, A. H. S. and Frost, C. 1903. Description of two new Australian lizards, *Varanus spenceri* and *Diplodactylus bilineatus*. *Proceedings of the Royal Society of Victoria*, 15:145-147.
- Melville, J., Schulte, J. A. and Larson, A. 2004. A molecular study of phylogenetic relationships and evolution of antipredator strategies in Australian *Diplodactylus* geckos, subgenus *Strophurus*. *Biological Journal of the Linnean Society* 82:123-138.
- Melville, J., Chaplin, K., Hutchinson, M., Sumner, J., Gruber, B., MacDonald, A. J. and Sarre, S. D. 2019. Taxonomy and conservation of grassland earless dragons: new species and an assessment of the first possible extinction of a reptile on mainland Australia. *Royal Society Open Science* 6:190233 (online).
- Mertens, R. 1967. Die herpetologische Sektion des Natur-Museums und Forschungs-Institutes Senckenberg in Frankfurt am Main nebst einem Verzeichnis ihrer Typen. *Senckenbergiana Biologica* 48:1-106.
- Michael, D. R. and Lindenmayer, D. B. 2011. *Diplodactylus tessellatus* Gunther, 1875 (Squamata: Diplodactylidae), *Parasuta dwyeri* Greer, 2006 and *Suta suta* Peters, 1863 (Squamata: Elapidae): Distribution extension in the Murray catchment of New South Wales, South-eastern Australia. *Check List* 7(5):578-580.
- Mosyakin, S. L. 2022. If "Rhodes-" must fall, who shall fall next? *Taxon* 71:49-255.
- Olive, N. 2012. Pat, John Peter (1966–1983), Australian Dictionary of Biography, National Centre of Biography, Australian National University, online at: <https://ia.anu.edu.au/biography/pat-john-peter-15031/text26228>.
- Oliver, P., Hughall, A., Adams, M., Cooper, S. J. B. and Hutchinson, M. 2007a. Genetic elucidation of cryptic and ancient diversity in a group of Australian diplodactyline geckos: The *Diplodactylus vittatus* complex. *Molecular Phylogenetics and Evolution* 44 (2007) 77-88.
- Oliver, P. M., Hutchinson, M. N. and Cooper, S. J. B. 2007b. Phylogenetic relationships in the lizard genus *Diplodactylus* Gray and resurrection of *Lucasium* Wermuth (Gekkota, Diplodactylidae). *Australian Journal of Zoology*, 55:197-210.
- Oliver, P., Hutchinson, M. N. and Hutchinson, R. 2007c. Karyotypic Variation in the Australian Gecko *Diplodactylus tessellatus*, with the Description of a New Karyotypic Complement for Diplodactyline Geckos. *Journal of Herpetology*, 41(3):540-543.
- Oliver, P. M., Adams, M., Lee, M. S. Y., Hutchinson, M. N. and Doughty, P. 2009. Cryptic diversity in vertebrates: molecular data double estimates of species diversity in a radiation of Australian lizards (Diplodactylus, Gekkota). *Proceedings of the Royal Society B*, 276:2001-2007.
- Oliver, P. M., Couper, P. J. and Pepper, M. 2014. Independent transitions between monsoonal and arid biomes revealed by systematic revision of a complex of Australian geckos (*Diplodactylus*; Diplodactylidae). *PLoS One* (Online) 9(12):e111895:53 pp.
- Parker, H. W. 1926. New reptiles and a new frog from Queensland. *Annals and magazine of natural history* (9)17:665-670.
- Pellegrin, J. 1909. Sur une collection de lézards de l'Australie occidentale. *Bulletin de la Société Zoologique de France*, 34:241-245.
- Pepper, M., Doughty, P. and Scott Keogh, J. 2006. Molecular phylogeny and phylogeography of the Australian *Diplodactylus stenodactylus* (Gekkota; Reptilia) species-group based on mitochondrial and nuclear genes reveals an ancient split between Pilbara and non-Pilbara *D. stenodactylus*. *Molecular Phylogenetics and Evolution* 41:539-555.
- Pepper, M., Doughty, P., Arculus, R. and Scott Keogh, J. 2008. Landforms predict phylogenetic structure on one of the world's

- most ancient surfaces. *BMC Evolutionary Biology*, 8, 152.
- Peters, W. C. H. 1863. Eine Übersicht der von Hr. Richard Schomburgk an das zoologische Museum eingesandten Amphibien, aus Buchsfelde bei Adelaide in Südastralien. Monatsberichte der Königlich Preussische Akademie des Wissenschaften zu Berlin (April):228-236.
- Pianka, E. R. 1969. Habitat specificity, speciation, and species density in Australian desert lizards. *Ecology* 50(3):498-502.
- Rhodin, A. *et al.* (70 listed authors, with some later publishing that they had never read the document they allegedly co-authored) 2015. Comment on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, Elapidae): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published (Case 3601; see *BZN* 70: 234-237; 71: 30-38, 133-135, 181-182, 252-253). *Bulletin of Zoological Nomenclature* 72(1):65-78.
- Ride, W. D. L. (ed.) *et al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature*. The Natural History Museum - Cromwell Road, London SW7 5BD, UK (also commonly cited as "The Rules", "Zoological Rules" or "ICZN 1999").
- Riedel, J., Nordberg, E. and Schwarzkopf, L. 2020. Ecological niche and microhabitat use of Australian geckos. *Israel Journal of Ecology and Evolution* 66(3-4):209-222.
- Rösler, H. 2000. Kommentierte Liste der rezent, subrezent und fossil bekannten Geckotaxa (Reptilia: Gekkonomorpha). *Gekkota* 2:28-153.
- Rösler, H. 2017. Gecko-Chorologie (Squamata: Gekkota). *Gekkota* (4):1-160.
- Rösler, H. 2022. Akzente der Fortpflanzungsbiologie oviparer Geckos (Squamata: Gekkota) - Charakter, Evolution, Phylogenie. *Vernate* 41/2022:91-212.
- Skipwith, P. L., Bi, K. and Oliver, P.M. 2019. Relicts and radiations: Phylogenomics of an Australasian lizard clade with east Gondwanan origins (Gekkota: Diplodactyloidea). *Molecular Phylogenetics and Evolution* (2019) (online):14 pp.
- Steindachner, F. 1870. Herpetologische Notizen (II). Reptilien gesammelt Während einer Reise in Sengambien. *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften in Wien*, 62:326-348.
- Shea, G., Thomson, S. and Georges, A. 2020. The identity of *Chelodina oblonga* Gray 1841 (Testudines: Chelidae) reassessed. *Zootoxic* (PRINO) (online) 4779(3):419-437.
- Sternfeld, R. 1925. Beiträge zur Herpetologie Inner-Australiens. Abhandlungen Herausgegeben von der Senckenbergischen Naturforschenden Gesellschaft, 38:221-251.
- Storr, G. M. 1964 *Ctenotus*, a new generic name for a group of Australian skinks. *Western Australian Naturalist* 9(4):84-85.
- Storr, G. M. 1978. Seven new gekkonid lizards from Western Australia. *Records of the Western Australian Museum*, 6:337-352.
- Storr, G. M. 1979. The *Diplodactylus vittatus* complex (Lacertilia: Gekkonidae) in Western Australia. *Records of the Western Australian Museum*, 7:391-402.
- Storr, G. M. 1988. Three new *Diplodactylus* (Lacertilia: Gekkonidae) from the arid zone of Australia. *Records of the Western Australian Museum*, 14:217-223.
- Storr, G. M., Smith, L. A. and Johnstone, R. E. 1990. *Lizards of Western Australia. III. Geckos and Pygopods*. Western Australian Museum Press, Perth, Western Australia, Australia:x+141 pp.
- Swan, G., Sadler, R. and Shea, G. 2022. *A field guide to reptiles of New South Wales*. Fourth edition. Reed New Holland, Australia:336 pp.
- Thiele, K. R., Oliver, P. M., Bauer, A. M., Doughty, P., Kraus, F., Rix, M. G. and Kaiser, H. 2020. Case 3824 - A special proposal to suppress certain names under the plenary powers of the Commission. *Bulletin of Zoological Nomenclature* 77:78 (title only). The full submission to the ICZN was sent out as a SPAM email to thousands of recipients, is a rambling 71 page pdf and is widely available online.
- Tiedemann, F., Häupl, M. and Grillitsch, H. 1994. Katalog der Typen der herpetologischen Sammlung nach dem Stand vom 1. Jänner 1994. Teil II: Reptilia. *Kataloge der Wissenschaftlichen Sammlungen des Naturhistorischen Museums in Wien* 10 (Vertebrata 4):1-110.
- Underwood, G. 1954. On the classification and evolution of geckos. *Proceedings of the Zoological Society of London* 124:469-492.
- Vanderduys, E., Hoskin, C. J., Kutt, A. S., Wright, J. M. and Zozaya, S. M. 2020. Beauty in the eye of the beholder: a new species of gecko (Diplodactylidae: *Lucasium*) from inland north Queensland, Australia. *Zootoxic* (PRINO) (Online) 4877(2):291-310.
- Wellington, R. W. 2015. Comment on the proposed confirmation of the availability of the generic name *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, Elapidae) and for the nomenclatural validation of the journal in which it was published. *Bulletin of Zoological Nomenclature* 72(3):222-226.
- Wells, R. W. and Wellington, C. R. 1984. A synopsis of the class Reptilia in Australia. *Australian Journal of Herpetology* 1(3-4):73-129.
- Wells, R. W. and Wellington, C. R. 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology Supplementary Series* 1:1-61.
- Wells, R. W. and Wellington, C. R. 1989. A checklist of the amphibians and reptiles known from the Cumberland Plain Region, Sydney Basin, New South Australia. *Australian Herpetologist* 506:1-34.
- Werner, F. 1910a. Reptilia (Geckonidae und Scincidae). pp. 451-493 in: Michaelsen, W. and Hartmeyer, R. *Die Fauna Südwest-Australiens*. Vol. 2. G. Fischer, Jena, Germany.
- Werner, F. 1910b. Neue oder seltener Reptilien des Musée Royal d'Histoire Naturelle de Belgique in Brüssel. *Zoologische Jahrbücher Abteilung für Systematik, Geographie und Biologie der Tiere* 28 [1909]:263-288.
- Wilson, S. and Knowles, D. 1988. *Australia's Reptiles: A Photographic Reference to the Terrestrial Reptiles of Australia*. Collins Publishers, Sydney, New South Wales, Australia:447 pp.
- Wilson, S. and Swan, G. 2021. *A complete guide to reptiles of Australia*. (Sixth edition), Reed / New Holland, Sydney, Australia:688 pages.
- Zietz, F. R. 1920. Catalogue of Australian lizards. *Records of the South Australian Museum* 1:181-228.

ALL PHOTOS - By Raymond Hoser.

CONFLICT OF INTEREST - None.

Cite this paper as:

Hoser, R. T. 2023. Species diversity seriously under-estimated! 23 new species and 4 new subspecies within the Australian Gecko genus *Diplodactylus* Gray, 1827. *Australasian Journal of Herpetology* 64 (1 August):1-64.

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Australasian Journal of Herpetology

Issue 64, 1 August 2023

Hoser, R. T. 2023. Species diversity seriously under estimated! 23 new species and 4 new subspecies within the Australian Gecko genus *Diplodactylus* Gray, 1827.

ISSN 1836-5698 (Print)

ISSN 1836-5779 (Online)