Australasian Journal of Herpetology 34:57-63.
Published 20 July 2017.

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

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.

RAYMOND T. HOSER

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
Received 25 March 2017, Accepted 28 May 2017, Published 20 July 2017.

ABSTRACT

The taxonomy of the genus *Diplodactylus* Gray 1832 *sensu lato* was well resolved at the genus level by Oliver *et al*. (2007) and to a lesser extent other authors over the past 30 years to 2017. However a group known as the Wüster gang as detailed by Hoser (2015a-f) have unlawfully stopped most herpetologists from using taxonomy and nomenclature proposed by authors outside of their mob.

As a result names formally proposed by Wells and Wellington (1989) for obvious species groups have been forcibly suppressed in herpetology since they were first published.

This has remained the case even after Oliver *et al*. (2007) confirmed the validity of their genus-level classification in terms of three names they proposed.

Taking an ultra-conservative position, Oliver *et al*. (2007) split *Diplodactylus* Gray 1832 *sensu lato* into three genera, using the first available names of *Diplodactylus* Gray 1832, *Lucasium* Wermuth, 1965 and *Rhynchoedura* Günther, 1867 for three main groups that diverged from one another in excess of 20 MYA.

However if one divided the genus groups at 10-15 MYA, there would in fact be 8 well-defined species groups, for which seven have available names.

In order to maintain stability of taxonomy and nomenclature, this paper formally resurrects four available names and assigns another for five subgenera, within the three genera identified by Oliver *et al*. (2007). The species group currently referred to the species *Diplodactylus byrnei* Lucas and Frost, 1896, including this and three other closely related species, that as a group, diverged from congeners an estimated 15-20 MYA is herein placed in the newly named subgenus *Crottyoides gen. nov.*.

The other formally resurrected genus names, herein applied as subgenera are: *Stenodactylopsis* Steindachner, 1870, *Manwellisaurus* Wells and Wellington, 1989, *Ozziedactylus* Wells and Wellington, 1989 and *Turnerdactylus* Wells and Wellington, 1989. This paper also presents a genus and subgenus list with component species.

Keywords: Taxonomy; nomenclature; lizards; Australia; Gecko; Genus; *Diplodactylus*; *Lucasium*; *Rhynchoedura*; resurrected names; available names; *International Code of Zoological Nomenclature*; Subgenus; *Stenodactylopsis*; *Manwellisaurus*; *Ozziedactylus*; *Turnerdactylus*; New subgenus; *Crottyoides*; new species; *rosssadlieri*; *allengreeri*.

INTRODUCTION

This paper is the result of an review of the taxonomy and nomenclature of the genus *Diplodactylus* Gray 1832 *sensu lato*.

An audit of relevant species and the scientific literature found that the taxonomy of the group was well resolved at the genus level by Oliver *et al*. (2007) and various other studies by other authors over the past 30 years to 2017. However a group known as the Wüster gang as detailed by Hoser (2015a-f) have unlawfully stopped most herpetologists from using taxonomy and nomenclature proposed by authors outside of their mob.

As a result names formally proposed in Wells and Wellington (1989), by Richard Wells and Cliff Ross Wellington for obvious species groups have been forcibly suppressed in herpetology since they were first published.

This has remained the case even after Oliver *et al.* (2007) *prima facie* confirmed the validity of their genus-level classification using molecular methods technology not available to Wells and Wellington two decades earlier.

Taking an ultra-conservative position, Oliver *et al.* (2007) split *Diplodactylus* Gray 1832 *sensu lato* into three genera, using the first available names of *Diplodactylus* Gray 1832, *Lucasium* Wermuth, 1965 and *Rhynchoedura* Günther, 1867 for three main groups that diverged from one another in excess of 20 MYA.

However if one divided the genus groups at 10-15 MYA, which is line with other reptile genera in Australia, there would in fact be 8 well-defined species groups requiring genus-level names, for which seven have available names.

In the long term it is clearly not tenable to informally describe groups of taxa as vaguely defined (or more often than not, undefined) "species groups" and so it is only appropriate that previously assigned names compliant with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) be used.

In order to maintain stability of taxonomy and nomenclature, this paper formally resurrects four available names, beyond those used by Oliver *et al*. (2007) and assigns another for a total five subgenera, within the three genera identified by Oliver *et al.* (2007). The species group currently referred to the species originally named as *Diplodactylus byrnei* Lucas and Frost, 1896, including this and three other closely related species, that diverged from congeners an estimated 15-20 MYA are herein placed in the newly named subgenus *Crottyoides gen. nov..*

The other formally resurrected genus names, herein applied as subgenera are: *Stenodactylopsis* Steindachner, 1870, *Manwellisaurus* Wells and Wellington, 1989, *Ozziedactylus* Wells and Wellington, 1989 and *Turnerdactylus* Wells and Wellington, 1989. This paper also presents a genus and subgenus list with component species.

The methodology of this paper's preparation was simple in that it involved a mere review of the existing literature combined with a hands-on knowledge of the relevant species gathered over more than 40 years of intensive survey work across Australia as well as viewing numerous specimens in Museums and elsewhere.

The final result has already been outlined above and in the abstract.

As the morphological differences between the relevant species groups are well established in the literature, it is not necessary for me to detail this in terms of the relevant species beyond that which is needed to formally establish the new name to be defined in this paper.

This is because all other names for the other species groups have been previously established and sufficiently redefined by the paper of Oliver *et al.* (2007) and those papers describing relevant species after that date as cited below.

I do however note the following: Oliver *et al.* (2007) showed that the species they identified as *Diplodactylus byrnei* Lucas and Frost, 1896 diverged from all other species in *Diplodactylus sensu lato* somewhere between 15 and 20 MYA, making it worthy of genus-level recognition. This alone is sufficient basis for the erection of a subgenus to accommodate the taxon.

Having said this, their phylogeny showed two distinct lineages of this putative taxon. There are two available names for this species group, the second being "*Diplodactylus dorotheae* Wells and Wellington, 1985".

The results of Oliver *et al.* (2007) *prima facie* confirm that at least two lineages worthy of genus-level recognition exist and because of the sampling locations used, that both available names can be assigned to given taxa.

Therefore the Wells and Wellington name is resurrected from synonymy to be treated as a valid species level taxon in the new subgenus erected to accommodate "*Diplodactylus byrnei* Lucas and Frost, 1896".

Having said this, I have had the good fortune to inspect several populations of putative "*Diplodactylus byrnei* Lucas and Frost, 1896" in recent years with a view to ascertaining their relationships to one another, including substantial time in the field at Leigh Creek and south of Coober Pedy in South Australia.

As a result of relevant fieldwork and inspection of other specimens from across the range of putative "*Diplodactylus byrnei* Lucas and Frost, 1896" this paper subdivides the putative species "*Diplodactylus byrnei* Lucas and Frost, 1896" four ways based on obvious and consistent morphological differences between populations.

The differences include such things as iris colour and dorsal body pattern, which were also matched up with apparent geographical barriers between the populations, these being areas of evidently uninhabited terrain.

A fifth population with a distribution centred in south-west Queensland near Birdsville, may also represent an undescribed species, although it is herein treated as being of "*Diplodactylus byrnei* Lucas and Frost, 1896". This is because an inspection of the holotype for "*Diplodactylus byrnei* Lucas and Frost, 1896" at the Museum of Victoria and other live specimens from the same part of the Northern Territory show them to have several similarities to the Birdsville (and nearby) animals, including the configuration of dark colouration posterior to the eye, the shape of the lighter dorsal cross band-type markings and the colour patterning of the flanks.

Literature relevant to the taxonomic and nomenclatural conclusions and actions herein includes the following:

Aplin and Adams (1998), Boulenger (1885, 1896), Brown *et al.* (2014), Cogger (1975, 1983, 2000, 2014), Cogger *et al.* (1983), Couper and Oliver (2016), Couper *et al.* (2007), Doughty and Hutchinson (2008), Doughty and Oliver (2013), Doughty *et al.* (2008, 2010), Duméril and Bibron (1836), Fry (1914), Glauert (1956), Gray (1832, 1842, 1845, 1867), Günther (1867), Han *et al.* (2004), Hoser (1989, 2007, 2015a-f, 2016a-b, 2017a-b), Hutchinson *et al.* (2009), King *et al.* (1982), King (1985), King and Gow (1983), Kluge (1967), Laube (2002), Laube and Langner (2007), Longman (1915), Loveridge (1934), Lucas and Frost (1896), Nielsen *et al.* (2016), Oliver and Bauer (2010), Oliver and Doughty (2016), Oliver and McDonald (2016), Oliver *et al.* (2007, 2010, 2012, 2014a-c), Pepper *et al.* (2006, 2011), Ride *et al.* (1999), Rosauer *et al.* (2016), Rösler (1995, 2000), Storr (1978), Underwood (1954), Wells and Wellington (1984, 1985, 1989), Werner (1910), Wilson and Knowles (1988), Wilson and Swan (2010), Zietz (1920) and sources cited therein.

It should also be noted that the spelling of the new subgenus or two species named should not be altered in any way unless mandated by the rules of the "in force" *International Code of Zoological Nomenclature*, or equivalent publication or set of rules. This remains the case if the names are applied at the genus as opposed to subgenus level or subspecies as opposed to species level. Gender, spelling and the like should not be amended in any way unless mandated by the rules applicable.

If a later author seeks to merge taxa named for the first time herein, the name to be used should be in page priority order as published within this paper.

Latitude and Longitude information is given in degrees (first two digits) and minutes (second two digits after the period).

SUBGENUS *CROTTYOIDES SUBGEN. NOV.*

Type species: *Lucasium* (*Crottyoides*) *rosssadlieri sp. nov*. (as described in this paper below).

Diagnosis: *Crottyoides subgen. nov.* is separated from all other species within *Lucasium* Wermuth, 1965 as defined by Oliver *et al.* (2007) by having heterogenous body scalation, relatively large terminal scansors and unusual bodily proportions, this being with a relatively large head, a sharply pointed snout and a disproportionately skinny (original) tail.

The four (defined in this paper) species in this subgenus are further defined (as one species) on page 310 of Cogger (2014). On the same page, Cogger (2014) shows an image of the species *L.* (*Crottyoides*) *dorotheae* (Wells and Wellington, 1985), which is identified as "*Lucasium byrnei*, Roto, NSW", showing well-defined yellow spots on the flanks that are diagnostic for that particular species.

The species *Lucasium* (*Crottyoides*) *byrnei* (Lucas and Frost, 1896) has a centre of distribution in Northern South Australia and the southern Northern Territory.

The diagnosis of all other species within *Lucasium* and *Crottyoides subgen. nov.* (as if within *Lucasium*) is as follows:

A genus of the Diplodactylidae (*sensu* Han *et al.* 2004) distinguished from all but *Diplodactylus* and *Rhynchoedura* Günther, 1867 by having both lateral and medial pairs of cloacal bones present.

Distinguished from *Diplodactylus* and *Rhynchoedura* by the reduced or vestigial jugal and medial expansion of the suborbital portion of the maxilla. Further distinguished from *Diplodactylus* by low numbers of preanal spinose scales (generally 2-5), the presence of preanal pores (usually one left and one right) in males (absent in *L. maini*) and by more gracile, elongate proportions of the body, limbs and tail (fourth toe of hind foot approximately seven times as long as wide, tail narrow and moderate to long (80-110% of SVL)). Further distinguished from *Rhynchoedura* by the more robust skull, the absence of

beak-like projecting mental and rostral scales, the modal presacral vertebral count of 26 (versus 27) and the absence of distinctive enlarged preanal pores (Greer 1989).

Distribution: Central and southern interior of New South Wales extending to nearby parts of South Australia, extending towards the centre of that state, and including the far south-west of Queensland and immediately adjacent parts of the Northern Territory.

Etymology: Named in honour of a Great Dane / Rottweiller cross dog that I owned for 13 years from 1989 to 2002, in recognition of his services in protecting our herpetological research facility from thieves and other undesireables. The dog's name was "*Crotalus*" as in the Pitviper genus, but we called him "Crotty" as an abbreviation. "Oides" in Latin means "son of". Hence the subgenus name is in memory of this dog as would be a son.

Content: *Lucasium* (*Crottyoides*) *rosssadlieri sp. nov.* (Type species); *L.* (*Crottyoides*) *allengreeri sp. nov.*; *L.* (*Crottyoides*) *byrnei* (Lucas and Frost, 1896); *L.* (*Crottyoides*) *dorotheae* (Wells and Wellington, 1985).

LUCASIUM* (*CROTTYOIDES*) *ROSSSADLIERI SP. NOV.

Holotype: A preserved specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R52296, collected in a pit trap at Camel Yard Spring Station, Flinders Ranges, South Australia, Australia, Latitude -30.73 S., Longitude 139.07 E.

The South Australian Museum, Adelaide, South Australia, Australia, allows access to its holdings.

Paratypes: 1/ A preserved specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R52297, collected at Camel Yard Spring Station, Flinders Ranges, South Australia, Australia, Latitude -30.73 S., Longitude 139.07 E.

2/ A preserved specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R52302 collected at Camel Yard Spring Station, Flinders Ranges, South Australia, Australia, Latitude -30.73 S., Longitude 139.07 E.

Diagnosis: *Lucasium* (*Crottyoides*) *rosssadlieri sp. nov.* from East of Lake Eyre and north of the lower Flinders Ranges is characterised and separated from the other three species in the subgenus *Crottyoides subgen. nov.* by a strongly banded tail which is such for all or most of its length, (versus not so in all other species) as well as a light orange iris and indistinct markings on the head of even proportions of dark and light. Spots on the flanks merge to give a mottled appearance.

L. byrnei (Lucas and Frost, 1896) with a centre of distribution near the Northern Territory, South Australia border is characterised and separated from the other three species in the subgenus *Crottyoides subgen. nov.* by the following suite of characters: A very strongly orange iris that is orangeish throughout, indistinct dark and light markings on the head, in even proportion of dark and light, and a mainly light tail with lots of scattered mid-sized darker blotches. There are no obvious or indistinct yellow spots on the flanks, or spots that appear to have merged. Instead the flanks are characterised by areas of dark and light pigment in no particular order or pattern, giving a marbled appearance at a distance.

L. dorotheae (Wells and Wellington, 1985), from drier western New South Wales, generally south of about White Cliffs and nearby parts of South Australia, including the Riverland is characterised and separated from the other three species in the subgenus *Crottyoides subgen. nov.* by having an obviously greyish yellow iris, and strong yellow markings on a darker background on the head, neck and flanks, including well-defined bright yellow spots on the mid to lower flanks.

L. allengreeri sp. nov. from central South Australia, generally west of Lake Eyre is characterised and separated from the other three species in the subgenus *Crottyoides subgen. nov.* by orange or reddish labials (as opposed to whitish in the other species), no large yellowish areas on the head, instead being mainly dark in colour with scattered small indistinct yellow flecks on top and indistinct yellow spots on the sides and nape, the snout noticeably darkens at the tip (unlike the other species), the iris is deep orange in the centre and yellow at the edges. The flanks have indistinct yellow spots on a reddish brown background.

Crottyoides subgen. nov. is separated from all other species within *Lucasium* Wermuth, 1965 as defined by Oliver *et al.* (2007) by having heterogenous body scalation, relatively large terminal scansors and unusual bodily proportions, this being with a relatively large head, a sharply pointed snout and a disproportionately skinny (original) tail.

The four (defined in this paper) species in this subgenus are further defined (as one species) on page 310 of Cogger (2014). On the same page, Cogger (2014) shows an image of the species *L.* (*Crottyoides*) *dorotheae* (Wells and Wellington, 1985), which is identified as "*Lucasium byrnei*, Roto, NSW", showing well-defined yellow spots on the flanks that are diagnostic for this species.

The species *Lucasium* (*Crottyoides*) *byrnei* (Lucas and Frost, 1896) has a centre of distribution in Northern South Australia and the southern Northern Territory.

The diagnosis of all other species within *Lucasium* and *Crottyoides subgen. nov.* (as if within *Lucasium*) is as follows:

A genus of the Diplodactylidae (*sensu* Han *et al.* 2004) distinguished from all but *Diplodactylus* and *Rhynchoedura* Günther, 1867 by having both lateral and medial pairs of cloacal bones present.

Distinguished from *Diplodactylus* and *Rhynchoedura* by the reduced or vestigial jugal and medial expansion of the suborbital portion of the maxilla. Further distinguished from *Diplodactylus* by low numbers of preanal spinose scales (generally 2-5), the presence of preanal pores (usually one left and one right) in males (absent in *L. maini*) and by more gracile, elongate proportions of the body, limbs and tail (fourth toe of hind foot approximately seven times as long as wide, tail narrow and moderate to long (80-110% of SVL)). Further distinguished from *Rhynchoedura* by the more robust skull, the absence of

beak-like projecting mental and rostral scales, the modal presacral vertebral count of 26 (versus 27) and the absence of distinctive enlarged preanal pores (Greer 1989).

Distribution: *Lucasium rosssadlieri sp. nov.* is found in South Australia generally east of Lake Eyre, north of Lake Torrens and north-east in a region generally south of the Coopers Creek drainage system, including far south-west Queensland and nearby parts of North-west New South Wales.

Etymology: Named in honour of Ross Sadlier, former collections manager for herpetology at the Australian Museum in Sydney, New South Wales, Australia in recognition of his many contributions to herpetology in Australia and places outside Australia.

LUCASIUM* (*CROTTYOIDES*) *ALLENGREERI SP. NOV.

Holotype: A preserved specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R65650, collected 16.9 km North-east of Bon Bon Homestead, South Australia, Australia, Latitude -30.32 S., Longitude 135.61 E.

The South Australian Museum, Adelaide, South Australia, Australia, allows access to its holdings.

Paratype: A preserved specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R23871, collected 2 miles south of Black Oak Bore, South Australia, Australia, Latitude -29.98 S., Longitude 135.25 E.

Diagnosis: *Lucasium* (*Crottyoides*) *allengreeri sp. nov*. from central South Australia, generally west of Lake Eyre is characterised and separated from the other three species in the subgenus *Crottyoides subgen. nov*. by orange or reddish labials (as opposed to whitish in the other species), no large yellowish areas on the head, instead being mainly dark in colour with scattered small indistinct yellow flecks on top and indistinct yellow spots on the sides and nape, the snout noticeably darkens at the tip (unlike the other species), the iris is deep orange in the centre and yellow at the edges. The flanks have indistinct yellow spots on a reddish brown background.

L. rosssadlieri sp. nov. from East of Lake Eyre and north of the lower Flinders Ranges is characterised and separated from the other three species in the subgenus *Crottyoides subgen. nov.* by a strongly banded tail which is such for all or most of its length, (versus not so in all other species) as well as a light orange iris and indistinct markings on the head of even proportions of dark and light. Spots on the flanks merge to give a mottled appearance.

L. byrnei (Lucas and Frost, 1896) with a centre of distribution near the Northern Territory, South Australia border is characterised and separated from the other three species in the subgenus *Crottyoides subgen. nov*. by the following suite of characters: A very strongly orange iris that is orangeish throughout, indistinct dark and light markings on the head, in even proportion of dark and light, and a mainly light tail with lots of scattered mid-sized darker blotches. There are no obvious or indistinct yellow spots on the flanks, or spots that appear to have merged. Instead the flanks are characterised by areas of dark and light pigment in no particular order or pattern, giving a marbled appearance at a distance.

L. dorotheae (Wells and Wellington, 1985), from drier western New South Wales, generally south of about White Cliffs and nearby parts of South Australia, including the Riverland is characterised and separated from the other three species in the subgenus *Crottyoides subgen. nov*. by having an obviously greyish yellow iris, and strong yellow markings on a darker background on the head, neck and flanks, including well-defined bright yellow spots on the mid to lower flanks.

Crottyoides subgen. nov. is separated from all other species within *Lucasium* Wermuth, 1965 as defined by Oliver *et al.* (2007) by having heterogenous body scalation, relatively large terminal scansors and unusual bodily proportions, this being with a relatively large head, a sharply pointed snout and a disproportionately skinny (original) tail.

The four (defined in this paper) species in this subgenus are further defined (as one species) on page 310 of Cogger (2014). On the same page, Cogger (2014) shows an image of the species *L.* (*Crottyoides*) *dorotheae* (Wells and Wellington, 1985), which is identified as "*Lucasium byrnei*, Roto, NSW", showing well-defined yellow spots on the flanks that are diagnostic for this species.

The species *Lucasium* (*Crottyoides*) *byrnei* (Lucas and Frost, 1896) has a centre of distribution in far Northern South Australia and the southern Northern Territory.

The diagnosis of all other species within *Lucasium* and *Crottyoides subgen. nov.* (as if within *Lucasium*) is as follows:

A genus of the Diplodactylidae (*sensu* Han *et al*. 2004) distinguished from all but *Diplodactylus* and *Rhynchoedura* Günther, 1867 by having both lateral and medial pairs of cloacal bones present.

Distinguished from *Diplodactylus* and *Rhynchoedura* by the reduced or vestigial jugal and medial expansion of the suborbital portion of the maxilla. Further distinguished from *Diplodactylus* by low numbers of preanal spinose scales (generally 2-5), the presence of preanal pores (usually one left and one right) in males (absent in *L. maini*) and by more gracile, elongate proportions of the body, limbs and tail (fourth toe of hind foot approximately seven times as long as wide, tail narrow and moderate to long (80-110% of SVL)). Further distinguished from *Rhynchoedura* by the more robust skull, the absence of beak-like projecting mental and rostral scales, the modal presacral vertebral count of 26 (versus 27) and the absence of distinctive enlarged preanal pores (Greer 1989).

Distribution: *Lucasium allengreeri sp. nov.* is found in South Australia generally west and south-west of Lake Eyre and generally south of Marla and Oodnadatta in the north.

Etymology: Named in honour of Allen E. Greer, former curator for herpetology at the Australian Museum in Sydney, New South Wales, Australia in recognition of his many contributions to herpetology in Australia and elsewhere.

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. *J. Roy. Soc. Western Australia* 81:201-223.

Boulenger, G. A. 1885. *Catalogue of the Lizards in the British Museum (Nat. Hist.) I. Geckonidae, Eublepharidae, Uroplatidae, Pygopodidae, Agamidae.* London:450 pp.

Boulenger, G. A. 1896. Descriptions of four new lizards from Roebuck Bay, N. W. Australia obtained by Dr. Dahl for the Christiania Museum. *Ann. Mag. nat. Hist.* (6)18:232-235.

Brown, D., Worthington, J. and Macdonald, S. 2014. A revision of *Strophurus taenicauda* (Squamata; Diplodactylidae) with the description of two new subspecies from central Queensland and a southerly range extension. *Zootaxa* 3243:1-28.

Cogger, H. G. 1975. *Reptiles and Amphibians of Australia.* First Edition, Reed, NSW, Australia, 584 pp.

Cogger, H. G. 1983. *Reptiles and Amphibians of Australia.* Second Edition, Reed, NSW, Australia, 660 pp.

Cogger, H. G. 2000. *Reptiles and Amphibians of Australia*, Sixth Edition. Ralph Curtis Publishing, Sanibel Island, USA:808 pp.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia*, Seventh Edition. CSIRO Publishing, Australia:xxx+1033 pp.

Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia (1): Amphibia and Reptilia.* Australian Government Publishing Service, Canberra, ACT, Australia:313 pp.

Couper, P. J. and Oliver, P. M. 2016. A new species of gecko from arid inland regions of eastern Australia (Diplodactylus; Diplodactylidae). *Zootaxa* 4093(4):525-538.

Couper, P. J., Keim, L. D. and Hoskin, C. J. 2007. A new velvet

Gecko (Gekkonidae: *Oedura*) from south-east Queensland, Australia. *Zootaxa* 1587:27-41.

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. M. 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(1):44-65.

Doughty, P., Oliver, P. and Adams, M. 2008. Systematics of stone geckos in the genus *Diplodactylus* (Reptilia: Diplodactylidae) from northwestern Australia, with a description of a new species from the Northwest Cape, Western Australia. *Records of the Western Australian Museum* 24:247-265.

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* 2393:33-45.

Duméril, A. M. C. and Bibron, G. 1836. *Erpetologie Générale ou Histoire Naturelle Complete des Reptiles*. Vol. 3. Libr. Encyclopédique Roret, Paris:528 pp

Fry, D. B. 1914. On a collection of reptiles and batrachians from Western Australia. *Records of the Western Australian Museum* 1:174-210.

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. *Proc. Zool. Soc. London* 1832:39-40.

Gray, J. E. 1842. Description of some hitherto unrecorded species of Australian reptiles and batrachians. *Zoological Miscellany* 2:51-57 (London: Treuttel, Würtz and Co).

Gray, J. E. 1845. *Catalogue of the specimens of lizards in the collection of the British Museum*. Trustees of the British Museum/Edward Newman, London: xxvii+289 pp.

Gray, J. E. 1867. *The Lizards of Australia and New Zealand in the Collection of the British Museum*. London: British Museum.

Günther, A. 1867. Additions to the knowledge of Australian reptiles and fishes. *Ann. Mag. nat. Hist.* (3) 20:45-57.

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. *Biol. J. Linn. Soc.* 83:353-368.

Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, 2088, Australia:238 pp.

Hoser, R. T. 2007. Wells and Wellington - It's time to bury the hatchet! *Calodema* (Supplementary Paper No. 1):1-9 on 5 April.

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* 25:39-52.

Hoser, R. T, 2015d. 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). (unedited version) *Australasian Journal of Herpetology* 27:37-42.

Hoser, R. T. 2015e. PRINO (Peer reviewed in name only) journals: When quality control in scientific publication fails. *Australasian Journal of Herpetology* 26:3-64.

Hoser, R. T. 2015f. 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. 2016a. *Acanthophis lancasteri* Wells and Wellington, 1985 gets hit with a dose of Crypto! … this is not the last word on Death Adder taxonomy and nomenclature. *Australasian Journal of Herpetology* 31:3-11.

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 break-up of the Australian gecko genus *Strophurus* Fitzinger, 1843 *sensu lato* as currently recognized, from one to four genera, with two new subgenera defined, description of nine new species and two new subspecies. *Australasian Journal of Herpetology*, 34:36-56.

Hutchinson, M. N., Doughty, P. and Oliver, P. M. 2009. Taxonomic revision of the stone geckos (Squamata: Diplodactylidae: *Diplodactylus*) of southern Australia. *Zootaxa* 2167:25-46.

King, M. 1985. Three new species of *Oedura* (Reptilia: Gekkonidae) from the Mitchell Plateau of north Western Australia. *Amphibia-Reptilia* 5(3-4):329-337.

King, M., Braithwaite, R. W. and Wombey, J. C. 1982. A new species of *Diplodactylus* (Reptilia: Gekkonidae) from the Alligator Rivers region, Northern Territory. *Transactions of the Royal Society of South Australia* 106:15-18.

King, M. and Gow, G. 1983. A new species of *Oedura* (Gekkonidae: Reptilia) from the Alligator Rivers region of northern Australia. *Copeia* 1983(2):445-449.

Kluge, A. G. 1967. Systematics, phylogeny, and zoogeography of the lizard genus *Diplodactylus* Gray (Gekkonidae). *Aust. J. Zool.* 15:1007-1108.

Laube, A. 2002. Captive Maintenance and Breeding of Some Ground Dwelling Australian Geckos Part II: *Diplodactylus byrnei* Lucas and Frost, 1896, *D. tessellatus* (Günther, 1875) and *D. steindachneri* Boulenger, 1885. *Gekko* 2(2):12-18.

Laube, A. and Langner, C. 2007. Die "Geckos" Australiens. *Draco* 8(29):4-21.

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. *Bull. Mus Comp. Zool. Harvard* 77:243-383.

Lucas, A. H. S. and Frost, C.1896. Further preliminary notice of certain new species of lizards from central Australia. *Proceedings of the Royal Society of Victoria*, 8:1-4.

Nielsen, S. V., Oliver, P. M., Laver, R. J., Bauer, A. M. and Noonan, B. P. 2016. Stripes, jewels and spines: further investigations into the evolution of defensive strategies in a chemically defended

gecko radiation (*Strophurus*, Diplodactylidae). *Zoologica Scripta*, Royal Swedish Academy of Sciences, 45, 5, September:481-493.

Oliver, P. M. and Bauer, A. M. 2011. Systematics and evolution

of the Australian knob-tail geckos (*Nephrurus*, Carphodactylidae, Gekkota): Pleisomorphic grades and biome shifts through the Miocene. *Molecular Phylogenetics and Evolution* 59(3):664-674.

Oliver, P. M. and Doughty, P. 2016. Systematic revision of the marbled velvet geckos (*Oedura marmorata* species complex, Diplodactylidae) from the Australian arid and semi-arid zones. *Zootaxa* 4088(2):151-176.

Oliver, P. M. and McDonald, P. J. 2016. Young relicts and old relicts: a novel palaeoendemic vertebrate from the Australian Central Uplands. *R. Soc. open sci.* 3:160018.

Oliver, P. M., Hutchinson, M. N. and Cooper, S. J. B. 2007. Phylogenetic relationships in the lizard genus *Diplodactylus* Gray and resurrection of *Lucasium* Wermuth (Gekkota, Diplodactylidae). *Australian Journal of Zoology* 55(3):197-210.

Oliver, P. M., Adams, M. and Doughty, P. 2010. Extreme underestimation of evolutionary diversity within a nominal Australian gecko species (*Crenadactylus ocellatus*). *BMC Evolutionary Biology*, 10:386. Published online at: http://dx.doi.org/10.1186/1471-2148-10-386

Oliver, P. M., Bauer, A. M., Greenbaum, E., Jackman, T. and Hobbie, T. 2012. Molecular phylogenetics of the arboreal Australian gecko genus *Oedura* Gray, 1842 (Gekkota: Diplodactylidae): Another plesiomorphic grade?. *Molecular Phylogenetics and Evolution* 63(2):255-264.

Oliver, P. M., Laver, R. J., Melville, J. and Doughty, P. 2014a. A new species of Velvet Gecko (*Oedura*: Diplodactylidae) from the limestone ranges of the southern Kimberley, Western Australia. *Zootaxa* 3873 (1):49-61.

Oliver, P. M., Couper, P.J. and Pepper, M. 2014b. Independent Transitions between Monsoonal and Arid Biomes Revealed by Systematic Revison of a Complex of Australian Geckos (*Diplodactylus*; Diplodactylidae). PLoS ONE 9(12):e111895. doi:10.1371/journal.pone.0111895.

Oliver, P. M., Smith, K. L., Laver, R. J., Doughty, P. and Adams, M. 2014c. Contrasting patterns of persistence and diversification in vicars of a widespread Australian lizard lineage (the *Oedura marmorata* complex). *Journal of Biogeography*:1-12.

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., Hutchinson, M. and Scott Keogh, J. 2011. Ancient drainages divide cryptic species in Australia's arid zone: Morphological and multi-gene evidence for four new species of Beaked Geckos (Rhynchoedura). *Molecular Phylogenetics and Evolution* 61(3):810-822.

Pianka, E. R. 1986. *Ecology and Natural History of Desert Lizards*. Princeton University Press, NJ, USA:205 pp.

Ride, W. D. L. (*ed.*) *et al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature* (Fourth edition). The Natural History Museum - Cromwell Road, London SW7 5BD, UK (also commonly cited as "The Rules", "Zoological Rules" or "ICZN 1999").

Rosauer, D. F., Blom, M. P. K., Bourke, G., Catalano, S., Donnellan, S., Gillespie, G., Mulder, E., Oliver, P. M., Potter, S., Pratt, R., Rabosky, D. L., Skipworth, P. L. and Moritz, C. 2016. Phylogeography, hotspots and conservation priorities: An example from the Top End of Australia. *Biological Conservation*, doi:10.1016/j.biocon.2016.05.002 pp. 1-11 (online with stamp "ARTICLE IN PRESS").

Rösler, H. 1995. *Geckos der Welt - Alle Gattungen*. Urania, Leipzig:256 pp.

Rösler, H. 2000. Studien an den Begattungsorganen der Geckos (Reptilia: Gekkota) - 3. Die Hemipenismorphologie von Arten der Gattungen *Hoplodactylus* FITZINGER, 1843, *Naultinus* GRAY, 1842, *Oedura* GRAY, 1842, *Rhacodactylus* FITZINGER, 1843 und *Strophurus* FITZINGER, 1843, *Gek Gekkota* 2:220-248.

Storr, G. M. 1978. Seven new gekkonid lizards from Western Australia. *Records of the Western Australian Museum* 6: 337-352.

Underwood, G. 1954. On the classifcation and evolution of geckos. *Proc. Zool. Soc. London*, 124(3):469-492.

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. 1910. Reptilia (Geckonidae und Scincidae). In: Michaelsen, W. and Hartmeyer, R.: *Die Fauna Südwest-Australiens*. Vol. 2. G. Fischer, Jena, pp. 451-493.

Wilson, S. K. and Knowles, D. G. 1988. *Australia's Reptiles: A Photographic Reference to the Terrestrial Reptiles of Australia*. Cornstalk Publishing, Pymble, NSW, Australia:447 pp.

Wilson, S. and Swan, G. 2010. *A complete guide to reptiles of Australia*, Third edition. Chatswood: New Holland, 558 pp.

Zietz, F. R. 1920. Catalogue of Australian lizards. *Records of the South Australian Museum* 1:181-228.

CONFLICT OF INTEREST

The author has no known conflicts of interest in terms of this paper and conclusions within.

Diplodactylus Gray 1832 *sensu lato* genus, subgenus, species list.

Diplodactylus Gray 1832

Diplodactylus vittatus Gray, 1832 (Type species)
Diplodactylus fulleri Storr, 1978
Diplodactylus furcosus Peters, 1863
Diplodactylus galeatus Kluge, 1963
Diplodactylus tessellatus (Günther, 1875)
Diplodactylus wiru Hutchinson, Doughty and Oliver, 2009

Subgenus *Stenodactylopsis* Steindachner, 1870

Diplodactylus (*Stenodactylopsis*) *pulcher* (Steindachner, 1870) (Type species)
Diplodactylus (*Stenodactylopsis*) *capensis* Doughty, Oliver and Adams, 2008
Diplodactylus (*Stenodactylopsis*) *galaxias* Doughty, Pepper and Keogh, 2010
Diplodactylus (*Stenodactylopsis*) *granariensis* Storr, 1979
Diplodactylus (*Stenodactylopsis*) *klugei* Aplin and Adams, 1998
Diplodactylus (*Stenodactylopsis*) *savagei* Kluge, 1963
Diplodactylus (*Stenodactylopsis*) *mitchelli* Kluge, 1963

Subgenus *Manwellisaurus* Wells and Wellington, 1989

Diplodactylus (*Manwellisaurus*) *conspicillatus* Lucas and Frost, 1897 (Type species)
Diplodactylus (*Manwellisaurus*) *ameyi* Couper and Oliver, 2016
Diplodactylus (*Manwellisaurus*) *barraganae* Couper, Oliver and Pepper, 2014
Diplodactylus (*Manwellisaurus*) *bilybara* Couper, Pepper and Oliver, 2014
Diplodactylus (*Manwellisaurus*) *calcicolus* Hutchinson, Doughty and Oliver, 2009
Diplodactylus (*Manwellisaurus*) *custos* Couper, Oliver and Pepper, 2014
Diplodactylus (*Manwellisaurus*) *hillii* Longmann, 1915
Diplodactylus (*Manwellisaurus*) *kenneallyi* Storr, 1988
Diplodactylus (*Manwellisaurus*) *laevis* Sternfeld, 1925
Diplodactylus (*Manwellisaurus*) *lateroides* Doughty and Oliver, 2013
Diplodactylus (*Manwellisaurus*) *nebulosus* Doughty and Oliver, 2013
Diplodactylus (*Manwellisaurus*) *ornatus* Gray, 1845
Diplodactylus (*Manwellisaurus*) *platyurus* Parker, 1926
Diplodactylus (*Manwellisaurus*) *polyophthalmus* Günther, 1867

Lucasium Wermuth, 1965

Lucasium damaeum (Lucas and Frost, 1896) (Type species)
Lucasium alboguttatum (Werner, 1910)
Lucasium maini (Kluge, 1962)

Subgenus *Ozziedactylus* Wells and Wellington, 1989

Lucasium (*Ozziedactylus*) *steindachneri* (Boulenger, 1885) (Type species)
Lucasium (*Ozziedactylus*) *immaculatum* (Storr, 1988)

Subgenus *Turnerdactylus* Wells and Wellington, 1989

Lucasium (*Turnerdactylus*) *stenodactylum* (Boulenger, 1896) (Type species)
Lucasium (*Turnerdactylus*) *bungabinna* Doughty and Hutchinson, 2008
Lucasium (*Turnerdactylus*) *occultum* (King, 1982)
Lucasium (*Turnerdactylus*) *wombeyi* (Storr, 1978)
Lucasium (*Turnerdactylus*) *squarrosum* (Kluge, 1962)

Subgenus Crottyoides subgen. nov.

Lucasium (*Crottyoides*) *allengreeri sp. nov.* (Type species)
Lucasium (*Crottyoides*) *byrnei* (Lucas and Frost, 1896) (Type species)
Lucasium (*Crottyoides*) *dorotheae* (Wells and Wellington, 1985)
Lucasium (*Crottyoides*) *rosssadlieri sp. nov.*

Rhynchoedura Günther, 1867

Rhynchoedura ornata Günther, 1867
Rhynchoedura angusta Pepper, Doughty, Hutchinson and Keogh, 2011
Rhynchoedura eyrensis Pepper, Doughty, Hutchinson and Keogh, 2011
Rhynchoedura mentalis Pepper, Doughty, Hutchinson and Keogh, 2011
Rhynchoedura ormsbyi Wells and Wellington, 1985
Rhynchoedura sexapora Pepper, Doughty, Hutchinson and Keogh, 2011