

**Australian agamids: Eighteen new species from the genera  
*Amphibolurus* Wagler, 1830, *Lophognathus* Gray, 1842, *Rankinia*  
Wells and Wellington, 1984, *Diporiphora* Gray, 1842, *Tympanocryptis*  
Peters, 1863, as well as three new genera and six new subgenera.**

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**ABSTRACT**

To correct anomalies in recently published studies, a total of eighteen new species, three new genera and six new subgenera are described herein according to the *International Code of Zoological Nomenclature*.

The type species for the genus *Amphibolurus* Wagler, 1830, the well known Jacky Lizard *Amphibolurus muricatus* (White, 1970) has long been known to be composite in terms of phylogenetic origins, but in spite of this has been treated by recent authors as being of a single species (see Cogger *et al.* 1983).

One of four divergent clades was referred to a new species *Amphibolurus norrisi* Witten and Coventry, 1984, which has been widely accepted since.

Notwithstanding this, three other divergent clades, as identified by Melville *et al.* (2011) remain undescribed.

The isolated central and western Victorian populations of what until now have been treated as *Amphibolurus muricatus* is herein named *Amphibolurus jacky* *sp. nov.*, those from North-east New South Wales are named *A. eipperri* *sp. nov.*; the population of lizards assigned to *Amphibolurus norrisi* west of the Spencer Gulf in South Australia is now named *Amphibolurus adelyn* *sp. nov.*

In terms of the species *Lophognathus gilberti* Gray, 1842 (type for that genus), the complex been partially divided and yet two obvious and well known species within the complex remain unnamed (Melville *et al.* 2011).

The northern-most population of *Lophognathus centralis* Loveridge (1933), recently transferred to the genus *Amphibolurus* is herein named *Amphibolurus wellsi* *sp. nov.* and specimens from a western Australian population previously referred to as *Lophognathus gilberti* Gray, 1842 is herein named *Lophognathus wellingtoni* *sp. nov.*

In terms of the lizards assigned to the species *Rankinia diemensis* (Gray, 1841), only one of at least six obvious species has been named and recognized widely in herpetology. The taxon, *Rankinia boylani* Wells and Wellington, 1984, is herein recognized as valid and four previously identified and yet unnamed taxa within the same species complex are herein formally recognized.

Grampians (Victoria) lizards formerly assigned to *Rankinia diemensis* are herein formally described as *Rankinia neildaviei* *sp. nov.* while specimens from the Anglesea and central Victoria population are herein named as *Rankinia hoserae* *sp. nov.* The population from Victoria, just east of Lake Eildon is formally described as *Rankinia jameswhybrowi* *sp. nov.* while the divergent population from Goonoo National Park, NSW is herein formally described as *Rankinia fergussonae* *sp. nov.*

Furthermore the divergent taxon *Grammatophora temporalis* Günther, 1867, as widely recognized is herein treated as more than one species, them being most recently placed in the genus *Lophognathus* is herein placed in a new genus. Because *Grammatophora* is not available and no other name is either, a new genus is formally named, *Melvillesaurea* *gen. nov.*

The genus *Ctenophorus* Fitzinger, 1843 as recognized by Melville *et al.* (2008) and most authors since, is dissected along phylogenetic lines into four genera (three named for the first time) and subgenera, using three available Wells and Wellington names and seven new ones in a continuation of the quite appropriate dismemberment of the genus commenced by Wells and Wellington (1984, 1985) with each group defined properly.

Smith *et al.* (2011), identified what they said were eight deeply divergent clades within the *Diporiphora bilineata* Gray, 1842 species complex and other lesser ones, but did not resolve the taxonomy and nomenclatural issues arising. This paper accounts for the ten main clades by resurrecting available names and formally naming six unnamed and morphologically distinct groups as species. Three new species within the genus *Tympanocryptis* Peters, 1863 are also formally named for the first time.

An unnamed subgenus within *Diporiphora* is also formally described.

**Keywords:** Taxonomy; Dragon; tree dragon; Australia; Victoria; Northern Territory, South Australia; Western Australia; Richard Wells; Ross Wellington; Jane Melville; Adelyn Hoser; Jacky Hoser; Shireen Hoser, Neil Davie, *Amphibolurus*; *muricatus*; *norrisi*; *Gowidon*; *Lophognathus*; *temporalis*; *gilberti*; *centralis*; *nobbi*; *Rankinia*; *diemensis*; *boylani*; *Ctenophorus*; *Licentia*; *Phthanodon*; *Tachyon* new species; *jacky*; *adelyn*; *eipperri*; *wellingtoni*; *wellsi*; *hoserae*; *neildaviei*; *jameswhybrowi*; *fergussonae*; *melvilleae*; *smithae*; *shooi*; *harmoni*; *nolani*; *garrodi*; *bottomi*; *markteesi*; *alexteesi*; new genera; *Melvillesaurea*; *Notactenophorus*; *Paractenophorus*; *Pseudoctenophorus*; new subgenera; *Chapmanagama*; *Turnbullagama*; *Leucomaculagama*; *Arenicolagama*; *Valenagama*; *Aurantiacoagama*; *Membrumvariegatagama*; *Pailsagama*.

## INTRODUCTION

The Jacky Dragon Lizard *Amphibolurus muricatus* (White, 1970) as recognized to date is one of Australia's icon species, being familiar to Australians as an inhabitant of bushland within Australia's largest cities of Sydney and Melbourne.

However only recently with the studies of Melville *et al.* (2011) and Pepper *et al.* (2014) have there been significant molecular studies into the lizards long assigned to this apparently widespread species.

The dismemberment of the species as defined by Cogger *et al.* (1983) and herpetologists before them, commenced in 1984 when Witten and Coventry assigned western individuals to their newly named species *Amphibolurus norrisi*.

Notwithstanding this, four other divergent clades, as identified by Melville *et al.* (2011) remain undescribed.

One of these unnamed species (until now treated as a south-west population of *Amphibolurus muricatus*) has a centre of distribution near Melbourne, Victoria, which as of 2015 is Australia's fastest growing urban metropolis and has a population already of roughly 5 million humans.

Noting the appalling conservation record of the Victorian State Government (of all political persuasions) and their wildlife bureaucrats who in fact control them in terms of relevant activity, it is important that this species (with a 6% mtDNA separation from the nominate *A. muricatus* according to Pepper *et al.* 2014) be formally named and recognized so that someone, somewhere may in fact safeguard the future of the taxon.

A similar situation applies to a population from North-east New South Wales, also currently treated as *A. muricatus*, but with sufficient divergence to be better treated as its own taxonomic entity at the species level. This is described herein as *Amphibolurus epperi sp. nov.*

Recognizing that there is just one other undescribed species level taxon within the *Amphibolurus muricatus* complex besides these two also remaining unnamed, that being the south-west population currently referred to as being within *Amphibolurus norrisi*, it makes sense to properly formalize the taxonomy of the group and name them as well in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

The isolated central and western Victorian populations of what until now have been treated as *Amphibolurus muricatus* is herein named *Amphibolurus jacky sp. nov.*, the population of lizards assigned *Amphibolurus norrisi* west of the Spencer Gulf in South Australia is herein named *Amphibolurus adelyn sp. nov.* and as mentioned the name *Amphibolurus epperi sp. nov.* applies to the North east NSW animals.

The same situation applies in terms of the species *Lophognathus gilberti* Gray, 1842 (type for that genus) which has been partially divided and yet two obvious and well known species within the complex remain unnamed as outlined by Melville *et al.* (2011).

The northern-most population of *Lophognathus centralis* Loveridge (1933) (treated for a long time as a variant of *Lophognathus gilberti* Gray, 1842, was recently transferred to *Amphibolurus* by Wilson (2015) on the evidence of Melville *et al.* (2011). This taxon is different to the nominate form of *Lophognathus centralis* Loveridge (1933) from central Australia. It is herein formally named *Amphibolurus wellsii sp. nov.* and specimens from a western Australian population previously referred to as *Lophognathus gilberti* Gray, 1842 is herein named *Lophognathus wellingtoni sp. nov.*

In terms of the lizards assigned to the species *Rankinia diemensis* (Gray, 1841), only one of at least six obvious species has been named and recognized widely in herpetology. The taxon, *Rankinia boylani* Wells and Wellington, 1984, is herein recognized as (quite obviously) valid and four previously identified and yet unnamed taxa within the same species complex are herein formally named for the first time.

Grampians (Victoria) lizards formerly assigned to *Rankinia diemensis* are herein formally described as *Rankinia neildaviei sp. nov.* (3.7% mtDNA divergence from the nominate form according to Ng *et al.* 2014, with this being the least divergent of the four newly named species), while specimens from the Anglesea and central Victoria population are herein named as *Rankinia hoserai sp. nov.*; the population from Victoria, just east of Lake Eildon is formally described as *Rankinia jameswhybrowi sp. nov.* while the divergent population from Goonoo National Park, NSW is herein formally described as *Rankinia fergussonae sp. nov.*

Furthermore the divergent taxon *Grammatophora temporalis* Günther, 1867, herein treated as three (until now synonymised species) species and most recently placed in the genus *Lophognathus* is herein placed in a new genus. Because the name *Grammatophora* is not available (see Cogger *et al.* 1983) and no other name is either, a new genus is formally named, *Melvillesaurea gen. nov.*

The genus *Ctenophorus* Fitzinger, 1843 as recognized by Melville *et al.* (2008) and most authors since, is dissected along phylogenetic lines into four genera (three named for the first time) and ten subgenera, using three available names and seven new ones in a continuation of the dismemberment of the genus commenced by Wells and Wellington (1984, 1985).

The phylogeny produced in Melville *et al.* (2008) generally validated the taxonomic decisions of Wells and Wellington (1984, 1985) who dissected *Ctenophorus* as generally recognized at the time. Their genera *Licentia* Wells and Wellington, 1984; *Phthanodon* Wells and Wellington, 1985; *Tachyon* Wells and Wellington, 1985 and of course *Rankinia* Wells and Wellington, 1984 are all recognized herein.

However, all of *Licentia*, *Phthanodon* and *Tachyon* are relegated to subgenus status herein within *Ctenophorus* on the basis that Melville showed divergences for each group, but it is questionable if this was sufficient for each to be accorded full genus status.

Five other as yet unnamed groups within *Ctenophorus* are formally named for the first time as are the three most divergent groups (another three), which are sufficiently divergent to warrant being treated as full genera as per the phylogenies produced by Pyron *et al.* (2013) and Melville *et al.* (2008).

One of these is also divided into three subgenera.

These groups are also supported by obvious morphological differences.

As a rule, genera defined elsewhere by other authors are not redefined here in this paper.

However within *Ctenophorus sensu lato* (as recognized by most authors to date, including Cogger 2014), each genus and subgenus is defined properly according to the new generic and subgeneric arrangement and the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Smith *et al.* (2011) identified eight deeply divergent clades within the *Diporiphora bilineata* Gray, 1842 species complex and other lesser divergent groups, two of which were almost as divergent as their preferred eight, but they did not resolve the taxonomy and nomenclatural issues arising.

This is in spite of the authors stating, "we choose to delimit the eight most divergent clades as taxonomic units", but then failing to assign names to most of them. As they have had some four years to correct this omission and not yet done so, it is appropriate that this be done now bearing in mind the following.

For their eight preferred clades, the authors also claimed a "divergence between species (8-12%)".

When this is combined with non-breeding between populations and apparent allopatry in all cases, with the exception being non-cross-breeding sympatry known in one case only, the need to formally name each biological entity is compelling.

The relevant unnamed and named taxonomic units are easily delineated and defined and so are correctly named according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

In summary for this species complex, this paper accounts for each species by resurrecting available names and formally naming six unnamed groups as species.

Recognized and defined herein in the *Diporiphora bilineata* Gray, 1842 species complex are the following species: *Diporiphora bilineata* Gray, 1842; *D. lalliae* Storr, 1974; *D. magna* Storr, 1974; *D. jugalaris* (Macleay, 1877), this last listed taxon being resurrected from synonymy of *D. bilineata* to account for the population found in north Queensland.

I note that in spite of the much lampooned Wells and Wellington (1984, 1985) correctly resurrecting that taxon in their papers, their action has been quite forcibly suppressed by a the so-called Wüster gang ever since.

This even postdates the molecular verification of the species by Smith *et al.* (2011).

For the other six unnamed groups (all currently treated as regional variants of *Diporiphora magna* by most herpetologists in Australia,

they are named as follows: *D. melvilleae* sp. nov.; *D. smithae* sp. nov.; *D. shooi* sp. nov., *D. harmoni* sp. nov., *D. nolani* sp. nov. and *D. garrodi* sp. nov..

The widespread taxon *Diporiphora lalliae* Storr, 1974 described from a type specimen from Langey Crossing, Western Australia is known to have two main morphotypes as stated in numerous publications and obvious to anyone familiar with the taxon. These are one from the south Kimberley region of Western Australia (the nominate form) and the other from the rest of the known range (central Australia). The unnamed form is herein described as a new species *D. nolani* sp. nov..

The divergence of the two groups within the *D. lalliae* Storr, 1974 complex is estimated to be in the order of more than 2 million years and therefore sufficient to warrant division at the species level.

Cogger (2014) claimed a total of 21 species in the genus *Diporiphora* (including the species "*Diporiphora superba*" treated as *Diporiphora*), but notes that the total number given is less than the actual diversity.

Wells and Wellington (1984 and 1985) dissected the genus along obvious phylogenetic lines using existing nomenclature or erecting names for groups that lacked any.

While their classification has been effectively unused since published, as the size of the genus expands, it is appropriate that subgenera be named and recognized, to identify obvious phyletic groups.

The only remaining taxon within *Diporiphora* as recognized herein not appropriately placed in any available subgenus is the species *Diporiphora reginae* Glauert, 1959 and it is placed in a newly named subgenus herein called *Pailsagama* gen. nov..

Of the 21 species of *Diporiphora* claimed by Cogger (2014), widely recognized in herpetology in Australia as of 2015, only three are relevant to this paper in terms of the species descriptions herein.

These are:

*Diporiphora bilineata* Gray, 1842; *D. lalliae* Storr, 1974 and *D. magna* Storr, 1974.

These are defined within this paper within the context of the descriptions of the other newly named taxa and that resurrected from synonymy, this being the taxon *D. jugalaris* (Macleay, 1877) to enable readers to be able to identify and diagnose the relevant species.

The genus *Tympanocryptis* Peters, 1863 has long been recognized as having significant undescribed species diversity. Six new species were named in this paper, but just hours before this paper was to be sent to the printers on 3 November 2015, Doughty *et al.* published a paper naming three of these (Doughty *et al.* 2015).

The (effective) duplicate descriptions of those taxa within the *T. cephalus* Gunther, 1867 group (subgenus *Roundacryptus* Wells and Wellington, 1985) have been removed from the final published draft of this paper seen here. The other three species, one formerly treated as a variant of *T. intima* Mitchell, 1948 and the other two formerly treated as variants of *T. lineata* Peters, 1863 are described herein for the first time.

All patronym names are in honour of individuals who have made monumental and relevant contributions to the science of herpetology in Australia and in particular with respect to the relevant agamid genera, with the exception of five species.

Those ones, *Diporiphora nolani* sp. nov., *D. garrodi* sp. nov., *Tympanocryptis bottomi* sp. nov., *T. markteesi* sp. nov. and *T. alexteesi* sp. nov. are named in honour of individuals who have made significant contributions to herpetology in other areas.

#### MATERIALS AND METHODS

While it is not necessary to cite earlier works when publishing descriptions of new taxa, it worthwhile mentioning some key texts relevant to the preparation of this paper and detail materials and methods at the same time.

All relevant taxa have been inspected by myself across a period spanning more than four decades both live, in specimen collections and via numerous photos of specimens with accurate locality data.

Besides the fact that the newly named species taxa are geographically isolated from one another (within their immediate species complexes, being the species they are most similar to), they are also morphologically distinct.

Until recently this alone would have been regarded as being sufficient grounds to grant each formal taxonomic recognition.

In the post 2010 period, most species are only recognized on the basis of molecular data or some kind of equivalent that establishes a timeline of divergence.

This is adequately done in the papers of Melville *et al.* (2011), Ng *et al.* (2014), Pepper *et al.* (2014) and others.

Examples include estimates of at least 3.5 MYA divergence for the three clades until now treated as *Amphibolurus muricatus* (White, 1790) and 2.3 MYA for the two clades until now treated as *A. norrisi* Witten and Coventry, 1984 (Melville *et al.* 2011, table 5, p. 267).

The three relevant unnamed clades are named within this paper.

Most herpetologists and biologists in other disciplines of zoology recognize reproductive isolation and divergence of over 1.5 MYA as sufficient grounds to consider dividing a species as may have been previously recognized (e.g. Harvey *et al.* 2000).

Melville *et al.* (2011) also correctly pointed out that the species *Lophognathus temporalis* (Günther, 1867) should be placed in a new genus, giving proper reasons for the statement, but then failed to do so.

The basis of the statement was the molecular results (e.g. figs. 3 and 5 and table 5 in her paper) which clearly showed *Lophognathus* as presently recognized should be split into three genera.

This paper corrects that mistake (also identified by Cogger 2014, at page 739) and at the same time seeks to recognize the work of the lead author by naming the taxon in her honour.

I note that in order to recognize the genus for the species *Lophognathus temporalis* as recognized by her, she would have needed to recognize another genus, formerly treated as synonymous with *Lophognathus*. That genus was *Gowidon* Wells and Wellington, 1984 and is also recognized and used (quite properly) by Cogger (2014) and in spite of the illegal protestations of Kaiser *et al.* as spelt out in Kaiser *et al.* (2013), as explained by Hoser (2015).

Of course, it is here that I should explain the ridiculous, unscientific and childish attitude of many so-called "professional herpetologists" (including Melville) with respect to the works of Wells and Wellington and a pig-headed refusal to use their works, cite their works or be seen to accept their (often blindingly obvious) taxonomy and nomenclature, unless vetoed by one of a select few individuals, usually by the names of Glenn Shea or Hal Cogger.

This ridiculous attitude manifested by anti Wells and Wellington crusaders, is beyond a joke and is severely hampering the progress of herpetology and conservation in Australia as seen in the examples of Anonymous (1987), Anonymous (2001), Anstis (2002), Aplin (1999), Barker and Barker (1994), Cogger (1975, 1992, 1996), Kaiser *et al.* (2013), Mirtschin and Davis (1992), Sprackland *et al.* (1997), Turner and Valentic (1998), Tyler (1992) and Tyler *et al.* (1994).

However countering these ridiculous actions are the publications of Cogger (2014), Dubois (2014), Dubois *et al.* (1988), Hoser (1989, 1998, 2000a, 2001 and 2007), ICZN (1991, 2001), Shea (1995), Thomson (2003) and many others as cited by Hoser (2015).

By way of example I also note that the molecular results of Melville *et al.* (2011) upheld the Wells and Wellington action in 1984 of splitting the species *Rankinia diemensis* by naming the most divergent species in the complex as *Rankinia boylani* and yet Melville *et al.* effectively ignored their result and effectively said nothing, as did Ng *et al.* (2014).

This of course has meant that in the following years (post-dating 1984 to present), pretty much all other herpetologists have continued to recognize only *Rankinia diemensis* (Gray, 1841) and not the second species *Rankinia boylani* Wells and Wellington, 1984.

I need not mention that the latter taxon has a centre of distribution around Sydney, Australia, Australia's largest urban area in terms of population, already surpassing 5 million people in 2015 and clearly putting the taxon at potential risk.

It would be scandalous if this and other even more vulnerable taxa within the *Rankinia diemensis* complex or other threatened taxa named by Wells and Wellington were exterminated simply as a result of so-called jealousy by other Australian herpetologists.

The papers of Wells and Wellington (1984, 1985), subject of an illegal attempted suppression by the President of the Australian Society of Herpetologists, who at the time was none other than Richard Shine, now a professor at the University of Sydney, are still regularly condemned and lampooned by so-called herpetologists within Australia.

While they contain many errors, as do almost all other herpetology papers of similar size and scope, one fact has emerged in the three decades since it was published.

The taxonomy and nomenclature within as an account of the

systematics of Australian herpetofauna is considerably more accurate than any similar publications before or since, up to and including the present date. Most of the taxonomic decisions within the papers have been validated by molecular methods and phylogenies published since (e.g. Pyron *et al.* 2013), noting that these methods were not available to the original authors and all the nomenclature within the Wells and Wellington papers complied with the relevant edition/s of the *International Code of Zoological Nomenclature*.

While the most recent edition of Cogger (2014) has according to Cogger himself, been acting on behalf of the current views of the majority of Australian herpetologists, adopted numerous taxonomic and nomenclatural acts of Wells and Wellington (1984, 1985), many other obvious and sensible actions by them continue to be ignored by the herpetological community at large.

Examples are many and include the non-recognition of divergent taxa such as *Rankinia boylani* or the similarly vulnerable "*Pantherosaurus kurringai*" still ridiculously treated as a synonym for "*Varanus rosenbergi* Mertens, 1957" even though they are morphologically quite different, come from almost opposite sides of the continent and have even had their separate species status validated by molecular studies! Now of course, if there is anyone on the planet with a genuinely valid reason to take offense and to not want to recognize the name "*Rankinia boylani*" it is myself.

After all on 8 May 1981, Mr. Terry Boylan, the man whom the species was named after, was one of five men who illegally entered my home, tied me up in a chair and then proceeded to steal reptiles, files and whatever else took their fancy.

The NSW National Parks and Wildlife Service (NPWS) who led the raid later admitted they had acted illegally and were at fault and even returned some of the 14 stolen snakes, files taken and so on.

A decade later, Boylan to his credit made an apology and amends with me and as far as the rules of science go, none of this even matters!

The taxon *Rankinia boylani* Wells and Wellington, 1984 is valid; the name is valid according to the rules of the *International Code of Zoological Nomenclature*, and the sooner people get over the politics the better.

The name must be used and the species must be preserved.

In terms of the Wells and Wellington (1984 and 1985) papers however, I must state that it remains a key document in Australian herpetology and the sooner the obviously correct taxonomic decisions within those papers are adopted, the better!

This includes those agamid taxa described by them and until now treated as synonyms of others, even though they are morphologically distinct and when coupled with other publicly available evidence, make a compelling case for their proper recognition, for which the Wells and Wellington nomenclature must inevitably follow.

I also note the haste with which unethical herpetologists have literally stolen the works of Wells and Wellington (1984, 1985) and used their papers as a basis for their own alleged "discoveries", which they have then trumpeted far and wide and without even so much as a shred of decency to acknowledge the earlier works of these authors.

Hoser (2015) cites examples of this and another as yet uncited example is the paper of McLean *et al.* (2013), with the bold title: "Taxonomic assessment of the *Ctenophorus decreasii* complex (Reptilia: Agamidae) reveals a new species of dragon lizard from western New South Wales."

It is a brazen attempt to claim the discovery of a new species as a result of their allegedly original scientific work.

A close reading of the paper makes such a very claim and scandalously nowhere in this document is there even a reference to the works of Wells and Wellington.

Now because some of the co-authors have been very critical of the Wells and Wellington papers, we know that they have read them, or at least would reasonably expect this to be the case.

In Wells and Wellington (1984) the two men wrote:

"*Ctenophorus decreasii* (Duméril and Bibron, 1837): We believe the N.S.W. population to represent an undescribed species. *C. decreasii* is confined to South Australia."

Or in case McLean *et al.* missed that, Wells and Wellington (1985) wrote:

"We have deferred describing a number of species in this complex a Mr. Magnus Peterson has formally informed us of his intentions to name some members".

So clearly we have Wells, Wellington and at least another well-known

herpetologist at the time (1980's) well aware that the NSW animals assigned to *C. decreasii* were definitely of another species!

Now I am not going to deny that McLean *et al.* (2013) did a small amount of work on the relevant taxa and in naming this long known and undescribed species, but they have engaged in the morally repugnant action of plagiarism of the works of others in their process and it is this that I object to.

Hoser (2015) and sources cited therein, detail many other cases of similar attempts to steal the works of authors by a ratbag group known as the Wüster gang.

Not only are their actions ethically wrong and potentially illegal under intellectual property laws, they serve to hamper the progress of the science of herpetology and associated wildlife conservation efforts by acting to deter potential new entrants to the field, who may be in fear of many years work being stolen by pirates who have attempted to set themselves up as high priests or gatekeepers of herpetology in direct breach of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

In terms of the other taxa named herein within the *Rankinia diemensis* complex I note that the least divergent of these named herein is that from the Grampians, Western Victoria with a 3.7% mtDNA divergence from the nominate Tasmanian form according to Ng *et al.* 2014. Other forms described have divergences considerably in excess of this.

Noting that for similarly distributed reptilian species complexes with similar divergences, including within the genera *Austrelaps* Worrell, 1963 (long treated as a single species) and *Cyclodomorphus* Fitzinger, 1843 (where the type species from south-east Australia was split), the various species have already been split, formally named and widely recognized, it is clearly not consistent that the *Rankinia diemensis* complex with similar deep splits be treated any differently.

Hence I have no hesitation describing the relevant forms as new species as opposed to mere subspecies.

It is also relevant that past authors, including Ng *et al.* (2014) and Clemann (2003) already effectively treat each form as separate species with explicit statements to this effect and they recommend that governments from whom their projects were funded also manage the populations as such.

I also note that with sequence divergences in excess of 3.7% mtDNA, morphological differences and disjunct distributions there is no question that each form described herein represents a full species by any commonly used criteria.

One may look also at other recently named and widely accepted reptile species, such as "*Morelia nauta*" Harvey *et al.*, 2000, now known as *Australiasis nauta* (Harvey *et al.* 2000), separated from congeners on the basis of a mere 1-2% divergence as was their "*Morelia kinghorni* Stull", properly known now as *Australiasis clarki* (Barbour, 1914) (see Hoser 2000a and Hoser 2015 and sources cited therein).

If their "species" are to be recognized on divergences of 1-2%, it stands to reason that those named herein must be recognized at amounts at or significantly more than double this!

Perhaps in passing I should also mention that general acceptance of the Wells and Wellington (1985) breakup of the *Egernia cunninghami* species complex is also well overdue!

The genus *Ctenophorus* Fitzinger, 1843 as recognized by Melville *et al.* (2008) and most authors since, is dissected along phylogenetic lines into four genera (three named for the first time) and subgenera, using available names and three new ones in a continuation of the dismemberment of the genus commenced by Wells and Wellington (1984, 1985).

The phylogeny produced in Melville *et al.* (2008) generally validated the taxonomic decisions of Wells and Wellington (1984, 1985) who dissected *Ctenophorus* as generally recognized at the time, this including species that had been shunted between various genera by various authors.

The genera *Licentia* Wells and Wellington, 1984; *Phthanodon* Wells and Wellington, 1985; *Tachyon* Wells and Wellington, 1985 and of course *Rankinia* Wells and Wellington, 1984 have been largely supported by research results since 1985, but due to the pig-headed inertia of a vocal minority of herpetologists in Australia and their improper tactics of bludgeoning others to submit to their warped perceptions, the adoption and use of Wells and Wellington genera or subgenera, including these has been at times scandalously limited.

However I am not into personality politics and instead prefer to stick

with the science and hence, based on the molecular and morphological facts, all are recognized herein as defined by the original authors unless otherwise indicated in the detail of this paper. However, I should point out that all of *Licentia*, *Phthanodon* and *Tachyon* are conservatively relegated to subgenus status herein on the basis that Melville showed divergences for each group, but it is questionable if this divergence as presented by her was sufficient for each to be accorded full genus status.

They may be elevated by later authors in some years hence.

Three other as yet unnamed groups within *Ctenophorus* of similar divergences and morphological differences are formally named for the first time as are the three most divergent groups (another three), which are sufficiently divergent to warrant being treated as full genera as per the phylogenies produced by Pyron *et al.* (2013) and Melville *et al.* (2008) when compared to other reptile groups.

Once again these three groups are also supported by obvious morphological differences and it is astounding that they have not been formally named until now.

Genera defined elsewhere by other authors are not redefined here in this paper, with current definitions of each being contained in either Cogger (2014) or the papers of Wells and Wellington (1984, 1985).

There are of course numerous relevant papers in terms of the taxonomy and nomenclature of the genus *Amphibolurus sensu lato*, including the likes of *Lophognathus*, *Chlamydosaurus* Gray, 1825, *Ctenophorus* Fitzinger, 1843, *Diporiphora* Gray, 1842, *Gowidon* Wells and Wellington, 1984, *Pogona* Storr, 1982, *Rankinia* Wells and Wellington, 1984, *Tympanocryptis* Peters, 1863, *Uxoriurosauria* Wells and Wellington, 1985 and *Wittenagama* Wells and Wellington, 1985 and others mentioned above, not of all of which I need mention here.

However the key ones of relevance include the following: Austin *et al.* (2006), Boulenger (1883, 1885), Brygoo (1988), Chapple *et al.* (2005), Clemann (2003), Cogger (2014), Cogger *et al.* (1983), Colgan *et al.* (2009), Covacevich *et al.* (1990), de Rooij (1915), Dolman and Moritz (2006), Doughty *et al.* (2007, 2015), Driscoll and Hardy (2005), Dubey and Shine (2010), Edwards and Melville (2010, 2011), Ellis and Higgins (1993), Fairbairn *et al.* (1998), Fitzinger (1843), Glauert (1959), Gray (1841, 1845), Greer (1987, 1989), Günther (1867), Günther and Kapisa (2003), Hoser (1989), Houston (1978), Hugall and Lee (2004), Iglesias *et al.* (2012), Loveridge (1933), Macleay (1877), Maryan (1992), McLean *et al.* (2013), Melville *et al.* (2001, 2006, 2008, 2011), Ng *et al.* (2013), Paull (2002), Pepper *et al.* (2014), Pyron *et al.* (2013), Rawlinson (1967, 1974), Ryder (1986), Shea (1995), Shoo *et al.* (2008), Smith *et al.* (2011), Storr (1964, 1967, 1974, 1977), Thompson and Thompson (2001), Welling (1999), Wells and Wellington (1984, 1985), Werning (1995, 2002, 2004), Wilson and Swan (2010), Witten (1972, 1984), Witten and Coventry (1984), Worrell, 1963) and sources cited therein.

#### THEFT OF MATERIALS TO IMPEDE SCIENCE AND WILDLIFE CONSERVATION

I also note the following: In 2006 an online petition sponsored by a group of animal-hating pseudo-scientists including Wolfgang Wüster, Mark O'Shea, David John Williams, Bryan Fry and others posted at: <http://www.aussiereptileclassifieds.com/phpPETITION> (Hunter *et al.* 2006) called for my successful wildlife education business (Snakebusters®) and all my other herpetological activity to be shut down by the government of Victoria, Australia.

These men were successful in that after a ruthless five-year campaign, on 17 August 2011, 11 heavily armed police and wildlife officers conducted a highly illegal and violent raid on our family home and research facility. The raid was also a reprisal for several publications I had made that were highly critical of corruption involving the relevant people (e.g. Hoser 1993, 1996, 2010).

Myself, my wife and two vulnerable young daughters were arrested at gunpoint and held captive in the kitchen of the house for nine hours while the facility was ransacked. Besides the unspeakable acts of killing captive snakes and criminal damage to cages and household goods, the raiding officers illegally shut down our business and effectively placed myself under house arrest at gunpoint for some months after the raid.

An application by myself to the Supreme Court of Victoria led to the re-opening of our unlawfully shut down wildlife education business, although much of the damage to the business and our reputation built up over more than 4 decades was irreparable.

Later proceedings resolved in 2014 and 2015, cleared me of dozens of fabricated criminal charges spanning some decades (Magistrates

Court Victoria 2014), and a judicial finding that I was legally a cleanskin in that I had never acted illegally (VCAT 2015).

The government was ordered to pay me costs, restitution, compensation and damages (Court of Appeal, 2014), which as of mid 2015 remain unpaid.

Of greater relevance here is that at the time of the raid, research files spanning more than 40 years were taken and never returned, including materials and records relevant to this paper.

Material taken included all the computers, disks, hard drives, backups, cameras, scientific literature and other forms of information and information storage at the facility. All were loaded into the back of a truck and trailer and carted off.

Faced with the dilemma of deciding whether to spend another forty years gathering data, by which time I may be dead from old age, being aged 53 as of February 2015, or publishing the relevant paper/s with minimal data, I have opted to publish.

Underlying this motivation has been an increasing concern that a delay to formally identify and name undescribed biodiversity may lead to its extinction before another scientist gets around to the matter.

Engstrom *et al.* (2002) wrote: "The documentation of this diversity must be seen as an activity that is done not just for posterity but for immediate action and protection."

A number of authors including Kaiser (2012a, 2012b, 2013, 2014a and 2014b), Kaiser *et al.* (2013), Naish (2013) and Wüster *et al.* (2014), all part of the group of people effectively controlled by Wolfgang Wüster of Wales, UK, have been highly critical of the fact that I have assigned names to unnamed clades of snakes and more recently for other reptiles. Their unscientific and childish attacks, continued incessantly on social media such as Facebook and Twitter are rejected herein as destabilizing the nomenclature, impeding the progress of science and in some cases putting people's lives at risk.

Their ridiculous comments and false and defamatory statements are systematically rebutted by Hoser (2013), as well as Cogger (2013, 2014), Dubois (2014), Eipper (2013), Mutton (2014a, 2014b), Shea (2013a-d), Thorpe (2013, 2014a-c), Wellington (2013, 2014a, 2014b), Wells (2013, 2014a, 2014b), and many others, so this history is not reviewed here.

I also note that many taxa formally named by myself for the first time in earlier publications (e.g. Hoser 2000a, 2000b) are in fact threatened species.

Therefore I note the sensible remarks of Engstrom *et al.* (2002) as a perfectly reasonable explanation for the publishing of taxon descriptions for such unnamed groups. This remains the case even if a sizeable amount of my original research, files, photos and data have been stolen (more than once) and therefore cannot be relied upon and incorporated into these contemporary publications.

I also note that I welcome redescriptions of the relevant taxa by later authors unfettered by illegal break ins and thefts by corrupt government officers and if fortunate, even funded by these people, and who will hopefully have time and money to be able to do a more thorough description of the same and other taxa.

One does however expect these and all other herpetologists to abide by the letter and spirit of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

#### SPECIES AMPHIBOLURUS JACKY SP. NOV.

**Holotype:** A preserved specimen at the national Museum of Victoria, Melbourne, Australia, specimen number: D1522 collected from Winchelsea, Victoria.

This is a government-owned facility that allows access to its holdings.

**Diagnosis:** *Amphibolurus jacky sp. nov.* are separated from the morphologically similar *A. muricatus* (White, 1790) and *A. eipperii sp. nov.* by the dark colouration dark under the eye, this being a continuation of the canthal streak from above the back of the upper jawline. This dark under the eye is not seen in typical *A. muricatus* or *A. eipperii sp. nov.*

*A. eipperii sp. nov.* distributed in north-east NSW and adjacent parts of southern Queensland, are readily separated from *A. muricatus* (White, 1790) and *A. jacky sp. nov.* by the fact that in the males, they possess a large dark black patch behind the ear and above the leg. This patch is small in the other taxa. Males of *A. eipperii sp. nov.* differ from males of the other two species by their smallish to medium sized well-defined black triangles running in a pattern along the inner dorsolateral stripes on the back. Female *A. eipperii sp. nov.* are readily separated from the other two species by the presence of seven moderately well-defined

stripes running in a dorsolateral direction, radiating from the back of the head, behind the eyes to the neck.

The forelimbs of female *A. eipperii* sp. nov. are characterised with well defined dark and light crossbands and while these are sometimes seen in specimens of the other two species, in *A. eipperii* sp. nov. the difference is that these well defined crossbands extend onto the toes. Female *A. eipperii* sp. nov. differ from the other species in that the dark patches across the mid back are wider than the light patches. In *A. muricatus* (White, 1790) and *A. jacky* sp. nov. the reverse is the case. On the tail of male *A. eipperii* sp. nov. the lighter part of the crossbands flare significantly outwards. The flaring is only minor in *A. muricatus* (White, 1790) and not present in *A. jacky* sp. nov..

Male *A. muricatus* have a large and well defined nuchal crest. It is only of moderate size in *A. jacky* sp. nov.. In *A. eipperii*, the nuchal crest is small, separating it from the other two species.

The three species *Amphibolurus jacky* sp. nov., *A. eipperii* sp. nov. and *A. muricatus* are separated from *A. norrisi* Witten and Coventry, 1984 and *A. adelyn* sp. nov. by the fact that the dark canthal stripe extends only to the nostril or to the lower eye, versus to the tip of the snout in the other taxa.

*Amphibolurus jacky* sp. nov. and *A. muricatus* also have dark transverse markings on the snout in the internarial region, which is not seen in the other taxa.

Adult male *A. muricatus* invariably have two distinct light coloured stripes running down either side of the back, partially broken with dark triangular incursions. In adult male *Amphibolurus jacky* sp. nov. the same striping is significantly broken tending towards the female colouration.

**Distribution:** Southern Victoria from the Mornington Peninsula, west to the region of the Victorian and South Australian border, near the coast. Within this range distribution is patchy and restricted to coastal dune habitats and dry wooded areas.

Populations from East Gippsland, east of the Latrobe Valley and north into New South Wales are referred to the species *Amphibolurus muricatus* (White, 1790).

**Etymology:** Named after my younger daughter Jacky Hoser, in recognition for her monumental work in reptile education over the first 14 years of her life, with Snakebusters, Australia's best reptile displays. She has had to face illegal armed raids by corrupt wildlife officers working on behalf of rival wildlife display businesses owned by police-protected criminals and other totally unjustified attacks when doing excellent work educating the general public about reptiles.

Childish online rants by a little angry Englishman named Mark O'Shea complaining about myself naming taxa after family members are not only offensive, but against the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), a document he treats with utter contempt.

#### **SPECIES AMPHIBOLURUS EIPPERI SP. NOV.**

**Holotype:** A specimen number R148375 at the Australian Museum in Sydney, New South Wales, Australia, collected on the road to Mulligans Hut at the Gibraltar Range, National Park in New South Wales, Australia, Latitude -29.53, Longitude 152.32.

The Australian Museum in Sydney, New South Wales, Australia is a government owned facility that allows access to its holdings.

**Paratype:** A specimen number R148385 at the Australian Museum in Sydney, New South Wales, Australia, collected on the road to Mulligans Hut at the Gibraltar Range, National Park in New South Wales, Australia, Latitude -29.53, Longitude 152.32.

The Australian Museum in Sydney, New South Wales, Australia is a government owned facility that allows access to its holdings.

**Diagnosis:** *Amphibolurus jacky* sp. nov. are separated from the morphologically similar *A. muricatus* (White, 1790) and *A. eipperii* sp. nov. by the dark colouration dark under the eye, this being a continuation of the canthal streak from above the back of the upper jawline. This dark under the eye is not seen in typical *A. muricatus* or *A. eipperii* sp. nov..

*A. eipperii* sp. nov. distributed in north-east NSW and adjacent parts of southern Queensland, are readily separated from *A. muricatus* (White, 1790) and *A. jacky* sp. nov. by the fact that in the males, they possess a large dark black patch behind the ear and above the leg. This patch is small in the other taxa. Males of *A. eipperii* sp. nov. differ from males of the other two species by their smallish to medium sized well-defined black triangles running in a pattern along the inner dorsolateral stripes on the back. Female *A. eipperii* sp. nov. are readily separated from the

other two species by the presence of seven moderately well-defined stripes running in a dorsolateral direction, radiating from the back of the head, behind the eyes to the neck.

The forelimbs of female *A. eipperii* sp. nov. are characterised with well defined dark and light crossbands and while these are sometimes seen in specimens of the other two species, in *A. eipperii* sp. nov. the difference is that these well defined crossbands extend onto the toes. Female *A. eipperii* sp. nov. differ from the other species in that the dark patches across the mid back are wider than the light patches. In *A. muricatus* (White, 1790) and *A. jacky* sp. nov. the reverse is the case. On the tail of male *A. eipperii* sp. nov. the lighter part of the crossbands flare significantly outwards. The flaring is only minor in *A. muricatus* (White, 1790) and not present in *A. jacky* sp. nov..

Male *A. muricatus* have a large and well defined nuchal crest. It is only of moderate size in *A. jacky* sp. nov.. In *A. eipperii*, the nuchal crest is small, separating it from the other two species.

The three species *Amphibolurus jacky* sp. nov., *A. eipperii* sp. nov. and *A. muricatus* are separated from *A. norrisi* Witten and Coventry, 1984 and *A. adelyn* sp. nov. by the fact that the dark canthal stripe extends only to the nostril or to the lower eye, versus to the tip of the snout in the other taxa.

*Amphibolurus jacky* sp. nov. and *A. muricatus* also have dark transverse markings on the snout in the internarial region, which is not seen in the other taxa.

**Distribution:** North-eastern New South Wales, on the coastal plain and nearby ranges (where they are most common) and into adjacent parts of southern Queensland.

**Etymology:** Named in honour of Scott Eipper, now of Brisbane, Queensland, Australia, formerly of Caulfield, Victoria, Australia in recognition of his many services to herpetology in Australia, including via the publication of two excellent books on keeping reptiles and frogs in 2012 (Eipper 2012a, 2012b).

#### **SPECIES AMPHIBOLURUS ADELYN SP. NOV.**

**Holotype:** A preserved specimen number R45649 collected at Twilight Cove, Western Australia, Lat. 32°15'00" S, Long. 126°02'00"E, held at the Western Australian Museum, Perth, Western Australia, Australia.

This is a government-owned facility that allows access to its holdings.

**Paratype:** A juvenile preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R151108 collected at 3 km west of Burnabie, Western Australia Latitude 126.18'00" E, Longitude 32.13'33" S.

This is a government-owned facility that allows access to its holdings.

**Diagnosis:** *Amphibolurus adelyn* sp. nov. is separated from the similar *A. norrisi* Witten and Coventry, 1984 by the following suite of characters:

The canthal stripe does not significantly widen towards the rear; there is a distinct supraciliary pattern of about five alternating light and dark patches, the light patches being larger, forming the supracilia commencing anterior to and above the eye; an oversized dark patch on the flank above the anterior limb (this occurs sometimes in *A. norrisi* but is not common in the taxon); the irregular and more-or-less triangular dark patches on the back are not noticeably lighter in the centres (as seen in *A. norrisi*).

In *A. norrisi* the canthal stripe noticeably darkens at the tip of the snout. This is not the case in *Amphibolurus adelyn* sp. nov..

*Amphibolurus jacky* sp. nov., *A. eipperii* sp. nov. and *A. muricatus* are separated from *A. norrisi* Witten and Coventry, 1984 and *A. adelyn* sp. nov. by the fact that the dark canthal stripe extends only to the nostril or to the lower eye, versus to the tip of the snout in the other taxa.

*Amphibolurus jacky* sp. nov., *A. eipperii* sp. nov. and *A. muricatus* also have dark transverse markings on the snout in the internarial region, which is not seen in the other taxa.

**Distribution:** Southern Australia in the near coastal region west of the Spencer Gulf, South Australia, through Mallee habitats across the Great Australian Bight to near Nullabor parts of south-east Western Australia to the general region of Ravensthorpe, Western Australia. Populations of similar lizards from Big Desert Victoria and nearby regions and east of the Spencer Gulf are *Amphibolurus norrisi* Witten and Coventry, 1984.

**Etymology:** Named after Adelyn Hoser, elder daughter of this author in recognition for her monumental work in reptile education over the first 16 years of her life, with Snakebusters, Australia's best reptile

displays. She has had to face illegal armed raids by corrupt wildlife officers working on behalf of rival wildlife display businesses owned by police-protected criminals, including suffering the extreme trauma of being arrested at gunpoint and other totally unjustified attacks when doing excellent work educating the general public about reptiles.

Childish online rants by a little angry English man named Mark O'Shea complaining about myself naming taxa after family members are not only offensive and illegal, but also against the similarly legally binding rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), a document he treats with utter contempt.

**SPECIES AMPHIBOLURUS WELLSI SP. NOV.**

**Holotype:** A preserved specimen number D72709, at the National Museum of Victoria, Melbourne, Australia, collected 108 km South of Cape Crawford on Tablelands Highway, Northern Territory Lat. 17.54 S, Long. 135.68 E.

This is a government-owned facility that allows access to its holdings.

**Paratype:** A preserved specimen number D72710, at the National Museum of Victoria, Melbourne, Australia, collected 3 km S of Heartbreak Inn on Tablelands Highway, Northern Territory, Australia, Latitude -16.70°39", Longitude 135.72°90".

This is a government-owned facility that allows access to its holdings.

**Diagnosis:** The species *Amphibolurus wellsi* sp. nov. is readily separated from *Amphibolurus centralis* (Loveridge, 1933) by the presence of a strong almost white bar along the lower jaw, running past the neck and onto the lighter broad dorsolateral stripes (one either side of the spine) which are also whitish at the anterior end of the body, before becoming brownish yellow towards the rear. By contrast, *A. centralis*, while marginally lighter along the lower jaw, lacks the obvious white bar as seen in this species and likewise the almost white anterior section of the dorsolateral stripes.

In some adult males, the strong almost white bar along the lower jaw has a strong yellow hue, but remains distinct.

Both *Amphibolurus wellsi* sp. nov. and *Amphibolurus centralis* (Loveridge, 1933) are readily separated from congeners by the fact that the lining of the mouth is either flesh-coloured or pink in life, versus bright yellow in life in all other species. *Amphibolurus wellsi* sp. nov. and *Amphibolurus centralis* (Loveridge, 1933) are further separated from congeners by the fact that dorsal and upper body lateral scales (excluding longitudinal rows of enlarged keeled scales) are mostly heterogeneous, but lower lateral scales are homogenous or subequal, versus strongly heterogeneous in shape and size dorsal and lateral body scales in other congeners.

A key to separate the genus *Amphibolurus* from other recognized Australian agamid genera is in Cogger (2014), pages 692-693.

**Distribution:** *Amphibolurus wellsi* sp. nov. is found in an area centred on the Barkly Tableland region of the Northern Territory and nearby parts of Queensland, west to near the Western Australian border and not found in the drier red soiled regions of central Australia to the south, where the species *A. centralis* is found instead. There is no known zone of sympatry between the taxa.

**Etymology:** Named in honour of Richard Wells (coauthor of Wells and Wellington, 1984, 1985), currently of Lismore, NSW, in recognition of a significant contribution to herpetology in Australia over some decades going way beyond those cited papers.

**SPECIES LOPHOGNATHUS WELLINGTONI SP. NOV.**

**Holotype:** Preserved specimen number D73809 at the National Museum of Victoria, Melbourne, Australia, collected from Gibb River Road crossing of the Durack River in the Kimberley region of Western Australia, Australia. Lat. -15.9738, Long. 127.154.

This is a government-owned facility that allows access to its holdings.

**Paratype:** Preserved specimen number D72652 at the National Museum of Victoria, Melbourne, Australia, collected from Montejinni Creek, Buntine Highway, Northern Territory, Australia. Lat. -16.635, Long. 131.756.

This is a government-owned facility that allows access to its holdings.

**Diagnosis:** *Lophognathus wellingtoni* sp. nov. is readily separated from *Lophognathus gilberti* Gray, 1842 by the presence of a thick creamish-white bar that runs on both the upper and lower jawline, versus mainly on the upper side in *L. gilberti*. In *L. wellingtoni* sp. nov. the upper margin of this white line is effectively straight whereas in *L. gilberti* there is a strong uptick in the region of the eye (usually a fraction behind the lowest point), meaning there is no straight line appearance at the upper margin of the bar.

In *L. wellingtoni* sp. nov. the dark region between the eye and the ear

is bounded at the top by a well defined line. This is not the case in *L. gilberti*, where the colour merely merges into that at the top of the head.

*Melvillesaurea* gen. nov. (formally described in this paper) is separated from all similar genera (e.g. *Gowidon* Wells and Wellington, 1984 and *Lophognathus* Gray, 1842), by the following suite of characters:

The nostril is nearer the snout than the eye (versus equidistant in *Gowidon*), the light labial stripe includes supralabials and several scale rows above them (the labial stripe does not include supralabials and several scale rows above them in *Gowidon*), the posterior margin of the ear does not have a small white spot (versus a small white spot on the black posterior margin of the ear in *Gowidon*).

*Gowidon* and *Melvillesaurea* gen. nov. are both separated from the morphologically similar genus *Lophognathus* by the fact that the keels of dorsal scales form ridges running obliquely to the vertebral scale row, versus running parallel in *Lophognathus*, (this trait being diagnostic for the genus *Lophognathus*).

A key to separate these and other recognized Australian agamid genera is in Cogger (2014), pages 692-693.

**Distribution:** The dry tropics of the Northern Territory from the Victoria River region in the west of that "Territory" west, through the Kimberley ranges and adjoining areas and skirting the Great Sandy Desert to include the north-west parts of the Pilbara in Western Australia.

**Etymology:** Named in honour of Cliff Ross Wellington (coauthor of Wells and Wellington, 1984, 1985), currently of Woy Woy, NSW, in recognition of a significant contribution to herpetology in Australia over some decades going way beyond those cited papers.

**GENUS MELVILLESAUREA GEN. NOV.**

**Type species:** *Grammatophora temporalis* Günther, 1867.

**Diagnosis:** *Melvillesaurea* gen. nov. is separated from all similar genera (e.g. *Gowidon* Wells and Wellington, 1984 and *Lophognathus* Gray, 1842), by the following suite of characters:

The nostril is nearer the snout than the eye (versus equidistant in *Gowidon*), the light labial stripe includes supralabials and several scale rows above them (the labial stripe does not include supralabials and several scale rows above them in *Gowidon*), the posterior margin of the ear does not have a small white spot (versus a small white spot on the black posterior margin of the ear in *Gowidon*).

*Gowidon* and *Melvillesaurea* gen. nov. are both separated from the morphologically similar genus *Lophognathus* by the fact that the keels of dorsal scales form ridges running obliquely to the vertebral scale row, versus running parallel in *Lophognathus*.

A key to separate these and other recognized Australian agamid genera is in Cogger (2014), pages 692-693.

**Distribution:** Northern Australia and southern New Guinea.

**Etymology:** Named in honour of Jane Melville, currently at the Museum of Victoria, in Melbourne, Australia in recognition of her work on these lizards.

**Content:** *Melvillesaurea temporalis* (Günther, 1867) (type species); *M. lateralis* (Macleay, 1877).

**GENUS NOTACTENOPHORUS GEN. NOV.**

**Type species:** *Tympanocryptis maculosa* Mitchell, 1948.

**Diagnosis:** *Notactenophorus* gen. nov. is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014), by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus* gen. nov. and most *Pseudoctenophorus* gen. nov.); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

Specimens within the genus *Pseudoctenophorus* gen. nov. are

separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, and *Notactenophorus gen. nov.* by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

**Distribution:** The Lake Eyre basin in the north of South Australia, Australia.

**Etmology:** Named as it is not properly placed in the genus *Ctenophorus* Fitzinger, 1843, (not-a-ctenophorus).

**Content:** *Notactenophorus maculosus* Mitchell, 1948 (monotypic).

#### GENUS PSEUDOCTENOPHORUS GEN. NOV.

**Type species:** *Grammatophora muricata adelaidensis* Gray, 1841.

**Diagnosis:** Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer

than 15; nostril is slit-like or narrowly elliptical.

**Distribution:** Coastal regions of southern Western Australia and adjacent parts of South Australia.

**Etmology:** Named as it is not properly placed in the genus *Ctenophorus* Fitzinger, 1843, therefore pseudo, and hence is a "pseudo-ctenophorus".

**Content:** *Pseudoctenophorus adelaidensis* (Gray, 1841) (type species); *C. butleri* (Storr, 1977); *P. chapmani* (Storr, 1977); *P. parviceps* (Storr, 1964).

#### SUBGENUS PSEUDOCTENOPHORUS SUBGEN. NOV.

**Type species:** *Grammatophora muricata adelaidensis* Gray, 1841.

**Diagnosis:** Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*) this information being diagnostic for the subgenus, or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest. *Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

**Distribution:** Coastal regions of southern Western Australia on the west coast in the region from the Murchison River in the north to around Perth in the south.

**Etmology:** Named as it is not properly placed in the genus *Ctenophorus* Fitzinger, 1843, therefore pseudo, and hence is a "pseudo-ctenophorus".

**Content:** *Pseudoctenophorus (Pseudoctenophorus) adelaidensis* (Gray, 1841) (monotypic).

#### SUBGENUS CHAPMANAGAMA SUBGEN. NOV.

**Type species:** *Amphibolurus adelaidensis chapmani* Storr, 1977.

**Diagnosis:** Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly



heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), this information being diagnostic for the subgenus, or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take

into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

**Distribution:** From the Stirling Ranges in Western Australia, eastwards across the Nullarbor to the Yorke Peninsula in South Australia.

**Etymology:** The species "*Amphibolurus adelaidensis chapmani* Storr, 1977" was named after Mr Andrew Chapman of the Western Australian Museum in appreciation of his contributions to Western Australian herpetology.

The subgenus *Chapmanagama gen. nov.* is not.

It is in fact named in honour of Christopher Chapman a lawyer from Sydney, New South Wales, Australia who spent many years advocating for the rights of private individuals to have the legal right to own reptiles in Australia. He also wrote a preface to the first edition of the best-selling book *Smuggled: The Underground Trade in Australia's Wildlife* (Hoser, 1993) and a second preface for the second edition published in 1996. It was a result of the sequence of events arising from the publishing of this book and the sequel, *Smuggled-2: Wildlife, trafficking, crime and corruption in Australia* (Hoser, 1996), that for the first time in decades, private individuals in Australia were legally allowed to keep reptiles as pets without fear of being raided and jailed for doing so. It is fitting that Chris Chapman be honoured with a patronym in his name, noting that he is largely responsible for the fact that there will be another young generation of herpetologists in Australia legally allowed to train in their science.

**Content:** *Pseudoctenophorus chapmani* (Storr, 1977) (monotypic).

#### SUBGENUS TURNBULLAGAMA SUBGEN. NOV.

**Type species:** *Tympanocryptis parviceps* Storr, 1964.

**Diagnosis:** Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*), this information being diagnostic for the subgenus.

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take

into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

**Distribution:** West coast of Western Australia between Exmouth Gulf and Shark Bay (*P. parviceps*) and West coast of Western Australia between Shark Bay and Kalbarri (*P. butleri*).

**Content:** *Pseudoctenophorus (Turnbullagama) parviceps* (Storr, 1964) (type species); *P. (Turnbullagama) butleri* (Storr, 1977).

**Etymology:** Named after Croppa Creek, north of Moree, NSW, Australia farmer, Ian Robert Turnbull in recognition of a lifetime's work in agriculture and environmental management. Turnbull got nationwide media attention after he shot and killed an alcoholic NSW Government, Office of Environment and Heritage compliance officer Glen Turner on 29 July 2014.

Turner had grossly misused his office and powers to run a personal vendetta against Turnbull and his family spanning a decade, including stalking and harassing the elderly (in his 70's), Mr. Turnbull.

Turner publicly humiliated Turnbull, accusing him of numerous heinous crimes on the basis of what could at best be described as very flimsy evidence. Furthermore via a series of vexatious legal proceedings he initiated against Turnbull using creative interpretations of the law, he literally ruined Turnbull financially.

These illegal actions by Turner eventually drove Turnbull to wits end.

With Turnbull and his hard-working family facing financial ruin as a direct result of a vexatious legal campaign against him by Turner and other departmental officers, Turnbull shot a round of bullets into Turner after he had illegally entered Turnbull's property.

This killed Turner instantly.

Turner had already cost Turnbull several hundred thousand dollars in losses.

Turnbull later remarked "I simply cracked", in describing how and why Turner drove him to retaliate by killing him (Hall, 2014).

Not surprisingly the government-controlled tabloid media did a scandalous job of blame shifting against Turnbull and made out that Turner was some kind of saint.

Turnbull was charged with murder as soon as he was arrested (the same day) and before it was even possible for any semblance of an impartial investigation could take place.

He was immediately imprisoned and repeatedly refused bail.

As a rule in such matters, in Australia, a person may be arrested, but charges are not laid until after an investigation is done, the evidence is assessed and the inquiry is properly completed.

That this did not occur, clearly showed that there was never an intent by the NSW Police, the NSW Government, Office of Environment and

Heritage and other associated agencies to have an impartial inquiry into the events leading to the shooting incident.

As a result, it is reasonable to expect that Turnbull (aged 79 in 2014) and in ill health as of October that year, will only leave jail in a body bag and not as a result of any fair criminal trial or acquittal.

At the time of the shooting and also prior, local politicians aware of the situation stated publicly that the actions of Turner and fellow officers had led to the shooting and that it had been a case of when, not if, such an event happened.

While I do not advocate killings or illegal actions, the effective self sacrifice by Turnbull at a very late stage in his life, to highlight the Nazi-like actions of anti-environmentalist and highly paid self-serving corrupt government wildlife officers, only concerned with their own financial welfare and not that of the environment, does deserve some kind of formal recognition.

As no government in Australia will ever admit that their officers have ever done wrong, or acknowledge the actions of the innocent victims of their illegal actions, I shall do this here.

Warnings of revenge attacks against wildlife officers acting illegally and harassing law-abiding conservationists have been made many times in the past.

In 2011, and following an illegal armed raid on my facility by Victorian wildlife officers, I directly told one of them, Glenn Sharp, that had they acted in a similar way against another law-abiding person besides myself, that the victim would well have been within reason to shoot them and that they should start acting within the law to prevent such an event possibly occurring.

Instead of taking on board my eminently sensible advice, noting that just a few years prior David Merceica had punched out an ocerzealous wildlife officer in Melbourne named Tony Zidarich, the corrupt Victorian Wildlife Officer, Glenn Sharp falsely accused me of threatening to kill him instead!

The claim was thrown out of court in 2015, when a covertly made tape of a phone call in August 2011, that Sharp himself had made without my knowledge, was played to the court (VCAT 2015).

Playing for his own tape recording, he repeatedly stated to me "are you threatening me", to which I repeatedly told him "no" and to "take that idea out of your mind".

In defiance of my sensible advice, in the three years post-dating the 2011 conversation, Sharp himself and several subordinates under his control, continued to harass, stalk and assault innocent members of the public as well as breach countless other rules and regulations, including such things as hoon driving through suburban streets, breaking numerous road rules, including driving on the wrong side of the road, over double lines, into oncoming traffic and even having the audacity to film themselves doing so.

The photographic and video evidence of this illegal activity that they themselves had created, was inadvertently passed to me in the lead up to a court hearing in 2015 (VCAT 2015).

Significantly, Sharp and his fellow wildlife officers under his control are police-protected criminals, as when their own evidence of their criminal actions was passed on to the relevant authorities (in this case the Victoria Police), they chose not to prosecute him or the other offenders (VCAT 2015).

In other words, if a victim of Sharp's illegal actions doesn't take the law into their own hands and kill one of Sharp or his underlings, it is considerably more likely that one or more of them will kill themselves, and perhaps an innocent member of the public, as they hoon around the streets of Melbourne driving down the wrong side of the road and sooner or later crash their car into an oncoming vehicle, as happened in a similar case as documented by Hoser (1999).

While I did not know, or know of either Turner, or Turnbull prior to the shooting incident in NSW in 2014, after which both media and family contacted me to give me details of the relevant events, I am very familiar with the kind of situation that gave rise to the shooting and I have absolutely no doubt at all that Turner is totally to blame for himself being killed by an otherwise law-abiding man he had tormented and harassed and publicly humiliated over the previous decade.

In summary the alcoholic government wildlife officer got what he deserved!

The word to describe this is Karma!

**GENUS PARACTENOPHORUS GEN. NOV.**

**Type species:** *Amphibolurus clayi* Storr, 1967.

**Diagnosis:** The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take

into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** From Exmouth Gulf region of Western Australia, through the eastern deserts of Western Australia to the south-eastern Northern Territory and adjacent part of far western Queensland.

**Etymology:** Named as it is not quite placed in the genus *Ctenophorus* Fitzinger, 1843, therefore para, and hence is a "para-ctenophorus".

**Content:** *Paractenophorus clayi* (Storr, 1967) (type species); *Paractenophorus raffertyi* (Wells and Wellington, 1985).

**GENUS CTENOPHORUS FITZINGER, 1843.**

**Type species:** *Grammatophora decresii* Dumeiril and Bibron 1837.

**Diagnosis:** *Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** Most parts of continental Australia.

**Content:** *C. decresii* (Duméril and Bibron, 1837) (type species); *Ctenophorus caudicinctus* (Günther, 1875); *C. cristatus* (Gray, 1841); *C. dudleyi* Wells and Wellington 1985; *C. femoralis* (Storr, 1965); *C. fionni* (Procter, 1923); *C. fordi* (Storr, 1965); *C. gibba* (Houston, 1974); *C. hawkeswoodi* (Wells and Wellington, 1985); *C. isolepis* (Fischer, 1881); *C. maculatus* (Gray, 1831); *C. mckenziei* (Storr, 1981); *C. mirriyana* McLean, Moussalli, Sass and Stuart-Fox, 2013; *C. nguyarna* Doughty, Maryan, Melville and Austin, 2007; *C. nuchalis* (De Vis, 1884); *C. ornatus* (Gray, 1845); *C. pictus* (Peters, 1866); *C. reticulatus* (Gray, 1845); *C. rubens* (Storr, 1965); *C. rufescens* (Stirling and Zietz, 1893); *C. salinarum* Storr, 1966; *C. scutulatus* (Stirling and Zietz, 1893); *C. tjantjalka* Johnston, 1992; *C. vadhappa* Houston, 1974; *C. yinnietharra* (Storr, 1981).

#### SUBGENUS *LICENTIA* WELLS AND WELLINGTON, 1984.

**Type species:** *Grammatophora christata* Gray, 1841.

**Diagnosis:** The subgenus *Licentia* Wells and Wellington, 1984, is herein treated as monotypic for the type species, noting however that it may be composite and the name *websteri* (Boulenger, 1904) is already potentially available for a south-western Australian population. The concept of this grouping is significantly different to that published by Wells and Wellington, 1985.

The subgenus *Licentia* is herein defined and separated from all other *Ctenophorus* Fitzinger, 1843 by the following unique suite of characters:

Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching to eye or beyond when adpressed; tail usually much more than 1.5 times as long as the head and body; canthus rostralis angular or moderately swollen but nostrils, when viewed from above, face outwards as opposed to distinctly upwards; a distinct nuchal crest; a series of differentiated small or enlarged keeled scales form a distinct vertebral series along at least the anterior two thirds of the body; dorsal, caudal and hindlimb scales heterogeneous with scattered, enlarged keeled scales, especially along the dorso-lateral skin fold; tail without dark dorso-lateral streaks, usually banded distally.

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest. The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of

enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** Drier parts of southern Western Australia and south-western South Australia, west of the Spencer Gulf.

**Content:** *Ctenophorus (Licentia) cristatus* (Gray, 1841) (monotypic).

#### SUBGENUS *PTHANADON* WELLS AND WELLINGTON, 1984.

**Type species:** *Uromastix maculatus* Gray, 1831.

**Diagnosis:** The subgenus as defined herein is considerably narrower than the original genus as described by Wells and Wellington in 1984.

Specimens of *Phthanodon* Wells and Wellington, 1984 are readily separated from all other *Ctenophorus* Fitzinger, 1843 by one or other of the following suites of characters:

1/ Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching to eye or beyond when adpressed; tail usually much more than 1.5 times as long as the head and body; canthus rostralis angular or moderately swollen but nostrils, when viewed from above, face outwards as opposed to distinctly upwards; at most a few enlarged keeled scales on the nape; a series of enlarged vertebral scales, if present forming a distinct linear series only to about the level of the forelimbs; dorsal and even small dorso-lateral scales with distinct sharp central keels forming continuous ridges running obliquely towards vertebral line; scales on the chest strongly keeled; pores more than 32, extending to more than halfway along thigh; black on the throat, at least in adult males; pre-anal pores not arching in the midline; black throat markings, when present not in a single undivided band and black on chest of males not extending to the abdomen (species: *isolepis* and *maculatus*), or:

2/ Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching to eye or beyond when adpressed; tail usually much more than 1.5 times as long as the head and body; canthus rostralis angular or moderately swollen but nostrils, when viewed from above, face outwards as opposed to distinctly upwards; at most a few enlarged keeled scales on the nape; a series of enlarged vertebral scales, if present forming a distinct linear series only to about the level of the forelimbs; dorsal and even small dorso-lateral scales with distinct sharp central keels forming continuous ridges running obliquely towards vertebral line; scales on the chest strongly keeled; pores 32 or fewer, extending to more than halfway along thigh; no black on the throat (species *femoralis*).

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of

paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

The taxon *Ctenophorus (Phthanodon) hawkeswoodi* Wells and Wellington, 1985 is readily separated from *C. fordi*, the species it has been synonymised with by all herpetologists since the original description both by distribution and colouration. It is found in the Spinifex belt of central NSW, and the fact that the two yellowish dorso-lateral stripes are one, as opposed to two or more scales wide.

There is no doubt whatsoever that it is a different species to *C. fordi*.

**Distribution:** Drier parts of southern Australia from west Victoria and NSW, extending north in Western Australia to the Exmouth Gulf.

**Content:** *Ctenophorus (Phthanodon) maculatus* (Gray, 1831) (type); *C. (Phthanodon) femoralis* (Storr, 1965); *C. (Phthanodon) hawkeswoodi* Wells and Wellington, 1985; *C. (Phthanodon) fordi* (Storr, 1965).

#### SUBGENUS TACHYON WELLS AND WELLINGTON, 1985.

**Type species:** *Grammatophora caudicincta* Günther, 1875.

**Diagnosis:** Species within the subgenus *Tachyon* Wells and Wellington, 1985 are separated from all other *Ctenophorus* Fitzinger, 1843 by the following suite of characters being one or other of:

1/ Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching to eye or beyond when adpressed; tail usually much more than 1.5 times as long as the head and body; canthus rostralis swollen, but nostrils, when viewed from above, face distinctly upwards as opposed to outwards (species *caudicinctus*) or:

2/ Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching to eye or beyond when adpressed; tail usually much more than 1.5 times as long as the head and body; canthus rostralis angular or moderately swollen, but nostrils, when viewed from above, face outwards as opposed to distinctly upwards (as seen in the species *caudicinctus*); at most a few enlarged keeled scales on the nape; a series of enlarged vertebral scales, if present, forming a distinct linear series only to about the level of the forelimbs; dorsal scales at most with low, irregular keels which do not form distinct continuous ridges; dorso-lateral scales and those on the chest smooth, or with low blunt edges;

nostril elliptical in a swollen nasal scale lying on a swollen canthal ridge; tibial region with a series of anterior proximal scales which are very much larger than those on the posterior surface (species *ornatus* and *yinnietharra*).

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** Drier parts of northern, central and Western Australia, including the south-west and invariably associated with rock outcrops.

**Content:** *Ctenophorus (Tachyon) caudicinctus* (Günther, 1875) (type species); *C. (Tachyon) ornatus* (Gray, 1845); *C. (Tachyon) yinnietharra* (Storr, 1981).

#### SUBGENUS LEUCOMACULAGAMA SUBGEN. NOV.

**Type species:** *Amphibolurus gibba* Houston, 1974.

**Diagnosis:** Specimens within the subgenus *Leucomaculagama subgen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they remain a part of, by the following suite of characters:

Tympanum exposed, small but distinct; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching no further than the tympanum when adpressed; tail is usually less than 1.5 times as long as the head and body; nasal region not swollen, the nostril lying below and angular canthal ridge; pores more than 25; nostril is oval in shape and facing outward; a series of 20-30 dark spots or blotches along each side of the tail.

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*);

*nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest. The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** Known only from the Lake Eyre basin in north-eastern South Australia.

**Etymology:** Named in reflection of the Latin derivative of its colour pattern (white spots or more commonly speckling) and the fact it is an agamid.

**Content:** *Ctenophorus (Leucomaculagama) gibba* (Houston, 1974) (monotypic).

#### SUBGENUS ARENICOLAGAMA SUBGEN. NOV.

**Type species:** *Amphibolurus salinarum* Storr, 1966.

**Diagnosis:** Specimens within the subgenus *Arenicolagama subgen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they remain a part of, by the following suite of characters:

Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 25, nostril is circular or broadly elliptical; no linear series of dark spots or blotches along each side of the tail; dorsal scalation heterogeneous, with numerous low, enlarged scales on the back and sides.

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer

than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** Drier parts of the interior and southern regions of Western Australia.

**Etymology:** Named in reflection of the sand dwelling nature of the component species and the fact it/they is/are an agamid.

**Content:** *Ctenophorus (Arenicolagama) salinarum* Storr, 1966 (type species); *C. (Arenicolagama) nguyarna* Doughty, Maryan, Melville and Austin, 2007.

#### SUBGENUS VALENAGAMA SUBGEN. NOV.

**Type species:** *Grammatophora reticulata* Gray, 1845.

**Diagnosis:** Specimens within the subgenus *Valenagama subgen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they remain a part of, by the following suite of characters:

Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region swollen, the nostril lying on or above the curved canthal ridge.

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest. The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** Drier parts of Australia except for the far south.

**Etymology:** Named in reflection of the stout build of the relevant species and that they are agamid lizards.

**Content:** *Ctenophorus (Valenagama) reticulatus* (Gray, 1845) (type species); *C. (Valenagama) nuchalis* (De Vis, 1884);

**SUBGENUS AURANTICOAGAMA SUBGEN. NOV.**

**Type species:** *Grammatophora isolepis* Fischer, 1881.

**Diagnosis:** *Phthanodon* Wells and Wellington, 1984 as defined by those authors, included species within this subgenus (*Aurantiacoagama subgen. nov.*). It is clearly the contention here, based on published molecular and morphological data as already cited herein, that the species within *Aurantiacoagama subgen. nov.* are sufficiently different and divergent as to qualify to be placed in their own taxonomic group and hence the erection of this subgenus, which is different to *Phthanodon* Wells and Wellington, 1984 as effectively redescribed above.

Specimens within the subgenus *Aurantiacoagama subgen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they remain a part of, by the following suite of characters, these being one or other of:

1/ Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching to eye or beyond when adpressed; tail usually much more than 1.5 times as long as the head and body; canthus rostralis angular or moderately swollen, but nostrils when viewed from above, face outwards (as opposed to upwards in the species *Ctenophorus (Tachyon) caudicinctus*); a distinct nuchal crest; a series of differentiated small or enlarged keeled scales form a distinct vertebral series along at least the anterior two-thirds of the body; dorsal, caudal and hindlimb scales homogeneous; a dark brown zig zag dorso-lateral streak along each side of the tail which is never banded (species *mckenziei* and *scutulatus*), or:

2/ Tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching to eye or beyond when adpressed; tail usually much more than 1.5 times as long as the head and body; canthus rostralis angular or moderately swollen, but nostrils when viewed from above, face outwards (as opposed to upwards in the species *Ctenophorus (Tachyon) caudicinctus*); at most a few enlarged keeled scales on the nape; a series of enlarged vertebral scales, if present, forming a distinct linear series only to about the level of the forelimbs; dorsal and even small dorso-lateral scales with distinct sharp central keels forming continuous ridges running obliquely towards the vertebral line; scales on the chest strongly keeled; pores more than 32 and extending more than halfway along the thigh; black on throat at least in the males; pre-anal pores arching forward to an apex on the midline; a single broad, undivided throat marking in males and black on the chest of males extends back to the abdomen (species *isolepis* and *rubens*).

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest. The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of

enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** Drier parts of the western two thirds of Australia south of the tropical zone.

**Etymology:** Named in reflection of the orangeish colouration of most specimens and the fact that they are an agamid.

**Content:** *Ctenophorus (Aurantiacoagama) isolepis* (Fischer, 1881) (type species); *C. (Aurantiacoagama) mckenziei* (Storr, 1981); *C. (Aurantiacoagama) rubens* (Storr, 1965); *C. (Aurantiacoagama) scutulatus* (Stirling and Zietz, 1893).

**SUBGENUS MEMBRUMVARIEGATAGAMA SUBGEN. NOV.**

**Type species:** *Amphibolurus pictus* Peters, 1866.

**Diagnosis:** Specimens within the subgenus *Membrumvariegatagama subgen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they remain a part of, by the following suite of characters:

Tympanum exposed, no series of enlarged, spinose scales on either side of the base of the tail; hindlimb usually reaching no further than the tympanum when adpressed; tail is usually less than 1.5 times as long as the head and body; nasal region not swollen, the nostril lying below and angular canthal ridge; pores more than 25; nostril is round in shape and facing outward in an enlarged nasal scale below the canthal ridge; no linear series of dark spots or blotches along each side of the tail; dorsal scalation is homogenous, without scattered enlarged scales on the back and sides.

*Ctenophorus* as defined until now (Cogger 2014) is defined by the following definition, modified to take into account the new genera as defined herein. *Ctenophorus* is defined as an Australian agamid genus characterised by small dorsal scales, homogenous or with at most slightly enlarged tubercles; a few species with distinct rows of paravertebral or dorsolateral spinose scales; a row of enlarged scales from below the eye to above the ear; tympanum exposed (not exposed in *Notactenophorus gen. nov.* and most *Pseudoctenophorus gen. nov.*); tail long, ranging from slightly to much longer than the head and body; femoral and preanal pores present in males; adult males usually with distinctive black or dark grey markings on the throat and/or chest.

The genus *Paractenophorus gen. nov.* is separated from *Ctenophorus*, *Notactenophorus gen. nov.* and *Pseudoctenophorus gen. nov.* by the following suite of characters: tympanum exposed; no series of enlarged, spinose scales on either side of the base of the tail; hindlimb reaching no further than the tympanum when adpressed; tail usually less than 1.5 times as long as the head and body; nasal region is not swollen, the nostril lying below an angular canthal ridge; pores fewer than 15; nostril is slit-like or narrowly elliptical.

Specimens within the genus *Pseudoctenophorus gen. nov.* are separated from all other *Ctenophorus* Fitzinger, 1843, the genus they

were placed in previously, by the following suite of characters, being one or other of the following three:

1/ Tympanum exposed; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Pseudoctenophorus subgen. nov.*), or:

2/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; a series of enlarged, spinose scales on either side of the base of the tail (subgenus *Chapmanagama subgen. nov.*), or:

3/ Tympanum hidden; covered by skin; body scales are strongly heterogeneous, many of the larger scales on the body and head keeled or moderately spinose; no series of enlarged, spinose scales on either side of the base of the tail (subgenus *Turnbullagama subgen. nov.*).

*Notactenophorus gen. nov.* is readily separated from all other members of the genus *Ctenophorus* (where it has been placed until now, as defined in Cogger 2014) and *Pseudoctenophorus gen. nov.*, by the following unique suite of characters: Tympanum is hidden being covered by skin, the body scales are smooth, mostly small, homogenous, with scattered larger but small, flat scales, not keeled or spinose, with a dorsal pattern of a longitudinal dorso-lateral series of five or six large black spots on either side.

**Distribution:** Drier parts of southern Australia within an area not including the red centre and regions anywhere near the west or east coasts.

**Etymology:** Named in reflection of the variegated patterning on the limbs and that they are an agamid group of lizards.

**Content:** *Ctenophorus (Membrumvariegatagama) pictus* (Peters, 1866) (type species); *C. (Membrumvariegatagama) dudleyi* (Wells and Wellington, 1985).

#### GENUS RANKINIA WELLS AND WELLINGTON, 1984.

**Type species:** *Grammatophora diemensis muricatus* Gray, 1841.

**Diagnosis:** Noting that Wells and Wellington were widely lampooned at the time they erected the genus, it is significant to note the test of time and new molecular technology not available to the pair in 1984, has validated their good judgement.

However the genus as conceived by the pair in 1984, has been modified by most authors since, to be monotypic for the species *Rankinia diemensis* Gray, 1841.

Dissenting again from that consensus has been Wells and Wellington, who in 1984, formally named the taxon *Rankinia boylani* to separate the Blue Mountains of NSW population from that of Tasmania (the nominate form of *diemensis*).

The published results of Ng *et al.* (2014) with supporting molecular data, not only supported the Wells and Wellington contention that their *Rankinia boylani* was in fact a valid species, but further that there were in fact four more valid species level taxa within the *Rankinia diemensis* species complex.

With names unavailable for four of these species, all six are formally defined herein, and separated from one another in the text that follows.

The genus *Rankinia* Wells and Wellington, 1984, is separated from all other Australian agamids by the following suite of characters:

Body is without very large conical spines or a spiny nuchal hump; no large skin frill around the neck; tail is not compressed and with a lateral keel, it does not have a strongly differentiated dorsal keel; a vertebral series of enlarged scales present or absent on the back; if present, three or more femoral pores present on each side; femoral pores present; a single row of spinose scales on sides of the base of the tail; lower edge of supralabials straight or at most slightly curved, forming a more or less straight or even edge to the upper lip; no row of enlarged scales from below eye to above ear; dorsal scales of body heterogeneous, but with either distinctive vertebral and paravertebral rows of enlarged, keeled or spinose scales and with a poorly developed nuchal crest (that varies in development between species), no dorsal crest and sometimes a distinct vertebral ridge; tympanum distinct; enlarged spinose scales along each side of the base of the tail.

Within the genus *Rankinia*, each of the six morphologically similar species are identified and separated from one another as follows: *Rankinia diemensis* (Gray, 1841), herein restricted to Tasmania and main Bass Strait Islands, is separated from the other five species by the following characters: the lateral spines running on each side from

the base of the tail are smaller than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above; there are distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are distinctive in that they are easily noticed. *Rankinia boylani* Wells and Wellington, 1984, herein restricted to NSW in the vicinity of the Sydney basin, including the Blue Mountains, as far west at Mount Victoria (the type locality), but presumed to include most other specimens of *Rankinia* from New South Wales north of Goulburn, is separated from the other five species by the following characters: the lateral spines running on each side from the base of the tail are considerably larger than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are not of even curvature when viewed from above, these being larger at the posterior edge; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are not distinctive in that they are easily not noticed.

*Rankinia neildaviei sp. nov.* herein confined to the Grampians in south-western Victoria, is separated from the other five species by the following characters: the dorsal spines on the anterior part of the tail are large; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the lighter dorso-linear blotches above the lateral flanks are all or mostly of even curvature when viewed from above; the banding on the hind limbs is distinct (as opposed to obvious banding that is indistinct in some other species in the genus, including *R. diemensis* and *R. boylani*).

*Rankinia hoserae sp. nov.* is the taxon found around Anglesea on the central Victorian coast and the highlands of central Victoria in scattered locations including Kinglake National Park and Wombat State Forest. It is separated from the other five species by the following characters: the hind legs have no obvious banding; exceptionally large spines on the upper body and in particular between the rear legs; some of the scale spines on the rear of the hind legs are either white or yellowish in colour; scales forming the nuchal crest are small, distinct and apart.

*Rankinia jameswhybrowi sp. nov.* is the species found in the hills just east of Lake Eildon, Victoria and in the ranges to the north of there. It is separated from the other five species by the following characters: the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above and noticeably elongate in shape and to an extent not seen in any of the other species; the tail is strongly banded, versus indistinctly banded in the other species; the nuchal crest is so poorly developed as to appear absent.

*Rankinia fergussonae sp. nov.* from Goonoo National Park, NSW is defined and separated from the other five species in the genus by the following: It is similar in most respects to *R. boylani*, from which it is differentiated by its more prominent nuchal crest scales (prominent versus very hard to see) and the presence of a well-developed white line along the lower lateral flank of the body on either side, which is indistinct in *R. boylani* and usually not white in colour, but light greyish instead or if whitish in *R. boylani*, is invariably broken.

**Distribution:** Uplands of south-eastern Australia, including suitable habitat on and near the coast, usually being rocky hills, or stony and sandy areas on associated plateaus. This includes eastern NSW from areas north of Sydney, through Victoria as far west as the Grampians, including Bass Strait islands and most of Tasmania, particularly the eastern half. The population from north-east of Dubbo in NSW (*Rankinia fergussonae sp. nov.*) appears to be an outlier population.

**Content:** *Rankinia diemensis* (Gray, 1841) (type species); *R. boylani* Wells and Wellington, 1984; *R. fergussonae sp. nov.*; *R. hoserae sp. nov.*; *R. jameswhybrowi sp. nov.*; *R. neildaviei sp. nov.*.

#### SPECIES RANKINIA DIEMENSIS (GRAY, 1841).

*See for genus (above).*

#### SPECIES RANKINIA BOYLANI WELLS AND WELLINGTON, 1984.

*See for genus above.*

#### SPECIES RANKINIA HOSERAE SP. NOV.

**Holotype:** Preserved specimen number D71911 held at the National Museum of Victoria in Melbourne, Australia, collected in 2004 at Anglesea, Victoria, Australia, Latitude -38.42, Longitude 144.18. This is a government owned facility that allows access to its holdings of specimens.

**Paratype:** A preserved specimen held at the Australian National Wildlife Collection (ANWC), in Canberra, ACT, Australia, specimen number: R02212 collected at Anglesea, Victoria, Australia, Latitude -

38.42, Longitude 144.18. This is a government owned facility that allows access to its holdings of specimens.

**Diagnosis:** Within the genus *Rankinia*, each of the six morphologically similar species are identified and separated from one another as follows:

*Rankinia hoserae* sp. nov. is the taxon found around Anglesea on the central Victorian coast and the highlands of central Victoria in scattered locations including Kinglake National Park and Wombat State Forest. It is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the hind legs have no obvious banding; exceptionally large spines on the upper body and in particular between the rear legs; some of the scale spines on the rear of the hind legs are either white or yellowish in colour; scales forming the nuchal crest are small, distinct and apart.

*Rankinia jameswhybrowi* sp. nov. is the species found in the hills just east of Lake Eildon, Victoria and in the ranges to the north of there. It is separated from the other five species of *Rankinia* Wells and Wellington, 1984 by the following characters: the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above and noticeably elongate in shape and to an extent not seen in any of the other species; the tail is strongly banded, versus indistinctly banded in the other species; the nuchal crest is so poorly developed as to appear absent.

*Rankinia diemensis* (Gray, 1841), herein restricted to Tasmania and Bass Strait Islands, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the lateral spines running on each side from the base of the tail are smaller than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above; there are distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are distinctive in that they are easily noticed.

*Rankinia boylani* Wells and Wellington, 1984, herein restricted to NSW in the vicinity of the Sydney basin, including the Blue Mountains, as far west as Mount Victoria (the type locality), but presumed to include most other specimens of *Rankinia* from New South Wales north of Goulburn, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the lateral spines running on each side from the base of the tail are considerably larger than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are not of even curvature when viewed from above, these being larger at the posterior edge; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are not distinctive in that they are easily not noticed.

*Rankinia neildaviei* sp. nov. herein confined to the Grampians in south-western Victoria, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the dorsal spines on the anterior part of the tail are large; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the lighter dorso-linear blotches above the lateral flanks are all or mostly of even curvature when viewed from above; the banding on the hind limbs is distinct (as opposed to obvious banding that is indistinct in some other species in the genus, including *R. diemensis* and *R. boylani*).

*Rankinia fergussonae* sp. nov. from Goonoo National Park, NSW is defined and separated from the other five species in the genus *Rankinia* Wells and Wellington, 1984 by the following: It is similar in most respects to *R. boylani*, from which it is differentiated by its more prominent nuchal crest scales (prominent versus very hard to see) and the presence of a well-developed white line along the lower lateral flank of the body on either side, which is indistinct in *R. boylani* and usually not white in colour, but light greyish instead or if whitish in *R. boylani*, is invariably broken.

The genus *Rankinia* Wells and Wellington, 1984, is separated from all other Australian agamids by the following suite of characters:

Body is without very large conical spines or a spiny nuchal hump; no large skin frill around the neck; tail is not compressed and with a lateral keel, it does not have a strongly differentiated dorsal keel; a vertebral series of enlarged scales present or absent on the back; if present, three or more femoral pores present on each side; femoral pores present; a single row of spinose scales on sides of the base of the tail; lower edge of supralabials straight or at most slightly curved, forming a more or less straight or even edge to the upper lip; no row of enlarged scales from below eye to above ear; dorsal scales of body

heterogeneous, but with either distinctive vertebral and paravertebral rows of enlarged, keeled or spinose scales and with a poorly developed nuchal crest (that varies in development between species), no dorsal crest and sometimes a distinct vertebral ridge; tympanum distinct; enlarged spinose scales along each side of the base of the tail.

**Distribution:** Central Victoria, in scattered locations of suitable habitat in conservation reserves, including near Anglesea to the south-west of Melbourne, Wombat State Forest, near Bacchus Marsh, about 50 km west, north-west of Melbourne and Kinglake National Park about 50 km north, north-east of Melbourne, the three locations each representing significantly different climatic zones.

**Etymology:** Named in honour of my wife, Shireen Hoser in recognition of her massive contribution to herpetology on a global scale over nearly two decades.

**SPECIES RANKINIA JAMESWHYBROWI SP. NOV.**

**Holotype:** A female preserved specimen number: D71904 collected in 2004 at the Big River State Forest, Victoria, 200 metres south of the confluence of Taponga River and White Creek, Latitude -37.37, Longitude 146.05, held at the National Museum of Victoria in Melbourne, Australia.

This is a government facility that allows access to its holdings.

**Diagnosis:** Within the genus *Rankinia*, each of the six morphologically similar species are identified and separated from one another as follows:

*Rankinia jameswhybrowi* sp. nov. is the species found in the hills just east of Lake Eildon, Victoria and in the ranges to the north of there. It is separated from the other five species of *Rankinia* Wells and Wellington, 1984 by the following characters: the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above and noticeably elongate in shape and to an extent not seen in any of the other species; the tail is strongly banded, versus indistinctly banded in the other species; the nuchal crest is so poorly developed as to appear absent.

*Rankinia diemensis* (Gray, 1841), herein restricted to Tasmania and Bass Strait Islands, is separated from the other five species by the following characters: the lateral spines running on each side from the base of the tail are smaller than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above; there are distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are distinctive in that they are easily noticed.

*Rankinia boylani* Wells and Wellington, 1984, herein restricted to NSW in the vicinity of the Sydney basin, including the Blue Mountains, as far west as Mount Victoria (the type locality), but presumed to include most other specimens of *Rankinia* from New South Wales north of Goulburn, is separated from the other five species by the following characters: the lateral spines running on each side from the base of the tail are considerably larger than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are not of even curvature when viewed from above, these being larger at the posterior edge; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are not distinctive in that they are easily not noticed.

*Rankinia neildaviei* sp. nov. herein confined to the Grampians in south-western Victoria, is separated from the other five species by the following characters: the dorsal spines on the anterior part of the tail are large; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the lighter dorso-linear blotches above the lateral flanks are all or mostly of even curvature when viewed from above; the banding on the hind limbs is distinct (as opposed to obvious banding that is indistinct in some other species in the genus, including *R. diemensis* and *R. boylani*).

*Rankinia hoserae* sp. nov. is the taxon found around Anglesea on the central Victorian coast and the highlands of central Victoria in scattered locations including Kinglake National Park and Wombat State Forest. It is separated from the other five species by the following characters: the hind legs have no obvious banding; exceptionally large spines on the upper body and in particular between the rear legs; some of the scale spines on the rear of the hind legs are either white or yellowish in colour; scales forming the nuchal crest are small, distinct and apart.

*Rankinia fergussonae* sp. nov. from Goonoo National Park, NSW is defined and separated from the other five species in the genus by the



following: It is similar in most respects to *R. boylani*, from which it is differentiated by its more prominent nuchal crest scales (prominent versus very hard to see) and the presence of a well-developed white line along the lower lateral flank of the body on either side, which is indistinct in *R. boylani* and usually not white in colour, but light greyish instead or if whitish in *R. boylani*, is invariably broken.

The genus *Rankinia* Wells and Wellington, 1984, is separated from all other Australian agamids by the following suite of characters:

Body is without very large conical spines or a spiny nuchal hump; no large skin frill around the neck; tail is not compressed and with a lateral keel, it does not have a strongly differentiated dorsal keel; a vertebral series of enlarged scales present or absent on the back; if present, three or more femoral pores present on each side; femoral pores present; a single row of spinose scales on sides of the base of the tail; lower edge of supralabials straight or at most slightly curved, forming a more or less straight or even edge to the upper lip; no row of enlarged scales from below eye to above ear; dorsal scales of body heterogeneous, but with either distinctive vertebral and paravertebral rows of enlarged, keeled or spinose scales and with a poorly developed nuchal crest (that varies in development between species), no dorsal crest and sometimes a distinct vertebral ridge; tympanum distinct; enlarged spinose scales along each side of the base of the tail.

**Distribution:** Known from the ranges east of Lake Eildon and north-east of there, presumably to or beyond the NSW border, where pockets of suitable habitat exists.

**Etymology:** Named in honour of James Whybrow, aged 10 in 2015, son of Pete Whybrow and Judy Fergusson of Taggerty, Victoria, Australia in recognition to his already significant contributions to herpetology and the music industry. In spite of his youth, James plays concerts with various instruments in pubs, clubs and hotels on a regular basis to an ever expanding fan base and forever advocating the causes of animal welfare and wildlife conservation, proving that it is possible to achieve stardom in Australia without having to attack and torment animals in unspeakable acts of cruelty for TV audiences and at the same time yell "crikey" so done by the Irwin family of Queensland.

#### **SPECIES RANKINIA NEILDAVIEI SP. NOV.**

**Holotype:** A preserved specimen at the South Australian Museum, Adelaide, Australia, specimen number: R3190, collected at Mount William in the Grampians, Victoria, Latitude -37.30, Longitude 142.60. The South Australian Museum in Adelaide, Australia is a government owned facility that allows access to its specimens.

**Diagnosis:** Within the genus *Rankinia*, each of the six morphologically similar species are identified and separated from one another as follows:

*Rankinia neildaviei* sp. nov. herein confined to the Grampians in south-western Victoria, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the dorsal spines on the anterior part of the tail are large; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the lighter dorso-linear blotches above the lateral flanks are all or mostly of even curvature when viewed from above; the banding on the hind limbs is distinct (as opposed to obvious banding that is indistinct in some other species in the genus, including *R. diemensis* and *R. boylani*).

*Rankinia hoseri* sp. nov. is the taxon found around Anglesea on the central Victorian coast and the highlands of central Victoria in scattered locations including Kinglake National Park and Wombat State Forest. It is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the hind legs have no obvious banding; exceptionally large spines on the upper body and in particular between the rear legs; some of the scale spines on the rear of the hind legs are either white or yellowish in colour; scales forming the nuchal crest are small, distinct and apart.

*Rankinia jameswhybrowi* sp. nov. is the species found in the hills just east of Lake Eildon, Victoria and in the ranges to the north of there. It is separated from the other five species of *Rankinia* Wells and Wellington, 1984 by the following characters: the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above and noticeably elongate in shape and to an extent not seen in any of the other species; the tail is strongly banded, versus indistinctly banded in the other species; the nuchal crest is so poorly developed as to appear absent.

*Rankinia diemensis* (Gray, 1841), herein restricted to Tasmania and

Bass Strait Islands, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the lateral spines running on each side from the base of the tail are smaller than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above; there are distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are distinctive in that they are easily noticed.

*Rankinia boylani* Wells and Wellington, 1984, herein restricted to NSW in the vicinity of the Sydney basin, including the Blue Mountains, as far west as Mount Victoria (the type locality), but presumed to include most other specimens of *Rankinia* from New South Wales north of Goulburn, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the lateral spines running on each side from the base of the tail are considerably larger than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are not of even curvature when viewed from above, these being larger at the posterior edge; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are not distinctive in that they are easily not noticed.

*Rankinia fergussonae* sp. nov. from Goonoo National Park, NSW is defined and separated from the other five species in the genus *Rankinia* Wells and Wellington, 1984 by the following: It is similar in most respects to *R. boylani*, from which it is differentiated by its more prominent nuchal crest scales (prominent versus very hard to see) and the presence of a well-developed white line along the lower lateral flank of the body on either side, which is indistinct in *R. boylani* and usually not white in colour, but light greyish instead or if whitish in *R. boylani*, is invariably broken.

The genus *Rankinia* Wells and Wellington, 1984, is separated from all other Australian agamids by the following suite of characters:

Body is without very large conical spines or a spiny nuchal hump; no large skin frill around the neck; tail is not compressed and with a lateral keel, it does not have a strongly differentiated dorsal keel; a vertebral series of enlarged scales present or absent on the back; if present, three or more femoral pores present on each side; femoral pores present; a single row of spinose scales on sides of the base of the tail; lower edge of supralabials straight or at most slightly curved, forming a more or less straight or even edge to the upper lip; no row of enlarged scales from below eye to above ear; dorsal scales of body heterogeneous, but with either distinctive vertebral and paravertebral rows of enlarged, keeled or spinose scales and with a poorly developed nuchal crest (that varies in development between species), no dorsal crest and sometimes a distinct vertebral ridge; tympanum distinct; enlarged spinose scales along each side of the base of the tail.

**Distribution:** Believed to only occur in the Grampians of Western Victoria. The area is a conservation national park and so the population is believed to be safe. It is however effectively surrounded by agricultural land. Furthermore the ability of the government wildlife department of Victoria to kill wildlife is legendary and with the current administration, few, if any species of reptile with limited distribution in Victoria could be deemed safe.

**Etymology:** Named in honour of Neil Davie, deceased in late June or early July 2015, who died suddenly at his home at Lara (near Geelong) in Victoria, Australia at age 61 (or thereabouts), for services to herpetology. He founded the Victorian Association of Amateur Herpetologists (VAAH) in the 1990's at a time when private herpetologists were under siege from the business entity called Melbourne Zoo, part of a larger outfit known now as "Zoos Victoria", a dysfunctional government-run business enterprise.

This business was in turn owned and controlled by the State Wildlife Department which has undergone no less than nine separate name changes (rebranding) over the previous two decades.

In order to remove any business or person they saw as a potential competitor to their business, the wildlife department sought to outlaw private reptile keeping in Victoria, private businesses doing wildlife displays in schools and the like.

The business "Zoos Victoria" wanted (and as of 2015 still does seek) to be the only business in Victoria allowed to work with wildlife in any way and so have a government backed monopoly on their business, including wildlife display tourism, school wildlife incursions or excursions and even doing children's birthday parties with wildlife. Neil Davie and through his aggressive mobilization of others through

the VAAH successfully stopped the plans of the State Wildlife Department so that as of 2015, herpetologists in Victoria outside of the government octopus can still work with their reptiles, albeit under ever changing licensing conditions.

The over 10,000 private reptile keepers in Victoria who remain allowed to keep and study their pet snakes, lizards and other reptiles owe a debt of gratitude to Neil Davie and so it is fitting that a Victorian species of reptile be named in his honour.

It should also be added that the knock-on effect of his actions in other states have also greatly assisted the wildlife conservation and research effort far beyond the boundaries of Victoria, Australia.

#### **SPECIES RANKINIA FERGUSSONAE SP. NOV.**

**Holotype:** A preserved specimen number R151561 at the Australian Museum in Sydney, NSW, Australia, collected at Goonoo State Forest, near Samuels Dam, Latitude -32.05, Longitude 148.90. This is a location near Dubbo, central western, NSW, Australia.

The Australian Museum in Sydney, NSW, Australia is a government-owned facility that allows inspection of its holdings.

**Diagnosis:** Within the genus *Rankinia*, each of the six morphologically similar species are identified and separated from one another as follows:

*Rankinia fergussonae* sp. nov. from Goonoo National Park, NSW is defined and separated from the other five species in the genus *Rankinia* Wells and Wellington, 1984 by the following: It is similar in most respects to *R. boylani*, (see below), which it would otherwise key as using the information herein, however it is differentiated from *R. boylani* by its more prominent nuchal crest scales (prominent versus very hard to see) and the presence of a well-developed white line along the lower lateral flank of the body on either side, which is indistinct in *R. boylani* and usually not white in colour, but light greyish instead or if whitish in *R. boylani*, is invariably broken.

*Rankinia neildaviei* sp. nov. herein confined to the Grampians in south-western Victoria, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the dorsal spines on the anterior part of the tail are large; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the lighter dorso-linear blotches above the lateral flanks are all or mostly of even curvature when viewed from above; the banding on the hind limbs is distinct (as opposed to obvious banding that is indistinct in some other species in the genus, including *R. diemensis* and *R. boylani*).

*Rankinia hoserae* sp. nov. is the taxon found around Anglesea on the central Victorian coast and the highlands of central Victoria in scattered locations including Kinglake National Park and Wombat State Forest. It is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the hind legs have no obvious banding; exceptionally large spines on the upper body and in particular between the rear legs; some of the scale spines on the rear of the hind legs are either white or yellowish in colour; scales forming the nuchal crest are small, distinct and apart.

*Rankinia jameswhybrowi* sp. nov. is the species found in the hills just east of Lake Eildon, Victoria and in the ranges to the north of there. It is separated from the other five species of *Rankinia* Wells and Wellington, 1984 by the following characters: the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above and noticeably elongate in shape and to an extent not seen in any of the other species; the tail is strongly banded, versus indistinctly banded in the other species; the nuchal crest is so poorly developed as to appear absent.

*Rankinia diemensis* (Gray, 1841), herein restricted to Tasmania and Bass Strait Islands, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the lateral spines running on each side from the base of the tail are smaller than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are of even curvature when viewed from above; there are distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are distinctive in that they are easily noticed.

*Rankinia boylani* Wells and Wellington, 1984, herein restricted to NSW in the vicinity of the Sydney basin, including the Blue Mountains, as far west as Mount Victoria (the type locality), but presumed to include most other specimens of *Rankinia* from New South Wales north of Goulburn, is separated from the other five species in *Rankinia* Wells and Wellington, 1984 by the following characters: the lateral spines running on each side from the base of the tail are considerably

larger than the lateral spines along the sides of the body; the lighter dorso-linear blotches above the lateral flanks are not of even curvature when viewed from above, these being larger at the posterior edge; there are no distinct white-tipped spines on the posterior lateral edge of the back legs; the spines of the nuchal crest are not distinctive in that they are easily not noticed.

See also for *Rankinia fergussonae* sp. nov. above in terms of separating the morphologically similar *Rankinia boylani* Wells and Wellington, 1984 and *Rankinia fergussonae* sp. nov..

The genus *Rankinia* Wells and Wellington, 1984, is separated from all other Australian agamids by the following suite of characters:

Body is without very large conical spines or a spiny nuchal hump; no large skin frill around the neck; tail is not compressed and with a lateral keel, it does not have a strongly differentiated dorsal keel; a vertebral series of enlarged scales present or absent on the back; if present, three or more femoral pores present on each side; femoral pores present; a single row of spinose scales on sides of the base of the tail; lower edge of supralabials straight or at most slightly curved, forming a more or less straight or even edge to the upper lip; no row of enlarged scales from below eye to above ear; dorsal scales of body heterogeneous, but with either distinctive vertebral and paravertebral rows of enlarged, keeled or spinose scales and with a poorly developed nuchal crest (that varies in development between species), no dorsal crest and sometimes a distinct vertebral ridge; tympanum distinct; enlarged spinose scales along each side of the base of the tail.

**Distribution:** So far this taxon is known only from Goonoo State Forest, near Samuels Dam, Latitude -2.05, Longitude 148.90. This is a location near Dubbo, central western, NSW, Australia.

**Etymology:** Named in honour of Judy Fergusson, long term defacto wife of Peter Whybrow and mother (and father) of James Whybrow (see above), of Taggerty, Victoria, Australia in recognition of a huge contribution to herpetology over some decades. She has also done vital work in the fields of wildlife rescue and rehabilitation, including for rare and endangered species and in the face of enormous government-imposed obstacles.

#### **GENUS DIPORIPHORA GRAY, 1842.**

**Type species:** *Diporiphora bilineata* Gray, 1842.

**Diagnosis:** The genus *Diporiphora* Gray, 1842 is defined and separated from all other Australian lizard genera by the following suite of characters: Body is without large conical spines or a spiny nuchal hump; there is no large frill around the neck; femoral and/or preanal pores are present, at least in males; the tail is not strongly compressed and lacks a strongly differentiated dorsal keel; there is usually no vertebral series of enlarged scales on the back, but if present there are only 0-2 femoral pores on each side.

*Jackyhosersaur* Hoser, 2013, monotypic for the species originally described as "*Diporiphora superba* Storr, 1974" and until recently included within the genus *Diporiphora* as just described above, is readily separated from all *Diporiphora* Gray, 1842, on the basis of the following suite of characters: Keels of the dorsal scales are parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; no gular fold; no indication of spines or a fold behind the ear; usually greenish or greenish yellow above, yellow below and without pale dorsolateral stripes; there is sometimes a brown vertebral stripe present; the adpressed hind limb reaches about the eye; the hindlimb is about 70-100 per cent of the snout-vent length, the tail about 300 to 400 percent of the snout-vent length; there are four preanal pores.

Cogger (2014) claims 21 species in the genus *Diporiphora* (including the species "*Diporiphora superba*" treated by him as a species of *Diporiphora*), but he notes that the total number given is less than the actual diversity.

Wells and Wellington (1984 and 1985) dissected the genus along obvious phylogenetic lines using existing nomenclature or erecting names for groups that lacked any.

While their classification has been effectively unused since published, as the size of the genus expands, it is appropriate that subgenera be named and recognized, to identify obvious phyletic groups.

The only remaining taxon within *Diporiphora* as recognized herein not appropriately placed in any subgenus is the species *Diporiphora reginae* Glauert, 1959 and it is placed in a newly named subgenus herein called *Pailsagama* gen. nov..

Of the 21 species of *Diporiphora* claimed by Cogger (2014), widely

recognized in herpetology in Australia as of 2015, only three are relevant to this paper in terms of the species descriptions herein. These are:

*Diporiphora bilineata* Gray, 1842; *D. lalliae* Storr, 1974 and *D. magna* Storr, 1974.

These are defined within this paper within the context of the descriptions of the other newly named taxa and that resurrected from synonymy to enable readers to be able to identify and diagnose the relevant species.

#### SUBGENUS *PAILSAGAMA* SUBGEN. NOV.

**Type species:** *Diporiphora reginae* Glauert, 1959.

**Diagnosis:** The subgenus *Pailsagama* subgen. nov. is readily separated from all other *Diporiphora* by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are strongly keeled; the chin shields are smooth; gular fold is present; dorsal scales are homogeneous being more or less equal in size; posterior lateral (flank) scales in rows which are aligned upwards and backwards, converging on the dorsals; usually little or no indication of post-auricular fold or spines; a femoral pore on each side.

Preanal pores may or may not be present.

This subgenus is within the genus *Diporiphora* Gray, 1842.

The genus *Diporiphora* is defined and separated from all other Australian lizard genera by the following suite of characters: Body is without large conical spines or a spiny nuchal hump; there is no large frill around the neck; femoral and/or preanal pores are present, at least in males; the tail is not strongly compressed and lacks a strongly differentiated dorsal keel; there is usually no vertebral series of enlarged scales on the back, but if present there are only 0-2 femoral pores on each side.

*Jackyhosersaur* Hoser, 2013, monotypic for the species originally described as "*Diporiphora superba* Storr, 1974" and until recently included within the genus *Diporiphora* as just described above, is readily separated from all *Diporiphora* Gray, 1842, on the basis of the following suite of characters: Keels of the dorsal scales are parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; no gular fold; no indication of spines or a fold behind the ear; usually greenish or greenish yellow above, yellow below and without pale dorsolateral stripes; there is sometimes a brown vertebral stripe present; the adpressed hind limb reaches about the eye; the hindlimb is about 70-100 per cent of the snout-vent length, the tail about 300 to 400 percent of the snout-vent length; there are four preanal pores.

Cogger (2014) claims 21 species in the genus *Diporiphora* (including the species "*Diporiphora superba*" treated by him as a species of *Diporiphora*), but he notes that the total number given is less than the actual diversity.

Wells and Wellington (1984 and 1985) dissected the genus along obvious phylogenetic lines using existing nomenclature or erecting names for groups that lacked any.

While their classification has been effectively unused since published, as the size of the genus expands, it is appropriate that subgenera be named and recognized, to identify obvious phyletic groups.

**Distribution:** Southern interior of Western Australia, Australia.

**Etymology:** Named in honour of Roy Pails of Ballarat, Victoria, Australia in recognition of services to herpetology spanning some decades.

#### SPECIES *DIPORIPHORA BILINEATA* GRAY, 1842.

**Diagnosis:** The species *Diporiphora bilineata* Gray, 1842 and *Diporiphora jugularis* (Macleay, 1877) are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; some indication of a dorsolateral row of slightly enlarged, keeled scales.

The species *Diporiphora bilineata* Gray, 1842 is separated from *Diporiphora jugularis* (Macleay, 1877) by the fact that the nuchal crest is prominent in males, versus small in the latter species. *D. bilineata* occurs in the north of the Northern Territory while *D. jugularis* occurs in drier parts of the lower western side of Cape York Peninsula Queensland.

The species *Diporiphora magna* Storr, 1974 and taxa formerly treated as being a part of the species, namely *D. melvilleae* sp. nov., *D. smithae* sp. nov., *D. shooi* sp. nov., *D. harmoni* sp. nov. and *D. garrodi* sp. nov. are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; a long strong fold behind the ear, or if the fold is short or weak, the species group are identified by the following unique suite of characters being: at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; dorsal scales are homogeneous, without any indication of a dorso-lateral row of slightly enlarged keeled scales.

The species *D. melvilleae* sp. nov. from dry tropical parts of Western Queensland is readily separated from the other four species by the fact that males have a small relatively indistinct nuchal crest.

They are further defined and separated from the other species by their dorsolateral lines which are grey in colour.

The species *D. harmoni* sp. nov. from the North West Kimberley Coast, Western Australia is readily separated from the other four species by the strongly developed nuchal crest in males and a very strong body patterning in both sexes.

Both *D. smithae* sp. nov. and *D. shooi* sp. nov. from the Northern Territory are characterised by a relatively indistinct level of patterning on the body and tail and usually orange dorsolateral lines, versus a distinct patterning in the other forms. *D. smithae* sp. nov. and *D. shooi* sp. nov. also have different body patterns from one another. Included in this is the fact that the species *D. shooi* sp. nov. from the central west of the upper Northern Territory is characterised and separated from *D. smithae* sp. nov. of the central east of the upper Northern Territory by the presence of a dark blackish temporal streak running through the eye to the snout.

Adult male *D. shooi* sp. nov. are characterised by a very strong yellow colouration on the venter, versus light yellow or absent in *D. smithae* sp. nov.

Nominate *D. bilineata* from the central and East Kimberley in Western Australia and the Victoria River region of the Northern Territory is characterised by (in life) yellow dorsolateral lines which have none or little other colouration visible on the lines running down the body (proper). The phenotypically similar specimens from western Queensland, herein described as *D. melvilleae* sp. nov. by contrast (in life) have obvious colouration running through the dorsolateral lines, this being the other body markings.

These lines are also greyish in *D. melvilleae* sp. nov.

Male *D. bilineata* are further defined and separated from the other species in the group by the fact that the blackish region above the front leg extends to cover almost the entire upper arm, giving it a distinctive black appearance.

*D. garrodi* sp. nov. from the Tunnel Creek National Park of the southern Kimberley region in Western Australia, while similar in most respects to *D. harmoni* sp. nov., is readily separated from the other species by a partially developed gular fold which runs as a fold between the region behind the ear to the top of the leg, then slightly further, but not as a full gular fold that would be seen meeting in the middle of the gular region, as well as a small number distinctive dark flecks on the lower gular region (just above where the fold would otherwise be), as opposed to a smudge-like appearance (of darkish pigment) in the lower gular region as seen in others in the species group.

Adult male *D. garrodi* sp. nov. are characterized and separated from the other species (in life) by their colouration, which includes a yellow wash through the upper labial region, prominent but unusually thin, dorsolateral-stripes being white anterior to past the dark blotch above the front legs, then rapidly turning yellow for the rest of the body length to the pelvis (versus yellow for the entire length in *D. magna*), whereupon the stripes stop and then reform along the tail as a broken grey line, with the rest of the tail being a bright light orange flush in colour. Any markings on the tail are so indistinct as to appear absent and there are little if any ventral markings, or if present are indistinct.

*D. garrodi* sp. nov. is only known from the type locality being the Tunnel Creek National Park, which sits about 100 km south of the main part of the Kimberley Ranges, the relevant part being the King Leopold Ranges.

The species *Diporiphora lalliae* Storr, Storr, 1974 and *Diporiphora nolani* sp. nov. are separated from all others in the genus by the

following suite of characters: Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold present; dorsal scales are homogeneous and more or less equal in size; posterior lateral (flank) scales in rows which are aligned more or less parallel to the dorsals; no femoral pores.

The species *Diporiphora lalliae* Storr, Storr, 1974 is readily separated from *Diporiphora nolani* sp. nov. by the presence of only a weak postauricular fold. By contrast *D. nolani* sp. nov. has a strong and spiny postauricular fold. Furthermore the dorsal patterning in *D. nolani* sp. nov. is well defined and the dark brown squarish blotches running down the back are also well defined.

By contrast in *D. lalliae* the dorsal pattern, while similar, is generally poorly defined. The same applies for the tail, in that the lighter and darker sections are indistinct, whereas in *D. nolani* sp. nov. it is well defined with alternating dark reddish brown and light grey sections presented in a ring-like manner, the darker ones being larger and largest ventrally (with dark and light appearing as triangles when the tail is viewed side on).

**Distribution:** *D. bilineata* is restricted to the central area of the top end of the Northern Territory, Australia.

**SPECIES DIPORIPHORA JUGULARIS (MACLEAY, 1877).**

**Diagnosis:** See the description for *D. bilineata* Gray, 1842 above.

**Distribution:** Lower west of Cape York, Queensland, Australia.

**SPECIES DIPORIPHORA MAGNA STORR, 1974.**

**Diagnosis:** See the description for *D. bilineata* Gray, 1842 above.

**Distribution:** Lower west of Cape York, Queensland, Australia.

**SPECIES DIPORIPHORA LALLIAE STORR, 1974.**

**Diagnosis:** See the description for *D. bilineata* Gray, 1842 above.

**Distribution:** Southern Kimberley region of Western Australia.

**SPECIES DIPORIPHORA MELVILLEAE SP. NOV.**

**Holotype:** A specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number: D74063 collected from the Bourke and Wills Roadhouse, Northwest Queensland, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Paratypes:** Specimens at the National Museum of Victoria, in Melbourne, Australia, specimen numbers: D74064, D74066 and D74065 collected from the Bourke and Wills Roadhouse, Northwest Queensland, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Diagnosis:** The species *Diporiphora bilineata* Gray, 1842 and *Diporiphora jugularis* (Macleay, 1877) are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; some indication of a dorsolateral row of slightly enlarged, keeled scales.

The species *Diporiphora bilineata* Gray, 1842 is separated from *Diporiphora jugularis* (Macleay, 1877) by the fact that the nuchal crest is prominent in males, versus small in the latter species. *D. bilineata* occurs in the north of the Northern Territory while *D. jugularis* occurs in drier parts of the lower western side of Cape York Peninsula Queensland.

The species *Diporiphora magna* Storr, 1974 and taxa formerly treated as being a part of the species, namely *D. melvilleae* sp. nov., *D. smithae* sp. nov., *D. shooi* sp. nov., *D. harmoni* sp. nov. and *D. garrodi* sp. nov. are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; a long strong fold behind the ear, or if the fold is short or weak, the species group are identified by the following unique suite of characters being: at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; dorsal scales are homogeneous, without any indication of a dorso-lateral row of slightly enlarged keeled scales.

The species *D. melvilleae* sp. nov. from dry tropical parts of Western Queensland is readily separated from the other four species by the fact that males have a small relatively indistinct nuchal crest.

They are further defined and separated from the other species by their dorsolateral lines which are grey in colour.

The species *D. harmoni* sp. nov. from the North West Kimberley Coast, Western Australia is readily separated from the other four species by the strongly developed nuchal crest in males and a very strong body patterning in both sexes.

Both *D. smithae* sp. nov. and *D. shooi* sp. nov. from the Northern Territory are characterised by a relatively indistinct level of patterning on the body and tail and usually orange dorsolateral lines, versus a distinct patterning in the other forms. *D. smithae* sp. nov. and *D. shooi* sp. nov. also have different body patterns from one another. Included in this is the fact that the species *D. shooi* sp. nov. from the central west of the upper Northern Territory is characterised and separated from *D. smithae* sp. nov. of the central east of the upper Northern Territory by the presence of a dark blackish temporal streak running through the eye to the snout. This is not the case in *D. smithae* sp. nov..

Adult male *D. shooi* sp. nov. are characterised by a very strong yellow colouration on the venter, versus light yellow or absent in *D. smithae* sp. nov..

Nominate *D. bilineata* from the central and East Kimberley in Western Australia and the Victoria River region of the Northern Territory is characterised by (in life) yellow dorsolateral lines which have none or little other colouration visible on the lines running down the body (proper). The phenotypically similar specimens from western Queensland, herein described as *D. melvilleae* sp. nov. by contrast (in life) have obvious colouration running through the dorsolateral lines, this being the other body markings.

These lines are also greyish in *D. melvilleae* sp. nov..

Male *D. bilineata* are further defined and separated from the other species in the group by the fact that the blackish region above the front leg extends to cover almost the entire upper arm, giving it a distinctive black appearance.

*D. garrodi* sp. nov. from the Tunnel Creek National Park of the southern Kimberley region in Western Australia, while similar in most respects to *D. harmoni* sp. nov., is readily separated from the other species by a partially developed gular fold which runs as a fold between the region behind the ear to the top of the leg, then slightly further, but not as a full gular fold that would be seen meeting in the middle of the gular region, as well as a small number distinctive dark flecks on the lower gular region (just above where the fold would otherwise be), as opposed to a smudge-like appearance (of darkish pigment) in the lower gular region as seen in others in the species group.

Adult male *D. garrodi* sp. nov. are characterized and separated from the other species (in life) by their colouration, which includes a yellow wash through the upper labial region, prominent but unusually thin, dorsolateral-stripes being white anterior to past the dark blotch above the front legs, then rapidly turning yellow for the rest of the body length to the pelvis (versus yellow for the entire length in *D. magna*), whereupon the stripes stop and then reform along the tail as a broken grey line, with the rest of the tail being a bright light orange flush in colour. Any markings on the tail are so indistinct as to appear absent and there are little if any ventral markings, or if present are indistinct.

*D. garrodi* sp. nov. is only known from the type locality being the Tunnel Creek National Park, which sits about 100 km south of the main part of the Kimberley Ranges, the relevant part being the King Leopold Ranges.

The species *Diporiphora lalliae* Storr, Storr, 1974 and *Diporiphora nolani* sp. nov. are separated from all others in the genus by the following suite of characters: Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold present; dorsal scales are homogeneous and more or less equal in size; posterior lateral (flank) scales in rows which are aligned more or less parallel to the dorsals; no femoral pores.

The species *Diporiphora lalliae* Storr, Storr, 1974 is readily separated from *Diporiphora nolani* sp. nov. by the presence of only a weak postauricular fold. By contrast *D. nolani* sp. nov. has a strong and spiny postauricular fold. Furthermore the dorsal patterning in *D. nolani* sp. nov. is well defined and the dark brown squarish blotches running down the back are also well defined.

By contrast in *D. lalliae* the dorsal pattern, while similar, is generally poorly defined. The same applies for the tail, in that the lighter and darker sections are indistinct, whereas in *D. nolani* sp. nov. it is well

defined with alternating dark reddish brown and light grey sections presented in a ring-like manner, the darker ones being larger and largest ventrally (with dark and light appearing as triangles when the tail is viewed side on).

**Distribution:** Known only from Queensland, Australia in the savannah region west of Mount Isa, Queensland, northwards to the Gulf of Carpentaria and including range areas within.

**Etymology:** The species is named in honour of Jane Melville, currently of Melbourne, Australia in recognition of her work on the very species subject of this paper.

**SPECIES DIPORIPHORA SMITHAE SP. NOV.**

**Holotype:** A specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number: D74015 collected from Larrimah, Northern Territory, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Paratypes:** Specimens at the National Museum of Victoria, in Melbourne, Australia, specimen numbers: D74010, 74019, 74020 and D D74016 collected from Larrimah, Northern Territory, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Diagnosis:** The species *Diporiphora bilineata* Gray, 1842 and *Diporiphora jugularis* (Macleay, 1877) are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; some indication of a dorsolateral row of slightly enlarged, keeled scales.

The species *Diporiphora bilineata* Gray, 1842 is separated from *Diporiphora jugularis* (Macleay, 1877) by the fact that the nuchal crest is prominent in males, versus small in the latter species. *D. bilineata* occurs in the north of the Northern Territory while *D. jugularis* occurs in drier parts of the lower western side of Cape York Peninsula Queensland.

The species *Diporiphora magna* Storr, 1974 and taxa formerly treated as being a part of the species, namely *D. melvilleae* sp. nov., *D. smithae* sp. nov., *D. shooi* sp. nov., *D. harmoni* sp. nov. and *D. garrodi* sp. nov. are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; a long strong fold behind the ear, or if the fold is short or weak, the species group are identified by the following unique suite of characters being: at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; dorsal scales are homogeneous, without any indication of a dorso-lateral row of slightly enlarged keeled scales.

The species *D. melvilleae* sp. nov. from dry tropical parts of Western Queensland is readily separated from the other four species by the fact that males have a small relatively indistinct nuchal crest.

They are further defined and separated from the other species by their dorsolateral lines which are grey in colour.

The species *D. harmoni* sp. nov. from the North West Kimberley Coast, Western Australia is readily separated from the other four species by the strongly developed nuchal crest in males and a very strong body patterning in both sexes.

Both *D. smithae* sp. nov. and *D. shooi* sp. nov. from the Northern Territory are characterised by a relatively indistinct level of patterning on the body and tail and usually orange dorsolateral lines, versus a distinct patterning in the other forms. *D. smithae* sp. nov. and *D. shooi* sp. nov. also have different body patterns from one another. Included in this is the fact that the species *D. shooi* sp. nov. from the central west of the upper Northern Territory is characterised and separated from *D. smithae* sp. nov. of the central east of the upper Northern Territory by the presence of a dark blackish temporal streak running through the eye to the snout. This is not the case in *D. smithae* sp. nov..

Adult male *D. shooi* sp. nov. are characterised by a very strong yellow colouration on the venter, versus light yellow or absent in *D. smithae* sp. nov..

Nominate *D. bilineata* from the central and East Kimberley in Western Australia and the Victoria River region of the Northern Territory is

characterised by (in life) yellow dorsolateral lines which have none or little other colouration visible on the lines running down the body (proper). The phenotypically similar specimens from western Queensland, herein described as *D. melvilleae* sp. nov. by contrast (in life) have obvious colouration running through the dorsolateral lines, this being the other body markings.

These lines are also greyish in *D. melvilleae* sp. nov..

Male *D. bilineata* are further defined and separated from the other species in the group by the fact that the blackish region above the front leg extends to cover almost the entire upper arm, giving it a distinctive black appearance.

*D. garrodi* sp. nov. from the Tunnel Creek National Park of the southern Kimberley region in Western Australia, while similar in most respects to *D. harmoni* sp. nov., is readily separated from the other species by a partially developed gular fold which runs as a fold between the region behind the ear to the top of the leg, then slightly further, but not as a full gular fold that would be seen meeting in the middle of the gular region, as well as a small number distinctive dark flecks on the lower gular region (just above where the fold would otherwise be), as opposed to a smudge-like appearance (of darkish pigment) in the lower gular region as seen in others in the species group.

Adult male *D. garrodi* sp. nov. are characterized and separated from the other species (in life) by their colouration, which includes a yellow wash through the upper labial region, prominent but unusually thin, dorsolateral-stripes being white anterior to past the dark blotch above the front legs, then rapidly turning yellow for the rest of the body length to the pelvis (versus yellow for the entire length in *D. magna*), whereupon the stripes stop and then reform along the tail as a broken grey line, with the rest of the tail being a bright light orange flush in colour. Any markings on the tail are so indistinct as to appear absent and there are little if any ventral markings, or if present are indistinct.

*D. garrodi* sp. nov. is only known from the type locality being the Tunnel Creek National Park, which sits about 100 km south of the main part of the Kimberley Ranges, the relevant part being the King Leopold Ranges.

The species *Diporiphora lalliae* Storr, Storr, 1974 and *Diporiphora nolani* sp. nov. are separated from all others in the genus by the following suite of characters: Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold present; dorsal scales are homogeneous and more or less equal in size; posterior lateral (flank) scales in rows which are aligned more or less parallel to the dorsals; no femoral pores.

The species *Diporiphora lalliae* Storr, Storr, 1974 is readily separated from *Diporiphora nolani* sp. nov. by the presence of only a weak postauricular fold. By contrast *D. nolani* sp. nov. has a strong and spiny postauricular fold. Furthermore the dorsal patterning in *D. nolani* sp. nov. is well defined and the dark brown squarish blotches running down the back are also well defined.

By contrast in *D. lalliae* the dorsal pattern, while similar, is generally poorly defined. The same applies for the tail, in that the lighter and darker sections are indistinct, whereas in *D. nolani* sp. nov. it is well defined with alternating dark reddish brown and light grey sections presented in a ring-like manner, the darker ones being larger and largest ventrally (with dark and light appearing as triangles when the tail is viewed side on).

**Distribution:** The Northern Territory side of the Gulf of Carpentaria, including nearby areas such as the northern Barkly Tableland, across to the central part of the Northern Territory.

**Etymology:** The species is named in honour of Kate Smith, currently of Melbourne, Australia in recognition of her work on the very species subject of this paper.

**SPECIES DIPORIPHORA SHOOI SP. NOV.**

**Holotype:** A specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number: D72674 collected from Top Springs, Northern Territory, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Paratypes:** Specimens at the National Museum of Victoria, in Melbourne, Australia, specimen numbers: D72681, D72676 and D72722 collected from Top Springs, Northern Territory, Australia.

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**Diagnosis:** The species *Diporiphora bilineata* Gray, 1842 and *Diporiphora jugularis* (Macleay, 1877) are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; some indication of a dorsolateral row of slightly enlarged, keeled scales.

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The species *Diporiphora magna* Storr, 1974 and taxa formerly treated as being a part of the species, namely *D. melvilleae* sp. nov., *D. smithae* sp. nov., *D. shooi* sp. nov., *D. harmoni* sp. nov. and *D. garrodi* sp. nov. are separated from all others in the genus by the following unique suite of characters:

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Adult male *D. shooi* sp. nov. are characterised by a very strong yellow colouration on the venter, versus light yellow or absent in *D. smithae* sp. nov..

Nominate *D. bilineata* from the central and East Kimberley in Western Australia and the Victoria River region of the Northern Territory is characterised by (in life) yellow dorsolateral lines which have none or little other colouration visible on the lines running down the body (proper). The phenotypically similar specimens from western Queensland, herein described as *D. melvilleae* sp. nov. by contrast (in life) have obvious colouration running through the dorsolateral lines, this being the other body markings.

These lines are also greyish in *D. melvilleae* sp. nov..

Male *D. bilineata* are further defined and separated from the other species in the group by the fact that the blackish region above the front leg extends to cover almost the entire upper arm, giving it a distinctive black appearance.

*D. garrodi* sp. nov. from the Tunnel Creek National Park of the southern Kimberley region in Western Australia, while similar in most respects to *D. harmoni* sp. nov., is readily separated from the other species by a partially developed gular fold which runs as a fold between the region behind the ear to the top of the leg, then slightly further, but not as a full gular fold that would be seen meeting in the middle of the gular region, as well as a small number distinctive dark flecks on the lower gular region (just above where the fold would otherwise be), as opposed to a smudge-like appearance (of darkish pigment) in the lower gular region as seen in others in the species group.

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*D. garrodi* sp. nov. is only known from the type locality being the Tunnel Creek National Park, which sits about 100 km south of the main part of the Kimberley Ranges, the relevant part being the King Leopold Ranges.

The species *Diporiphora lalliae* Storr, Storr, 1974 and *Diporiphora nolani* sp. nov. are separated from all others in the genus by the following suite of characters: Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold present; dorsal scales are homogeneous and more or less equal in size; posterior lateral (flank) scales in rows which are aligned more or less parallel to the dorsals; no femoral pores.

The species *Diporiphora lalliae* Storr, Storr, 1974 is readily separated from *Diporiphora nolani* sp. nov. by the presence of only a weak postauricular fold. By contrast *D. nolani* sp. nov. has a strong and spiny postauricular fold. Furthermore the dorsal patterning in *D. nolani* sp. nov. is well defined and the dark brown squarish blotches running down the back are also well defined.

By contrast in *D. lalliae* the dorsal pattern, while similar, is generally poorly defined. The same applies for the tail, in that the lighter and darker sections are indistinct, whereas in *D. nolani* sp. nov. it is well defined with alternating dark reddish brown and light grey sections presented in a ring-like manner, the darker ones being larger and largest ventrally (with dark and light appearing as triangles when the tail is viewed side on).

**Distribution:** Inland parts of the Northern Territory Australia in the savannah zone north of the arid zone and south of the tropical region, in an area generally triangular in shape and bound by Pine Creek in the North, Top Springs in the south-east and Jasper Gorge in the West, all of where specimens have been taken.

**Etymology:** The species is named in honour of Luke Shoo, currently of Brisbane, Queensland, Australia in recognition of his work on the very species subject of this paper.

#### SPECIES DIPORIPHORA HARMONI SP. NOV.

**Holotype:** A specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number: D73822 collected from Mitchell Plateau Road, Western Australia, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Paratypes:** Specimens at the National Museum of Victoria, in Melbourne, Australia, specimen numbers: D73821, D73823, D71874, D71875 and D71876 all collected from Mitchell Plateau Road, Western Australia, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Diagnosis:** The species *Diporiphora bilineata* Gray, 1842 and *Diporiphora jugularis* (Macleay, 1877) are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; some indication of a dorsolateral row of slightly enlarged, keeled scales.

The species *Diporiphora bilineata* Gray, 1842 is separated from *Diporiphora jugularis* (Macleay, 1877) by the fact that the nuchal crest is prominent in males, versus small in the latter species. *D. bilineata* occurs in the north of the Northern Territory while *D. jugularis* occurs in drier parts of the lower western side of Cape York Peninsula Queensland.

The species *Diporiphora magna* Storr, 1974 and taxa formerly treated as being a part of the species, namely *D. melvilleae* sp. nov., *D. smithae* sp. nov., *D. shooi* sp. nov., *D. harmoni* sp. nov. and *D. garrodi* sp. nov. are separated from all others in the genus by the following

unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; a long strong fold behind the ear, or if the fold is short or weak, the species group are identified by the following unique suite of characters being: at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; dorsal scales are homogeneous, without any indication of a dorso-lateral row of slightly enlarged keeled scales.

The species *D. melvilleae* sp. nov. from dry tropical parts of Western Queensland is readily separated from the other four species by the fact that males have a small relatively indistinct nuchal crest.

They are further defined and separated from the other species by their dorsolateral lines which are grey in colour.

The species *D. harmoni* sp. nov. from the North West Kimberley Coast, Western Australia is readily separated from the other four species by the strongly developed nuchal crest in males and a very strong body patterning in both sexes.

Both *D. smithae* sp. nov. and *D. shooi* sp. nov. from the Northern Territory are characterised by a relatively indistinct level of patterning on the body and tail and usually orange dorsolateral lines, versus a distinct patterning in the other forms. *D. smithae* sp. nov. and *D. shooi* sp. nov. also have different body patterns from one another. Included in this is the fact that the species *D. shooi* sp. nov. from the central west of the upper Northern Territory is characterised and separated from *D. smithae* sp. nov. of the central east of the upper Northern Territory by the presence of a dark blackish temporal streak running through the eye to the snout.

Adult male *D. shooi* sp. nov. are characterised by a very strong yellow colouration on the venter, versus light yellow or absent in *D. smithae* sp. nov.

Nominate *D. bilineata* from the central and East Kimberley in Western Australia and the Victoria River region of the Northern Territory is characterised by (in life) yellow dorsolateral lines which have none or little other colouration visible on the lines running down the body (proper). The phenotypically similar specimens from western Queensland, herein described as *D. melvilleae* sp. nov. by contrast (in life) have obvious colouration running through the dorsolateral lines, this being the other body markings.

These lines are also greyish in *D. melvilleae* sp. nov.

Male *D. bilineata* are further defined and separated from the other species in the group by the fact that the blackish region above the front leg extends to cover almost the entire upper arm, giving it a distinctive black appearance.

*D. garrodi* sp. nov. from the Tunnel Creek National Park of the southern Kimberley region in Western Australia, while similar in most respects to *D. harmoni* sp. nov., is readily separated from the other species by a partially developed gular fold which runs as a fold between the region behind the ear to the top of the leg, then slightly further, but not as a full gular fold that would be seen meeting in the middle of the gular region, as well as a small number distinctive dark flecks on the lower gular region (just above where the fold would otherwise be), as opposed to a smudge-like appearance (of darkish pigment) in the lower gular region as seen in others in the species group.

Adult male *D. garrodi* sp. nov. are characterized and separated from the other species (in life) by their colouration, which includes a yellow wash through the upper labial region, prominent but unusually thin, dorsolateral-stripes being white anterior to past the dark blotch above the front legs, then rapidly turning yellow for the rest of the body length to the pelvis (versus yellow for the entire length in *D. magna*), whereupon the stripes stop and then reform along the tail as a broken grey line, with the rest of the tail being a bright light orange flush in colour. Any markings on the tail are so indistinct as to appear absent and there are little if any ventral markings, or if present are indistinct.

*D. garrodi* sp. nov. is only known from the type locality being the Tunnel Creek National Park, which sits about 100 km south of the main part of the Kimberley Ranges, the relevant part being the King Leopold Ranges.

The species *Diporiphora lalliae* Storr, Storr, 1974 and *Diporiphora nolani* sp. nov. are separated from all others in the genus by the following suite of characters: Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold present; dorsal scales are homogeneous and more or less equal in

size; posterior lateral (flank) scales in rows which are aligned more or less parallel to the dorsals; no femoral pores.

The species *Diporiphora lalliae* Storr, Storr, 1974 is readily separated from *Diporiphora nolani* sp. nov. by the presence of only a weak postauricular fold. By contrast *D. nolani* sp. nov. has a strong and spiny postauricular fold. Furthermore the dorsal patterning in *D. nolani* sp. nov. is well defined and the dark brown squarish blotches running down the back are also well defined.

By contrast in *D. lalliae* the dorsal pattern, while similar, is generally poorly defined. The same applies for the tail, in that the lighter and darker sections are indistinct, whereas in *D. nolani* sp. nov. it is well defined with alternating dark reddish brown and light grey sections presented in a ring-like manner, the darker ones being larger and largest ventrally (with dark and light appearing as triangles when the tail is viewed side on).

**Distribution:** *Diporiphora harmoni* sp. nov. is only known from a restricted area in the north east Kimberley Ranges, Western Australia, in an area bounded by Kalumburu in the north and Mitchell Plateau in the south.

The species *Diporiphora magna* Storr, 1974 as now recognized herein is known only from the drier East Kimberley region of Western Australia and inland parts of the main range area, south to the King Leopold Ranges in the main escarpment, eastwards to the Victoria River District in the west of the Northern Territory, Australia.

**Etymology:** The species is named in honour of Luke Harmon of Idaho, USA in recognition of his work on the very species subject of this paper.

#### SPECIES DIPORIPHORA NOLANI SP. NOV.

**Holotype:** A specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number: D72673 collected from Hooper Creek Road, 80 km South of Karkaringi, Northern Territory, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Paratype:** A specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number: D73909 collected at Cherribin Station Road, Western Australia, Australia.

This is a government-owned facility that allows access to its holdings by others.

**Diagnosis:** The species *Diporiphora lalliae* Storr, Storr, 1974 and *Diporiphora nolani* sp. nov. are separated from all others in the genus by the following suite of characters: Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold present; dorsal scales are homogeneous and more or less equal in size; posterior lateral (flank) scales in rows which are aligned more or less parallel to the dorsals; no femoral pores.

The species *Diporiphora lalliae* Storr, Storr, 1974 is readily separated from *Diporiphora nolani* sp. nov. by the presence of only a weak postauricular fold. By contrast *D. nolani* sp. nov. has a strong and spiny postauricular fold. Furthermore the dorsal patterning in *D. nolani* sp. nov. is well defined and the dark brown squarish blotches running down the back are also well defined.

By contrast in *D. lalliae* the dorsal pattern, while similar, is generally poorly defined. The same applies for the tail, in that the lighter and darker sections are indistinct, whereas in *D. nolani* sp. nov. it is well defined with alternating dark reddish brown and light grey sections presented in a ring-like manner, the darker ones being larger and largest ventrally (with dark and light appearing as triangles when the tail is viewed side on).

The species *Diporiphora bilineata* Gray, 1842 and *Diporiphora jugularis* (Macleay, 1877) are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; some indication of a dorsolateral row of slightly enlarged, keeled scales.

The species *Diporiphora bilineata* Gray, 1842 is separated from *Diporiphora jugularis* (Macleay, 1877) by the fact that the nuchal crest is prominent in males, versus small in the latter species. *D. bilineata* occurs in the north of the Northern Territory while *D. jugularis* occurs in drier parts of the lower western side of Cape York Peninsula

Queensland.

The species *Diporiphora magna* Storr, 1974 and taxa formerly treated as being a part of the species, namely *D. melvilleae* sp. nov., *D. smithae* sp. nov., *D. shooi* sp. nov., *D. harmoni* sp. nov. and *D. garrodi* sp. nov. are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; a long strong fold behind the ear, or if the fold is short or weak, the species group are identified by the following unique suite of characters being: at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; dorsal scales are homogeneous, without any indication of a dorso-lateral row of slightly enlarged keeled scales.

The species *D. melvilleae* sp. nov. from dry tropical parts of Western Queensland is readily separated from the other four species by the fact that males have a small relatively indistinct nuchal crest.

They are further defined and separated from the other species by their dosolateral lines which are grey in colour.

The species *D. harmoni* sp. nov. from the North West Kimberley Coast, Western Australia is readily separated from the other four species by the strongly developed nuchal crest in males and a very strong body patterning in both sexes.

Both *D. smithae* sp. nov. and *D. shooi* sp. nov. from the Northern Territory are characterised by a relatively indistinct level of patterning on the body and tail and usually orange dorsolateral lines, versus a distinct patterning in the other forms. *D. smithae* sp. nov. and *D. shooi* sp. nov. also have different body patterns from one another. Included in this is the fact that the species *D. shooi* sp. nov. from the central west of the upper Northern Territory is characterised and separated from *D. smithae* sp. nov. of the central east of the upper Northern Territory by the presence of a dark blackish temporal streak running through the eye to the snout.

Adult male *D. shooi* sp. nov. are characterised by a very strong yellow colouration on the venter, versus light yellow or absent in *D. smithae* sp. nov..

Nominate *D. bilineata* from the central and East Kimberley in Western Australia and the Victoria River region of the Northern Territory is characterised by (in life) yellow dorsolateral lines which have none or little other colouration visible on the lines running down the body (proper). The phenotypically similar specimens from western Queensland, herein described as *D. melvilleae* sp. nov. by contrast (in life) have obvious colouration running through the dorsolateral lines, this being the other body markings.

These lines are also greyish in *D. melvilleae* sp. nov..

Male *D. bilineata* are further defined and separated from the other species in the group by the fact that the blackish region above the front leg extends to cover almost the entire upper arm, giving it a distinctive black appearance.

*D. garrodi* sp. nov. from the Tunnel Creek National Park of the southern Kimberley region in Western Australia, while similar in most respects to *D. harmoni* sp. nov., is readily separated from the other species by a partially developed gular fold which runs as a fold between the region behind the ear to the top of the leg, then slightly further, but not as a full gular fold that would be seen meeting in the middle of the gular region, as well as a small number distinctive dark flecks on the lower gular region (just above where the fold would otherwise be), as opposed to a smudge-like appearance (of darkish pigment) in the lower gular region as seen in others in the species group.

Adult male *D. garrodi* sp. nov. are characterized and separated from the other species (in life) by their colouration, which includes a yellow wash through the upper labial region, prominent but unusually thin, dorsolateral-stripes being white anterior to past the dark blotch above the front legs, then rapidly turning yellow for the rest of the body length to the pelvis (versus yellow for the entire length in *D. magna*), whereupon the stripes stop and then reform along the tail as a broken grey line, with the rest of the tail being a bright light orange flush in colour. Any markings on the tail are so indistinct as to appear absent and there are little if any ventral markings, or if present are indistinct.

*D. garrodi* sp. nov. is only known from the type locality being the Tunnel Creek National Park, which sits about 100 km south of the main part of the Kimberley Ranges, the relevant part being the King Leopold Ranges.

**Distribution:** *Diporiphora nolani* sp. nov. is known from the arid zone in a strip about 150 km wide from

Great Northern Highway, Western Australia in the west to Barkly Homestead, Tablelands Highway, eastern Northern Territory, Australia.

**Etymology:** The species is named in honour of Ross Nolan of Ringwood, Victoria, Australia in recognition for his services to herpetology and to the science of aviation in Australia.

Nolan has also made an immense contribution to the cause of human rights and has made substantial personal sacrifices to help stop human rights abuses in Australia.

#### SPECIES *DIPORIPHORA GARRODI* SP. NOV.

**Holotype:** A specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number: D73901 collected from Tunnel Creek Road, Western Australia, Australia.

The National Museum of Victoria is a government-owned facility that allows access to its holdings by others.

**Paratype:** A specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number: D73905 collected from Tunnel Creek Road, Western Australia, Australia.

The National Museum of Victoria is a government-owned facility that allows access to its holdings by others.

**Diagnosis:** The species *Diporiphora lalliae* Storr, Storr, 1974 and *Diporiphora nolani* sp. nov. are separated from all others in the genus by the following suite of characters: Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold present; dorsal scales are homogeneous and more or less equal in size; posterior lateral (flank) scales in rows which are aligned more or less parallel to the dorsals; no femoral pores.

The species *Diporiphora lalliae* Storr, Storr, 1974 is readily separated from *Diporiphora nolani* sp. nov. by the presence of only a weak postauricular fold. By contrast *D. nolani* sp. nov. has a strong and spiny postauricular fold. Furthermore the dorsal patterning in *D. nolani* sp. nov. is well defined and the dark brown squarish blotches running down the back are also well defined.

By contrast in *D. lalliae* the dorsal pattern, while similar, is generally poorly defined. The same applies for the tail, in that the lighter and darker sections are indistinct, whereas in *D. nolani* sp. nov. it is well defined with alternating dark reddish brown and light grey sections presented in a ring-like manner, the darker ones being larger and largest ventrally (with dark and light appearing as triangles when the tail is viewed side on).

The species *Diporiphora bilineata* Gray, 1842 and *Diporiphora jugularis* (Macleay, 1877) are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; some indication of a dorsolateral row of slightly enlarged, keeled scales.

The species *Diporiphora bilineata* Gray, 1842 is separated from *Diporiphora jugularis* (Macleay, 1877) by the fact that the nuchal crest is prominent in males, versus small in the latter species. *D. bilineata* occurs in the north of the Northern Territory while *D. jugularis* occurs in drier parts of the lower western side of Cape York Peninsula Queensland.

The species *Diporiphora magna* Storr, 1974 and taxa formerly treated as being a part of the species, namely *D. melvilleae* sp. nov., *D. smithae* sp. nov., *D. shooi* sp. nov., *D. harmoni* sp. nov. and *D. garrodi* sp. nov. are separated from all others in the genus by the following unique suite of characters:

Keels of dorsal scales on posterior part of body parallel to the vertebral line; gular and ventral scales (excluding chin shields) are weakly to strongly keeled; gular fold absent; a long strong fold behind the ear, or if the fold is short or weak, the species group are identified by the following unique suite of characters being: at most a very short weak fold behind the ear; one or occasionally more, short, whitish spines behind the ear; dorsal scales are homogeneous, without any indication of a dorso-lateral row of slightly enlarged keeled scales.

The species *D. melvilleae* sp. nov. from dry tropical parts of Western Queensland is readily separated from the other four species by the fact that males have a small relatively indistinct nuchal crest.

They are further defined and separated from the other species by their



dorsolateral lines which are grey in colour.

The species *D. harmoni* sp. nov. from the North West Kimberley Coast, Western Australia is readily separated from the other four species by the strongly developed nuchal crest in males and a very strong body patterning in both sexes.

Both *D. smithae* sp. nov. and *D. shooi* sp. nov. from the Northern Territory are characterised by a relatively indistinct level of patterning on the body and tail and usually orange dorsolateral lines, versus a distinct patterning in the other forms. *D. smithae* sp. nov. and *D. shooi* sp. nov. also have different body patterns from one another. Included in this is the fact that the species *D. shooi* sp. nov. from the central west of the upper Northern Territory is characterised and separated from *D. smithae* sp. nov. of the central east of the upper Northern Territory by the presence of a dark blackish temporal streak running through the eye to the snout.

Adult male *D. shooi* sp. nov. are characterised by a very strong yellow colouration on the venter, versus light yellow or absent in *D. smithae* sp. nov.

Nominate *D. bilineata* from the central and East Kimberley in Western Australia and the Victoria River region of the Northern Territory is characterised by (in life) yellow dorsolateral lines which have none or little other colouration visible on the lines running down the body (proper). The phenotypically similar specimens from western Queensland, herein described as *D. melvilleae* sp. nov. by contrast (in life) have obvious colouration running through the dorsolateral lines, this being the other body markings.

These lines are also greyish in *D. melvilleae* sp. nov..

Male *D. bilineata* are further defined and separated from the other species in the group by the fact that the blackish region above the front leg extends to cover almost the entire upper arm, giving it a distinctive black appearance.

*D. garrodi* sp. nov. from the Tunnel Creek National Park of the southern Kimberley region in Western Australia, while similar in most respects to *D. harmoni* sp. nov., is readily separated from the other species by a partially developed gular fold which runs as a fold between the region behind the ear to the top of the leg, then slightly further, but not as a full gular fold that would be seen meeting in the middle of the gular region, as well as a small number distinctive dark flecks on the lower gular region (just above where the fold would otherwise be), as opposed to a smudge-like appearance (of darkish pigment) in the lower gular region as seen in others in the species group.

Adult male *D. garrodi* sp. nov. are characterized and separated from the other species (in life) by their colouration, which includes a yellow wash through the upper labial region, prominent but unusually thin, dorsolateral-stripes being white anterior to past the dark blotch above the front legs, then rapidly turning yellow for the rest of the body length to the pelvis (versus yellow for the entire length in *D. magna*), whereupon the stripes stop and then reform along the tail as a broken grey line, with the rest of the tail being a bright light orange flush in colour. Any markings on the tail are so indistinct as to appear absent and there are little if any ventral markings, or if present are indistinct.

*D. garrodi* sp. nov. is only known from the type locality being the Tunnel Creek National Park, which sits about 100 km south of the higher main part of the Kimberley Ranges, the relevant part being the King Leopold Ranges.

**Distribution:** *Diporiphora garrodi* sp. nov. is known only from the area of the type locality, that being the Tunnel Creek Conservation Park area of northwestern Western Australia, Australia.

**Etymology:** The species is named in honour of Nathan Garrod, deceased in 2014.

He lived in Toowoomba, Queensland, Australia and I pay tribute to his services to herpetology.

His death by suicide was in large part caused by non-stop harassment by police-protected criminals operating in the Queensland "reptile business" who like Garrod ran a travelling reptile show.

Among other things, they initiated illegal armed raids by wildlife officers on his private home in an attempt to destroy his rival education business and improperly steal his clients.

There is no doubt that the actions of Tony Harrison of the Gold Coast and Mike Cermak of Cairns directly contributed to his premature death.

These actions included harassing phone calls, online trolling and abuse, as well as bogus complaints to government authorities to

initiate raids on him.

Scandalously, both Cermak and Harrison are corruptly protected from prosecution by people in a government wildlife department.

**SPECIES TYMPANOCRYPTIS BOTTOMI SP. NOV.**

**Holotype:** A preserved specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number R42933 from 20 km south of Eromanga, Queensland, Australia. Lat. -26.85, Long. 143.25.

The South Australian Museum is a government-owned facility that allows access to its holdings by others.

**Diagnosis:** This taxon has until now been treated as a variant of *T. intima* Mitchell, 1948. However *T. bottomi* sp. nov. is separated from *T. intima* by the presence of distinct barring on the upper labials, versus indistinct in *T. intima* and in males smallish raised tubercles on the upper dorsal surfaces of the body, versus medium to large ones in *T. intima*.

Male *T. bottomi* sp. nov. have a triangular dark blackish flush posterior to the front limb on the flank, versus an elongate flush in *T. intima*.

**Distribution:** Known only from slightly elevated gibber plains and sandy areas of far western Queensland and separated from the South Australian populations of *T. intima* by the black soil riverine drainages of the Lake Eyre basin.

**Etymology:** Named in honour of Bob (Robert) Bottom, investigative journalist and publisher based in Sydney Australia and more recently, south-east Queensland. He broke numerous public interest news stories on wildlife smuggling, corruption and institutionalised crime and corruption in Victoria.

**SPECIES TYMPANOCRYPTIS MARKTEESI SP. NOV.**

**Holotype:** A preserved specimen at the Queensland Museum, Brisbane, Queensland, specimen number, J77690 from Peak Downs, Queensland, Australia, Lat. -22.68, Long. 147.67.

The Queensland Museum is a government-owned facility that allows access to its holdings by others.

**Diagnosis:** *Tympanocryptis markteesi* sp. nov. has until now been treated as a variant of *T. lineata* Peters, 1863. However *T. markteesi* sp. nov. can be separated from *T. lineata* by its generally greyish colour versus orangeish in *T. lineata*. Furthermore *T. lineata* is characterised by two more-or-less vertical thick creamy bars on the upper labials beneath the eye, whereas *T. markteesi* sp. nov. is characterised by one only (the rear one) and the equivalent front bar being reduced to a largeish spot. In *T. lineata* the light barring of the forelimbs is distinct, versus indistinct or non-existent in *T. markteesi* sp. nov. and the similar species *T. karumba* Wells and Wellington, 1985, treated (improperly) by most authors as merely *T. lineata*.

*T. karumba* is characterised by semi-circular blotches on the dorsolateral surface, versus squareish in *T. markteesi* sp. nov.. Like *T. lineata*, *T. karumba* is characterised by two more-or-less vertical thick creamy bars on the upper labials beneath the eye, whereas *T. markteesi* sp. nov. is characterised by one only (the rear one) and the equivalent front bar being reduced to a largeish spot.

*Tympanocryptis alexteesi* sp. nov. described below, is readily separated from *Tympanocryptis markteesi* sp. nov., *T. karumba* Wells and Wellington, 1985, and nominate *T. lineata* Peters, 1863 by the fact that the dark dorsal blotches are orange-brown as opposed to greyish as well as the deep reddish orange lighter background colour of the dorsal surfaces. *Tympanocryptis alexteesi* sp. nov. is also readily separated from the other three taxa by the considerable whitish yellow peppering on the lower neck region as well as a relative lack of white bars or spots on the upper labials, this being no more than two obvious ones.

**Distribution:** *Tympanocryptis markteesi* sp. nov. is known only from grassland areas in the vicinity of the tropic of Capricorn, just west of the Dividing Range in Eastern Queensland, and nearby areas immediately south.

**Etymology:** Named in honour of Mark Tees of Brunswick, Victoria, formerly of Bondi, New South Wales, in recognition of various logistical services to herpetology in Australia.

**SPECIES TYMPANOCRYPTIS ALEXTEESI SP. NOV.**

**Holotype:** A preserved specimen at the South Australian Museum, Adelaide, South Australia, specimen number: R44707 being a female specimen collected from 4 km south of the Eucalyptus Waterhole on the Douglas Dam Track, South Australia. Lat. -27.6128, Long. 134.59.

The South Australian Museum is a government-owned facility that allows access to its holdings by others.

**Diagnosis:** *Tympanocryptis alexteesi* sp. nov. is readily separated from *Tympanocryptis markteesi* sp. nov. described above, *T. karumba* Wells and Wellington, 1985, and nominate *T. lineata* Peters, 1863 by the fact that the dark dorsal blotches are orange-brown as opposed to greyish as well as the deep reddish orange lighter background colour of the dorsal surfaces. *Tympanocryptis alexteesi* sp. nov. is also readily separated from the other three taxa by the considerable whitish yellow peppering on the lower neck region as well as a relative lack of white bars or spots on the upper labials, this being no more than two obvious ones.

**Distribution:** Known only from various dry habitats in the northern parts of South Australia, mainly west of the main Cooper's Creek drainage system.

**Etymology:** Named in honour of Alex Tees, lawyer of Bondi, New South Wales, in recognition of various logistical services to herpetology in Australia, including being instrumental in successfully defending legal action to ban the best-selling book *Smuggled-2: Wildlife Trafficking, Crime and Corruption in Australia*, when published at end 1996 (Hoser, 1996).

This he did no less than three times!

It was following the third unsuccessful attempt to ban this book in 1996, that the New South Wales government was forced to allow the legal private ownership of reptiles in New South Wales, this being for the first time in 23 years and action that had implications for keepers in all other Australian states, where similar bans were either in force or about to be re-enacted.

All the current generation of New South Wales herpetologists and those in all other Australian states, as well as anyone else who owns pet reptiles or handles them at travelling wildlife shows owe Mr. Tees a debt of gratitude for his role in getting them the rights they now take for granted, noting most people in Australia in 2015 are now unaware that there was an over 20 year battle to regain those rights.

#### FIRST REVISOR'S INSTRUCTIONS

Unless mandatory under the rules of zoological nomenclature of the time, no new scientific names are to have spellings altered in any way. The spellings of the new scientific names, in some cases lacking the usual suffixes attached to such names or otherwise correct name formations, are deliberate on the part of the author.

Should a reviser decide that more than one described species herein are of the same taxon, then name priority is given to the taxon named first, as in by page priority in this paper.

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#### CONFLICT OF INTEREST

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

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