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ABSTRACT

For the past 200 years most, if not all Australian Tree Frogs have been treated as being in a single genus. For many years this was *Hyla* Laurenti, 1768, before the genus name *Litoria* Tschudi, 1838 was adopted by Cogger *et al*. (1983) and has been in general use by most herpetologists since, including Cogger (2014).

Tyler and Davies (1978) divided the putative genus *Litoria* into 37 “species groups” and this type of classification has been used by numerous authors since, including most recently Menzies (2006) for the New Guinea species and Anstis (2014) for the Australian ones.

By merging all previous molecular and morphological studies with systematic scientific methodology, including a review of all previous species and subspecies descriptions, including those of synonymised forms, all significant past papers on the group and inspection of thousands of specimens, this paper takes the logical next step of completing an overdue full family-wide reclassification of the Australiasian Tree Frogs in the Pelodryadidae.

Besides resurrecting dozens of old and available names for genera and species when applicable, this paper also formally names 12 tribes, 11 subtribes, 34 genera, 26 subgenera, 62 species and 12 subspecies for the first time in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

It remains self-evident that the species-level diversity of the group remains underestimated, especially in New Guinea. In the face of ongoing rapid, exponential human population growth in Australia and New Guinea, habitat destruction, introduced pests and pathogens, the survival threat to many species within the Pelodryadidae has never been greater. This increases the urgency to formally identify relevant taxa in order to be able to conserve them.

Keywords: Taxonomy; Tree Frog; Amphibia; nomenclature; Frog; Pelodryadidae; Australia; New Guinea; *Hyla*; *Litoria*; *Ranoidea*; *Cyclorana*; *Chirodryas*; *Nyctimystes*; *Dryopsophus*; *Pelodryas*; *Drymomantis*; *Euscelis*; *Mitrolysis*; *Brendanura*; *Coggerdonia*; *Colleeneremia*; *Llewellynura*; *Mahonabatrachus*; *Mosleyi*a; *Neophractops*; *Pengilleyia*; *Rawlinsonia*; *Saganura*; *Sandyrana;* new tribe; Adelynhoserhyleini; Coggerdoniani; Cycloranini; Daraninanurini; Fiacumminganurini; Maxinehoserranini; Nyctimystini; Kumanjayiwalkerini; Pelodryanini; Pustulataranini; Saganurini; Wowranaini; new subtribes; Leucodigiranina; Ranoideina; Gedyerananina; Dryopsophina; Drymomantina; Badiohylina; Audaxurina; Rawlinsonina; Shireenhoserhylina; Salmocularanina; Sandyranina; new genus; *Adelynhoserhylea*; *Jackyhoserhylea*; *Leucodigirana*; *Crottyrana*; *Gedyerana*; *Daraninanura*; *Fiacumminganurea*; *Maxinehoserranae*; *Angularanta*; *Bellarana*; *Fluvirana*; *Hopviridi*; *Incertanura*; *Inlustanura*; *Moechaeanura*; *Ornatanura*; *Nasuscuspis*; *Rotundaura*; *Variabilanura*; *Albogibba*; *Occultatahyla*; *Nigreosoculus*; *Badiohyla*; *Magnumoculus*; *Kumanjayiwalkerus*; *Audaxura*; *Brevicrusyla*; *Shireenhoserhylea*; *Summaviridis*; *Pustulatarana*; *Salmocularana*; *Paralitoria; Quasilitoria; Wowrana*; new subgenus; *Yikesanura*; *Paramitrolysis*; *Invisibiliaauris*; *Sandgroperanura*; *Amnisrana*; *Leucolatera*; *Ausverdarana*; *Vegrandihyla*; *Alliuma*; *Longuscrusanura*; *Naveosrana*; *Raucus*; *Scelerisqueanura*; *Aspercutis*; *Telaater*; *Sudesanura*; *Magnummanibus*; *Asperohyla*; *Ratiobrunneis*; *Webpede*; *Balatusrana*; *Emeraldhyla*; *Microlitoria*; *Ferelitoria*; *Vultusamolitoria*; *Parawowrana*; new species; *adelynhoserae*; *yikes*; *ernieswilei*; *jackyhoserae*; *flavoranae*; *leucodorsalinea*; *rosea*; *crottyi*; *sloppi*; *gedyei*; *cottoni*; *michaelsmythi*; *piloti*; *fiacummingae*; *timdalei*; *jarrodthomsoni*; *brettbarnetti*; *maxinehoserae*; *pierconi*; *chydaeus*; *communia*; *extentacrus*; *mukherjii*; *quaeinfernas*; *vulgarans*; *oxyeei*; *cuspis*; *fakfakensis*; *inluster*; *albatermacula*; *tritong*; *spica*; *leucopicturas*; *parscinereo*; *parsviridis*; *tomcottoni*; *ausviridis*; *celantur*; *northstradbrokensis*; *mondoensis*; *charlottae*; *doggettae*; *aspera*; *georgefloydi*; *ingens*; *kumanjayi; bogfrog*; *chunda*; *dunnyseat*; *watdat*; *wifi*; *ventrileuco*; *megaviridis*; *fukker*; *yehbwudda*; *chriswilliamsi*; *marionanstisae*; *pailsae*; *roypailsi*; *saxacola*; *mickpughi*; *mippughae*; new subspecies; *dorsaruber*; *occultatum*; *dumptrashensis*; *inornata*; *gippslandensis*; *leucopunctata*; *brunetus*; *toowoombaensis*; *tozerensis*; *davidtribei*; *dunphyi*; *serventyi*.

Presented herein is a revision of the Pelodryadidae.
A full list of recognized tribes, genera and species is presented at the end of this paper in alphabetical order, with page references for all descriptions and redescriptions of tribes, subtribes, genera and subgenera as well as for newly named species and subspecies.
The paper is published in three volumes, of *Australasian Journal of Herpetology,* being Issues 44-46, all published on 5 June 2020.

INTRODUCTION

For most of the past 200 years, most, if not all Australian and New Guinea Tree Frogs have been treated as being in a single genus.

For many years this was *Hyla* Laurenti, 1768, before the genus name *Litoria* Tschudi, 1838 was adopted by Cogger *et al.* (1983) and has been in general use by most herpetologists since, including Cogger (2014).

While a number of inveterate and obsessive name grabbers from the 1800's, including the usual suspects of Cope, Peters, Günther and Fitzinger put new genus names on several species and without a shred of scientific basis to do so, most of those names went into synonymy.

Because a number are objective synonyms of one another, this is where a lot must remain.

However two of the the more morphologically divergent species groups within the Australasian Tree Frog radiation were given different genus names, namely *Cyclorana* Steindachner, 1867 and *Nyctimystes* Stejneger, 1916 and both names have remained in use by herpetologists to the present day, including for example by Menzies (2006), Venderduys (2012), Anstis (2013), Cogger (2014) and Eipper and Rowland (2018).

In terms of the many dozens of other recognized species of Australasian Tree Frogs (being over 200 on most species lists as of 2020), almost all have been simply lumped into the genus *Litoria sensu* Cogger *et al.* (1983) by most authors since that date, without a shred of scientific justification.

As of 2020, this is the current state of play in terms of the taxonomy of Australian tree frogs so far as most of the Australian public is aware.

Unfortunately the same in fact applies to most of the "scientific community".

Tyler and Davies (1978) divided the putative genus *Litoria* into 37 "species groups".

This was a reasonable start to the dismemberment of the genus *Litoria* and from that point on the formal naming of these species groups should have been completed within a few short years.

After Tyler and Davies (1978), Wells and Wellington (1985) decided to place obvious phylogenetically related groups within this massive putative genus of ancient origins into obvious morphologically distinctive genera. Acting ethically, these authors resurrected seven names from synonymy and erected another 11 putative genera for obvious well-known species groups for the first time.

A group known as the Wolfgang Wüster gang of thieves (see Hoser 2007, Hoser 2015a-f and 2019a-b) have successfully harassed most publishing herpetologists to ignore the taxonomy of Wells and Wellington and to simply synonymise all genera into a greater *Litoria* (as per the doctrine of Kaiser *et al.* 2013).

However the unscientific edicts of Kaiser *et al.* were effectively ignored by Eipper and Rowland (2018). Instead they heeded the advice of Hoser (2007) and published an amended classification of Australian Tree Frogs that was essentially similar to that of Wells and Wellington (1985) by relying on recently published molecular phylogenies.

While relying on the published phylogenies of Duellman *et al.* (2016) and Bell *et al.* (2017) that they drew their conclusions from and using the available names, including many of those first proposed by Wells and Wellington (1985), the Eipper and Rowland (2018 taxonomy presented had obvious gaps and deficiencies, including genera they simply identified as "unnamed".

Further to that, generic assignments made in line with either Wells and Wellington (1985) or Duellman *et al.* (2016) at times simply did not correlate with the relevant published phylogenies.

While I note that the published phylogenies of Frost *et al.* (2006), Pyron *et al.* (2011), Duellman *et al.* (2016) and Bell *et al.* (2017) have clearly confirmed most of the Wells and Wellington classification as correct, but not all of it, these cited publications have highlighted a number of other well-defined and divergent lineages that by any reasonable analysis should be placed in their own, as yet unnamed genera.

With this in mind a review of the relevant species, including all species groups from Australia and New Guinea was conducted.

Specimens and literature were reviewed to find a superior taxonomy for the Australian and New Guinea Tree Frogs in order to get a genus level taxonomy and nomenclature that can be used by other herpetologists as a framework for further research.

Unnamed tribe and genus-level groupings identified in the process, have been formally named in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Obviously divergent forms are also formally named as new species for the first time. This being a total of 62 species and 12 new subspecies.

MATERIALS AND METHODS

These are inferred in both the abstract and introduction and self evident in the descriptions that follow.

An audit of all previously described species of Australasian Tree Frogs in the family Pelodryadidae Günther, 1858 was conducted.

In simple terms this included all species lumped in the genera *Litoria* Tschudi, 1838, *Cyclorana* Steindachner, 1867, *Nyctimystes* Stejneger, 1916, which has for most

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publishing authors in the past 50 years been the sum total of the family.

In the period post-dating Wells and Wellington (1985), in particular post-dating the paper of Duellman *et al.* (2016), it has been increasingly difficult for authors to justify the use of just three genus names for all the Pelodryadidae and some earlier names have been resurrected and used on online databases and publications.

However, as a rule, these published lists of names have not made sense as the species are often placed in genera in which the type species is not remotely related to the assigned species, giving further reason for a major in-depth review of the family, the results of which are published herein.

It has also been self evident that often the authors assigning species to their supposedly authoritative "genus and species list" clearly have no idea about classification and rules of nomenclature and invariably have assigned species to genera with little if any connection to the originally described type form.

Published species lists were checked against the relevant literature (e.g. Menzies 2006, Cogger *et al.* 2013, Tyler 1968, Anstis 2013, etc) and online databases such as "Amphibia Web" and "Amphibian Species of the World" hosted on the American Museum of Natural History website, with those listed species in this paper being treated as valid, either on the basis of prior descriptions in the scientific literature, or new descriptions herein.

When possible, specimens of all relevant species (named and until now unnamed) were examined both live in the wild and via museum collections and their records, including all State and Territory Museums on mainland Australia and some collections held outside of Australia as well. Furthermore photos and information with accurate locality data was also assessed, as was all relevant previously published scientific literature and the so-called grey literature in the form of popular mass-market books, internet sites, blogs, photo-sharing sites and the like.

Scrutinized in particular was taxonomic studies and phylogenies that uncovered relationships between species and species groups, although I note that a lot of this is self-evident to someone who has spent a lifetime working on these animals.

Not all type material was inspected, however I was generally able to ascertain relevant details from the published literature, including each and every original description which I read (including foreign language (non English) ones which I had translated).

Before a decision is made to name any new taxon at any level, including genus, subgenus, species or subspecies, reasonable steps must be taken to ensure that it is justified on all relevant grounds, including that it is morphologically, genetically and reproductively sufficiently diverged to warrant the erection of a new taxonomic grouping over and above what is already available and in common usage.

Key literature relevant to the taxonomic and nomenclatural conclusions within this paper include Ahl (1929, 1935), Andersson (1916), Anstis (2013), Anstis and Tyler (2005), Anstis *et al.* (1998, 2010, 2016a, 2016b), Barbour (1908, 1912, 1921), Barker and Grigg (1977), Barker *et al.* (1995), Bell *et al.* (2012, 2017), Bevelander (2014), Boettger (1895, 1900), Böhme (2014), Böhme and Bischoff (1984), Boulenger (1882, 1883, 1887a, 1887b, 1892, 1896, 1897a, 1897b, 1898, 1905, 1911, 1912, 1914, 1915), Brongersma (1953), Brown (1952), Burns (2004), Burns and Crayn (2006), Burt and Burt (1932), Capocaccia (1957), Clyne (1969), Cogger (1966, 1979, 2014), Cogger *et al.* (1983), Condit (1964), Cope (1866, 1867), Copland (1957, 1960, 1951, 1963a, 1963b), Courtice and Grigg (1975), Covacevich (1974), Coventry (1970), Czechura *et al.* (1987), Daan and Hillenius (1966), Daudin (1802, 1803), Davies *et al.* (1983, 1986), De la Riva *et al.* (2014), Dennis and Cunningham (2006), De Vis (1884), Donnellan and Mahony (2004), Donnellan *et al.* (1999), Doughty (2011), Doughty and Anstis (2007), Dubois (1984, 2005, 2007, 2018), Dubois and Frétey (2016), Dubois *et al.* (2019), Duellman (1977, 1993), Duellman and Trueb (1986), Duellman *et al.* (2016), Duméril (1853), Duméril, and Bibron (1841), Duméril and Duméril (1851), Eipper (2012), Eipper and Rowland (2018), Faivovitch *et al.* (2005), Fitzinger (1826, 1860), Fletcher (1898), Forcart (1953), Frost (2013), Frost *et al.* (2006), Fry (1912, 1913, 1915), Gadow (1901), Gassó Miracle *et al.* (2007), Gillespie (2001, 2002, 2004, 2010, 2011, 2012), Gillespie and Hollis (1996), Gillespie *et al.* (2015), Goldman *et al.* (1969), Gray (1841, 1842, 1848), Guibé (1948), Günther (1858, 1863a, 1863b, 1864, 1867, 1873, 1876, 1897), Günther (2003, 2006a, 2006b, 2006c, 2008, 2014), Günther (2003, 2004a, 2004b, 2006a, 2006b, 2006c, 2008, 2014), Günther and Richards (2000, 2005), Hiaso and Richards (2006), Hoser (1989, 2013b, 2014, 2015g, 2018a, 2018b, 2018c, 2018d, 2018e, 2020a, 2020b, 2020c, 2020d, 2020e), Hoskin (2007), Hosmer (1964), Hunter (2012), Hunter and Smith (2013), Hunter *et al.* (2011), Ingram and Corben (1990), Ingram *et al.* (1992, 1993), James (1998) James and Moritz (2000), Johnston and Richards (1994), Keferstein (1867), Kraus (2007, 2009, 2010, 2012a, 2012b, 2013a, 2013b, 2018), Kraus and Allison (2004a, 2004b, 2009), Krell and Marshall (2017), Lamb (1911), Laurance *et al.* (1996), Lesson (1829), Leunis (1844), Liem (1974a, 1974b), Liem and Ingram (1977), Lönnberg (1900), Loveridge (1945, 1948, 1950), Macleay (1879), Mahony (2001), Main (1965), Martin *et al.* (1978), McDonald (1997), McDonald *et al.* (2016), McDowell (1969), Méhely (1897), Menzies (1969, 1972, 1976, 1993, 2006, 2014a, 2014b), Menzies and Johnston (2015), Menzies and Tippett (1976), Menzies and Tyler (2004), Menzies and Zug (1979), Menzies and Zweifel (1974, 1976), Menzies *et al.* (2009), Merrem (1820), Mertens (1922, 1930, 1964, 1967), Meyer (1874, 1887), Meyer and Agnew (2013), Minister for the Environment, Commonwealth Government of Australia (2017), Moore (1961), Murray and Hose (2005), Nieden (1923), Noble (1931), Obst (1977), Ogilby (1890, 1907), Oken (1816), Oliver and Richards (2007), Oliver *et al.* (2007, 2008, 2019a, 2019b,), Parker (1936, 1938, 1940), Péron (1807), Peters (1863, 1867, 1869, 1871, 1873a, 1873b, 1874, 1877, 1878, 1880, 1882), Peters and Doria (1878), Pyron and Wiens (2011), Ramsay (1878), Regan (2002), Rensch (1936), Reynolds (2007), Richards (1992, 2001, 2002, 2005, 2007a, 2007b), Richards and

Alford (2005), Richards and Iskander (2001, 2006), Richards and Johnston (1993), Richards and Oliver (2006a, 2006b), Richards *et al.* (2006, 2009), Ride *et al.* (1999), Robinson (1993), Rosauer *et al.* (2009), Rowley and Cutajar (2018), Savage (1986), Schneider (1799), Scott (1942), Shaw (1802), Shea and Kraus (2007), Shea and Sadlier (1999), Sonnini de Manoncourt and Latreille (1801), Spencer (1896, 1901), Steindachner (1867), Stejneger (1916), Straughan (1969), Stuart *et al.* (2008), Thomson *et al.* (1996), Tschudi (1838), Tyler (1962, 1963a, 1963b, 1964a, 1964b, 1964c, 1965, 1967 1968a, 1968b, 1968c, 1969, 1971, 1985, 1992), Tyler and Anstis (1975, 1983), Tyler and Davies (1977, 1978, 1979, 1983, 1985, 1986), Tyler and Dobson (1973), Tyler and Knight (2009), Tyler and Martin (1977), Tyler and Parker (1972, 1974), Tyler *et al.* (1972, 1977, 1978a, 1978b, 1981, 1982, 1986, 1994), Van Beurden and McDonald (1980), Vanderduys (2012), Van Kampen (1906, 1909, 1919, 1923), Van Tuijl (1995), Vogt (1912), Wagler (1830), Wandolleck (1910, 1911), Watson *et al.* (1971, 1991), Weijola (2020), Wells and Wellington (1985), Werner (1898, 1901), White *et al.* (1994), White (1970), Wichmann (1912), Wiens *et al.* (2010), Withers (1993, 1995, 1998), Woodruff (1972), Zweifel (1956, 1958, 1960, 1980, 1983) and sources cited therein (duplicitous references not necessarily included).

As already mentioned, live and dead specimens as well as available bone specimens, were examined as was other relevant material, including past climate data for the relevant regions, sea level depths, and other relevant information, the latter being importany aids in establishing divergences between relevant forms and/or likely gene flow between populations currently disjunct.

It goes without saying that at the present time, even after publication of this paper there remain numerous undescribed species within the Australia and New Guinea areas.

I also note that, notwithstanding the theft of relevant materials from this author in an illegal armed raid on 17 August 2011, which were not returned in breach of undertakings to the court (Court of Appeal Victoria 2014 and VCAT 2015), I have made a decision to publish this paper.

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

This comment is made noting the extensive increase in human population in Australia and New Guinea, with a conservative forecast of a four-fold increase in human population in the next 100 years (from 25 million to 100 million) in Australia and an even more dramatic increase in New Guinea (both sides) and the general environmental destruction across the continental region as documented by Hoser (1991), including low density areas without a large permanent human population.

I also note the abysmal environmental record of various Australian National, State and Local governments in the relevant part of the Australasian region over the past 200 years as detailed by Hoser (1989, 1991, 1993 and 1996).

RESULTS

The published phylogenies of Frost *et al.* (2006), Pyron *et al.* (2011), Duellman *et al.* (2016) and Bell *et al.* (2017), clearly indicated that Australasian Tree Frogs should be placed in their own family as done by Wells and Wellington (1985) and as done in the title of this paper.

I note that Pyron *et al.* (2011) referred to the relevant group of genera as "Pelodryadinae", which is almost the same thing and clearly indicates that the thinking of Wells and Wellington (1985), some 35 years ago, was not out of whack with the peer reviewed scientific reality or consensus as is often claimed by the Wolfgang Wüster gang of thieves, including via their war cry blog Kaiser *et al.* (2013).

The published phylogenies also indicated a large number of divergent lineages, which in the main coincided with the treatment by Wells and Wellington (1985).

However the coincidence was not exact.

Two of the Wells and Wellington generic placements were not justified on the basis of the phylogeny of Pyron and Weins (2011), but see below.

Furthermore other unnamed lineages beyond those identified or named by Wells and Wellington (1985) were clearly apparent.

The phylogenies of Frost *et al.* (2006), Pyron *et al.* (2011), Duellman *et al.* (2016) and Bell *et al.* (2017) also had significant differences in parts (e.g. for the putative species "*Litoria inermis*"), which immediately drew attention to potential errors in their analysing of material.

Before assigning species to generic groups, it was important to cross-check the phylogenies with the frogs themselves to ensure that they matched and that divergences in published phylogenies reflected the physical differences as well.

Before mentioning generic assignments for relevant species groups, I note that Cogger *et al.* (1983) had published a synonyms list to that date and Wells and Wellington added 12 more names to the collection, all bar one of which were confirmed by myself as properly applied to unnamed species groups as determined herein based on the phylogeny of Pyron and Weins (2011) combined with that of Duellman *et al.* (2016).

I note that Wells and Wellington published at a time when mtDNA and the like were not available to herpetologists to more accurately determine relationships between putative taxa.

As an arbitrary line, I recognized as genera, all phylogenetic groups that could reasonably be estimated to have diverged from nearest common ancestors, well over ten million years back.

This was all 12 of 12 Wells and Wellington groups and 8 previously named genera, as well as those newly named herein (see below).

Because one of the genera named by Wells and Wellington (1985) was a duplicate name for another earlier name, which they overlooked, the Wells and Wellington name is simply synonymised.

When the divergence date number is close to 10 MYA, I have opted for subgenus-level division if the relevant species are morphologically divergent from one another, but in most cases not split the relevant genus.

It explains for example, why the species *Hyla moorei*

Copeland, 1957 is formally partly removed from *Ranoidea* Tschudi, 1838, type species *Ranoidea jacksionensis* Tschudi, 1838 = *Rana aurea* Lesson, 1831 and placed in the subgenus *Sandgroperanura subgen. nov.*.

Burns (2004) and Burns and Crayn (2006) used molecular data to find that the two taxa diverged from one another 10 to 10.8 MYA and Duellman *et al.* (2016) found a divergence of 12.0 MYA for the same groups.

While two generic groupings of Wells and Wellington (1985) associated with the genus *Cyclorana* Steindachner, 1867, type species *Alytes australis* Gray, 1842, were not strongly supported by the phylogeny of Pyron and Weins (2011) as being worthy of genus-level separation, that of Deullman *et al.* (2016), with date calibrations placed both the relevant groups as diverging 11 and 12 MYA from nearest common ancestors and so they are also recognized herein as full genera.

However the genus *Brendanura* Wells and Wellington, 1985, type species *Chiroleptes alboguttatus* Günther, 1867 was named in error as it is in fact an objective junior synonym of *Mitrolysis* Cope, 1889, with the same type species, so the earlier name is used instead.

To make things abundantly clear, there is no cirsumtance within the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), that the name *Brendanura* Wells and Wellington, 1985 can or should be used.

In summary the twenty extant genera (by name) in date order of priority recognized herein are as follows:

Litoria Tschudi, 1838, type species *L. freycineti* Tschudi, 1838.

Ranoidea Tschudi, 1838, type species *Ranoidea jacksionensis* Tschudi, 1838 = *Rana aurea* Lesson, 1831.

Dryopsophus Fitzinger, 1843, type species "*Hyla citropa* Peron" = *Hyla citropa* Dümeril and Bibron, 1841.

Euscelis Fitzinger, 1843, type species *Hyla lesueurii* Dümeril and Bibron, 1841.

Pelodryas Günther, 1858, type species *Rana caerulea* White, 1790.

Cyclorana Steindachner, 1867, type species *Alytes australis* Gray, 1842.

Chirodryas Keferstein, 1867, type species *Chirodryas raniformis* Keferstein, 1867.

Drymomantis Peters, 1882, type species *Drymomantis fallax* Peters, 1882.

Mitrolysis Cope, 1889, type species *Chiroleptes alboguttatus* Günther, 1867.

Nyctimystes Stejneger, 1916, type species *Nyctimantis papua* Boulenger, 1897.

Coggerdonia Wells and Wellington, 1985, type species *Hyla adelaidensis* Gray, 1841.

Colleeneremia Wells and Wellington, 1985, type species *Hyla rubella*, Gray, 1842.

Llewellynura Wells and Wellington, 1985, type species *Hyla dorsalis microbelos* Cogger, 1966.

Mahonabatrachus Wells and Wellington, 1985, type species *Hyla meriana* Tyler, 1969.

Mosleyia Wells and Wellington, 1985, type species *Hyla nannotis* Andersson, 1916.

Neophractops Wells and Wellington, 1985, type species *Chiroleptes platycephalus* Günther, 1873.

Pengilleyia Wells and Wellington, 1985, type species *Litoria tyleri* Martin, Watson, Gartside, Littlejohn and Loftus-Hills, 1979.

Rawlinsonia Wells and Wellington, 1985, type species *Hyla ewingi* Duméril and Bibron, 1841.

Sagunura Wells and Wellington, 1985, type species *Hyla burrowsi* Scott, 1942.

Sandyrana Wells and Wellington, 1985, type species *Hyla infrafrenata* Günther, 1867.

I note in passing that just two of the genera erected by Wells and Wellington in 1985 were even close to the 10 MYA divergence minimum I have arbitrarily set as defining generic assignments.

These are *Neophractops* Wells and Wellington, 1985, type species *Chiroleptes platycephalus* Günther, 1873 and *Brendanura* Wells and Wellington, 1985, type species *Chiroleptes alboguttatus* Günther, 1867, both previously synonymised with *Cyclorana* Steindachner, 1867.

The genus *Euscelis* Fitzinger, 1843 was not recognized by Wells and Wellington (1985), those species being placed by them within *Litoria*.

(Other Wells and Wellington, 1985 genera were shown by Duellman *et al.* (2016) to have diverged from nearest other named genera well over 10 MYA).

The species composition of these above genera is generally as put by Wells and Wellington (1985) and Eipper and Rowland (2018), allowing for newly described forms, except where otherwise indicated in this paper and the synonymies as indicated.

The species groups that are placed in each newly erected genus are often indicated in the original descriptions themselves even without reference to this paper, although all genera are formally defined or redefined herein for the pre-existing named groups.

This was absolutely necessary as, with very few exceptions, these genera have been wholly redefined as per previous concepts in use, including those of Wells and Wellington.

The published phylogenies, including for example Frost *et al.* (2006), Pyron *et al.* (2011), Duellman *et al.* (2016) and Bell *et al.* (2017), wholly corroborate the division of tribes, subtribes, genera and subgenera within this paper and provide an added basis for divisions on the basis of calibrated divergence dates.

Divergent forms formally named as new species herein for the first time are also placed in the relevant proper genus at the same time.

In other words, for the first time ever and in a single paper, this paper formally describes each and every tribe, subtribe, genus and subgenus within the Pelodryadidae.

In terms of the final taxonomic determinations, from which all relevant nomenclature follows, I note the following important points.

Species recognized herein are in the main widely recognized and acknowledged and reflect those taxa seen in the most recent regional field guides such as Cogger (2014), Anstis (2013), Eipper and Rowland (2018) or Menzies (2006), save for more recently

described and named forms which are also included herein.

The justification and basis for naming the new species and subspecies is either self evident or alternatively explained within the relevant descriptions.

I need to note that some of the newly named forms within this paper are separated from other species with minimal morphological divergence, which on the surface may appear unjustified.

I also note that a number of species resurrected from synonymy without specific comment in this paper, appear to have been resurrected from synonymy from forms they are also often morphologically similar or near identical to.

In both these situations, when they occur in this paper, an added and critically important basis for the recognition of these taxa is that in every case the relevant populations are split across biogeographical barriers of known antiquity, confirming the taxonomically distinct nature of each population and warranting species-level division. One such example that arises in this paper on a number of occasions are species pairs split across the central cordillera of New Guinea, which have evidently diverged from one another for millions of years.

Although the nature and antiquity of the relevant biogeographical barriers may not be spelt out in the relevant descriptions in this paper or resurrection of taxa from synonymy in the species lists herein, they are self evident when distributions of the relevant taxa are mapped out.

The preceding is important as it needs to be made known that all taxonomic decisions herein have been made with a body of evidence supporting them and also been subjected to peer review from no less than four other experts in the field of amphibian herpetology.

Each and every species within this paper has been scrutinized in detail and with the benefit of all relevant published material before being determined as valid and at what level of classification, as well as their genus-level assignment based on previously published phylogenies and the morphological evidence from the species themselves.

RELEVANT NUMBERS

Species were determined as being such based on the usual criteria of reproductive isolation from nearest living common ancestor and on the basis that this isolation is ancient.

When the duration of such isolation couldn't be established with certainty of being more than 1.5 MYA, or reasonably assumed not to be, then obviously divergent taxa were conservatively identified as subspecies.

Genera were arranged based on common morphology and divergence.

As a rule, groups of species diverged well over 10 MYA were placed in their own genera, this being in line with similar divisions for other groups of reptiles and frogs in recent reclassifications.

Species groups that were morphologically divergent, but with divergence around the 10 MYA mark were generally placed in subgenera.

At the higher level, tribes were generally determined to exist for genera that diverged from one another more than 25 MYA and subtribes those genera that diverged from one another more than 20 MYA.

These somewhat arbitrary divisions are more conservative (ancient) than adopted by a number of other recent authors, but even with this extreme conservatism, I was able to split the Pelodryadidae into 12 tribes and 11 subtribes.

The use of tribes in classification is important as it keeps relevant species groups contained and is a superior means of dealing with large groups of like genera within a speciose family such as Pelodryadidae.

The order of treatment of taxa in this paper is alphabetical, but by use of the tribe level of classification, closely related genera and species are dealt with together in effectively monophyletic groups.

The use of tribes to divide specious families such as the Pelodryadidae would be a major improvement in popular books and field guides as it would greatly assist in putting accounts of like species together and not interrupted by accounts for wholly dissimilar taxa.

Besides resurrecting dozens of old and available names for genera and species when applicable, this paper also formally names 12 tribes, 11 subtribes, 34 genera, 26 subgenera, 62 species and 12 subspecies for the first time in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

FORMAL DESIGNATION OF A LECTOTYPE IN ACCORDANCE WITH THE *INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE.*

Chiroleptes alboguttatus Günther, 1867 was originally described with two syntypes being from Bowen and Cape York in Queensland.

These specimens are themselves morphologically divergent and so as to remove confusion as to which taxon or specimen the name *Chiroleptes alboguttatus* Günther, 1867 should be applied to, I herein make the Cape York specimen (BMNH 1947.2.20.6-7) as the lectotype.

The syntype from Bowen in Queensland (BMNH 1947.2.18.50-51) herein ceases to have nomenclatural status.

This action is taken in accordance with paragraph 6, and Article 74, including all of 74.1 and 74.73, of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), including this being an "express statement of the taxonomic purpose of the designation", this being to remove potential doubt as to which subspecies or species should retain the name *alboguttatus* Günther, 1867 on the basis of divergence, either morphological or molecular between the two syntype specimens.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

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

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

In terms of the following formal descriptions of tribes, subtribes, genera, subgenera, species or subspecies, spellings should not be altered in any way for any

purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the *International Commission of Zoological Nomenclature.*

In the unlikely event two newly named tribes, subtribes, genera, subgenera, species or subspecies are deemed to be the same by a first reviser, then the name to be used and retained is that which first appears in this paper by way of page priority and as listed in the abstract keywords.

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

In terms of the subtribe or subgenus descriptions, there is usually no corresponding description for the nominate subtribe or subgenus (the nominate one being identified in the relevant description/s).

However these must be assumed as identified and by way of reverse diagnosis of the opposing subtribe/s or subgenus/genera (within those descriptions), thereby making the nominate subtribe or subgenus name also available, and as of the date of publication of this paper (5 June 2020) for nomenclatural purposes in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

That is the nominate subtribes are formally named in this paper, even when not expressly done so in the relevant part.

The same applies with regards to subgenera and nominate subgenera.

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 22 May 2020, unless otherwise stated (some downloads are later than 22 May 2020) and were accurate in terms of the context cited herein as of that date.

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

A general reference to “colour” is unless otherwise stated, referring to the dorsal and obvious colouration of the frog on the usually visible surfaces.

Unless otherwise stated, the following applies. Size measurements and ratios quoted herein are for normal adults of normal adult size. Where one number only is given, this is the average measurement. Where two numbers are given in the form of a range, this means “known range” based on previously measured and recorded specimens.

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

Each newly named tribe, subtribe, genus, subgenus, species or subspecies is readily and consistently separable from other similar taxon or group as indicated and that which until now the relevant newly named group or form have been treated as being within.

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

Therefore attempts by taxonomic vandals like the Wolfgang Wüster gang via Kaiser (2012a, 2012b, 2013, 2014a, 2014b) and Kaiser *et al.* (2013) (as frequently amended) to unlawfully suppress the recognition of these taxa on the basis they have a personal dislike for the person who formally named it should be resisted (Dubois *et al.* 2019).

Claims by the Wüster gang against this paper and the descriptions herein will no doubt be no different to those the gang have made previously, all of which were discredited long ago as outlined by Dubois *et al.* (2019), Hoser, (2007, 2009, 2012a, 2012b, 2013a, 2015a-f, 2019a, 2019b) and sources cited therein.

The order of treatment of all the Pelodryadidae within this paper is as follows.

Species are dealt with in clades corresponding to tribes as outlined above.

Under each tribe or subtribe heading are the genus and subgenus descriptions, followed by any relevant species-level descriptions.

Each tribe is dealt with alphabetically herein as are the groups within each.

Each is designated herein as “new”.

However there have been some family level classifications in the past and the following names have been used and are therefore available:

Pelodryadidae Günther, 1858

Cycloraninae Parker, 1940

Nyctimystinae Laurent, 1975

Because tribe is taken as being family-level classification, these three authors may be taken as name authorities for the three relevant tribes formally assigned for the first time as tribes within this paper.

At the end of the genus and species level descriptions the 12 tribes and 11 subtribes are formally described and named. Zoobank numbers for tribes and subtribes are placed with their full descriptions and not in the earlier text of this paper.

The diagnostic information for the tribes wholly reflects that of component genera and this means that persons only interested in species or genus-level classification need not read the formal tribe descriptions, but can ascertain tribe placement from the relevant accounts earlier in the paper.

After the references cited list is a full species list for the Pelodryadidae.

Acronyms used in descriptions in this paper, unless otherwise stated, are as follows:

(SV) (S-V): Snout to vent length. The distance between the anterior tip of the snout and the superior margin of the cloacal aperture.

(HL): Head length. Distance between the tip of the snout and the posterior margin of the tympanum, including the

tympanic annulus.

(HW): Head width. The greatest width of the head, usually recorded at a level with the tympana.

(E-N): Eye to naris distance. The distance between the anterior margin of the eye and the posterior margin of the naris.

(IN): Internarial span: The minimum distance separating the nares.

(ED): Eye diameter: The distance between the anterior and posterior corners.

(TD): Tympanum diameter. In the vast majority of specimens of most species the tympanum is circular and the horizontal diameter, measured to the outer margins of the tympanic annulus, is taken as the standard measurement.

(TL): Tibia length. The length of the tibia measured from the convex surface of the knee to the tibio-tarsal joint, with the knee held in the flexed position.

(RL/SVL): Rostral length/snout-vent length.

(HW/SVL): Head width measured as transverse distance between tympanum/snout-vent length from vent to tip of snout.

(EYE/SVL) (E/SV); Horizontal eye diameter/snout-vent length from vent to tip of snout.

(TL/SVL) (TL/SV): Tibia length/snout-vent length from vent to tip of snout.

(TYM/SVL): Horizontal tympanum diameter/snout-vent length from vent to tip of snout.

(4TD/SVL): Transverse diameter of toe four disc/snout-vent length from vent to tip of snout.

(3FD/SVL): Transverse diameter of finger three disc/ snout-vent length from vent to tip.

CONSERVATION OF RELEVANT SPECIES AND GENERA

In terms of the conservation outlook for the relevant species and genera, the outlook is generally not good, as detailed in Hoser (1991), the comments being as relevant in 2020 as they were in 1991, if not more so.

With a few exceptions, most species of frogs are regarded as being in serious decline and at risk of extinction, with primary blame being placed on the Australian government, State governments and likewise for Papua New Guinea and Indonesia.

In particular via the actions of the State wildlife departments and their steadfast refusal to enact proper captive breeding programs for the relevant taxa in any meaningful way, this means that many species face an inevitable path towards extinction, due to this direct action and other human caused threats.

The long term overpopulation of the Australia with feral humans (Saunders, 2019) does not auger well for the long term survival of many of the relevant species in Australia!

In line with the Australian Federal Government's "Big Australia" policy, that being to increase the human population of 25 million (2020), from 13 million in around 1970, to over 100 million within 100 years "so that we can tell China what to do", as stated by the former Prime Minister, Kevin Rudd in 2019 (Zaczek 2019), the human pressure on the relevant ecosystems has increased in line with the human populations nearby and will clearly continue to do so.

The conservation situation for frogs in New Guinea and offshore islands is even more dire and again gives justification and urgency for the naming of hitherto unnamed species in the Australasian region.

According to the website https://www.worldometers.info Papua New Guinea claimed a population of nearly 9 million people in 2020.

This is up from just over 2 million in 1955, more than a 4 fold rise in 65 years.

In that time Papua New Guinea has been converted from largely untouched jungle to mainly heavily cleared and or generally vandalized habitat, with an ever decreasing amount of native wildlife.

The pace of habitat destruction is getting faster, year on year.

The destruction on the Indoensian side of New Guinea is of similar scale, but at the moment coming from a lower population base.

In 1990 there were 385,509 people in the Indonesian province of Irian Jaya. This has nearly tripled in 30 years to be about 1 million in 2020.

Transnational companies clearing land for agriculture and deforestation to satisfy insatiable global demand makes up for any lack of local people doing environmental damage just in their quest to stay alive and satisfy daily needs.

In any event, 1 million people in 2020 is likely to multiply to at least 4 million in 65 years and 16 million in 130 years and 72 million people in less than 200 years!

And this assumes no mass immigration from other even more overpopulated parts of the planet!

All in a land area of just 126,093 square kilometres.

The ecological disaster evolving on the island of New Guinea over just a few human life spans is a disaster of biblical proportions.

Even in 2020, in some areas near Port Moresby, Papua New Guinea, streams that 30 years ago were pristine and full of a diverse array of frogs are now nothing more than open sewers taking run off from the homes of increasing numbers of people living in third-world poverty and squalor.

Humans are literally an ecological plague in both Australia and New Guinea and the non-stop population explosion must be arrested with urgency.

The globalisation of trade has also globalized the spread of pathogens that has already had devastating effects on amphibian populations worldwide including in particular in New South Wales and Queensland, Australia (Hoser 1991, Anstis 2013).

Some species with the Pelodryadidae have gone from abundant and at "no extinction risk" to "rare" or "critically endangered" within two decades due to a deadly fungus and such calamities are more likely as the human impact increases.

Put simply, all other "conservation" efforts pale into insignificance when tallied against the benefits of stopping human population growth.

In the material that follows, there is generally no mention of conservation aspects relevant to the given species or genera, but all the preceding is invariably relevant.

ADELYNHOSERHYLEINI TRIBE NOV.

ADEYLNHOSERHYLEA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:67AA47F1-D600-47B8-8096-E4D768EFBF8B

Type species: *Adelynhoserhylea adelynhoserae sp. nov.*

Diagnosis: Species of tree frogs within the genus *Adelynhoserhylea gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Vomerine teeth present. Fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger. A conspicuous serrated ridge along the forearm and another along the hind edge of the foot. The morphologically similar genus *Jackyhoserhylea gen. nov.* with species confined to the New Guinea subregion is readily separated from *Adelynhoserhylea gen. nov.* by having dermal fringes on limbs poorly defined, fingers only part-webbed and they do not not have a well-developed crenulated fold along the outer edge of the fore and hind-limbs, this always being either reduced or absent.

Frogs within the subgenus *Yikesanura subgen. nov.* are readily separated from other species in the nominate subgenus *Adelynhoserhylea subgen. nov.* by having a large triangular skin flap on each heel and a call that is a series of short growls, as opposed to a small skin flap in the form of a tubercle or short spine on each heel and a call that ranges from a series of soft ticks to a faster-paced series of “tocs” in the nominate subgenus.

According to Duellman *et al.* (2016), the species within this genus diverged from their nearest living relatives in the genus *Jackyhoserhylea gen. nov.* 20.2 MYA. According to Duellman *et al.* (2016), the subgenus *Yikesanura subgen. nov.* diverged from their nearest living relatives in the nominate subgenus *Adelynhoserhylea subgen. nov.* 17 MYA.

Distribution: Frogs of the genus *Adelynhoserhylea gen. nov.* are confined to New Guinea and Cape York, Queensland, Australia.

Etymology: *Adelynhoserhylea gen. nov.* is named in honour of Adelyn Hoser, the eldest daughter of this author in recognition of over 21 years of services with Australia’s best reptiles shows, educating others about Australian wildlife and their conservation.

The latter part of the genus name reflects that the species are tree frogs.

Content: *Adelynhoserhylea adelynhoserae sp. nov.* (type species); *A. eucnemis* (Lönnberg, 1900); *A. exophthalmia* (Tyler, Davies and Aplin, 1986); *A. myola* (Hoskin, 2007); *A. serrata* (Andersson, 1916); *A. yikes sp. nov.*.

YIKESANURA SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:3BD043A9-2198-403E-8694-873EEAC963B9

Type species: *Adelynhoserhylea yikes sp. nov.*

Diagnosis: The subgenus *Yikesanura subgen. nov.* includes all species within the group of species associated with the putative taxon originally described as *Hyla eucnemis* Lönnberg, 1900.

These include the *Adelynhoserhylea eucnemis* (Lönnberg, 1900) species complex as well as the Australian species formally named within this paper as *A. yikes sp. nov.* being until now treated as Australian populations of *A. eucnemis.*

Frogs within the subgenus *Yikesanura subgen. nov.* are readily separated from other species in the nominate subgenus *Adelynhoserhylea gen. nov.* by having a large triangular skin flap on each heel and a call that is a series of short growls, as opposed to a small skin flap in the form of a tubercle or short spine on each heel and a call that ranges from a series of soft ticks to a faster-paced series of “tocs” in the nominate subgenus.

Species of tree frogs within the genus *Adelynhoserhylea gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Vomerine teeth present. Fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger. A conspicuous serrated ridge along the forearm and another along the hind edge of the foot. The morphologically similar genus *Jackyhoserhylea gen. nov.* with species confined to the New Guinea subregion is readily separated from *Adelynhoserhylea subgen. nov.* by having dermal fringes on limbs poorly defined, fingers only part-webbed and they do not not have a well-developed crenulated fold along the outer edge of the fore and hind-limbs, this always being either reduced or absent.

Distribution: Frogs of the subgenus *Yikesanura subgen. nov.* are confined to New Guinea and Cape York, Australia.

Etymology: When visiting an extended family of Muluridji, the native Aboriginal tribe from the Mount Carbine area of far north Queensland, Australia in 2017, I showed them a specimen of the species named herein as *Adelynhoserhylea* (*Yikesanura*) *yikes sp. nov.* and all the females in the group yelled out “Yikes” and backed away in fear.

Hence the subgenus and species (*yikes sp. nov.*) names.

Content: *Adelynhoserhylea* (*Yikesanura*) *yikes sp. nov.* (type species); *A.* (*Yikesanura*) *eucnemis* (Lönnberg, 1900).

ADELYNHOSERHYLEA* (*ADELYNHOSERHYLEA*) *ADELYNHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:4954BEF5-386D-49BB-B558-924C5113DE68

Holotype: A preserved male specimen in the South Australian Museum, Adelaide, South Australia, Australia, specimen number R41068 collected at Mount Lewis, in far North Queensland, Australia, Latitude -16.58 S., Longitude 145.28 E.

This government-owned facility allows access to its holdings.

Paratypes: Three preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, as follows:

1/ Specimen number J25175 collected at Mount Finnigan National Park, Queensland, Australia, Latitude -15.8194 S. Longitude 145.2806 E.

2/ Specimen number J27274 collected at Horans Gully, Mount Finnigan, Queensland, Australia, Latitude -15.8333 S., Longitude 145.2667 E.

3/ Specimen number J87041 collected at Little Stony

Creek, Grey Range, Queensland, Australia, Latitude -15.854 S., Longitude 145.211 E.

Diagnosis: Until now the species *Adelynhoserhylea adelynhoserae sp. nov.* has been treated as a northern population of *A. serrata* (Andersson, 1916). Richards *et al.* (2010) confirmed the presence of two species within "*Litoria serrata*" as recognized by them. The division of the north and south wet tropics populations is across the well-known Black Mountain corridor or barrier (or Gap) as detailed in Hoser (2020c).

The type locality/ies of *A. serrata* is Carrington (Malanda) and Atherton, both in the southern wet tropics of North Queensland. There are no available names for the north wet tropics population which is why it is formally named herein.

A. adelynhoserae sp. nov. would key out as "*Litoria serrata*" in both Anstis (2013) and Cogger (2014). The species *A. adelynhoserae sp. nov.* is readily separated from *A. serrata* by a significantly greater preponderance of green on the body as compared to *A. serrata* which is generally a reddish-brown frog, even when green markings are taken into consideration.

The two species are readily separated as follows:

Green pigment reaches the tip of the snout in *A. adelynhoserae sp. nov.* but not in *A. serrata.*

By day, adult *A. adelynhoserae sp. nov.* have a well-defined dark stripe running from the eye (very narrow at start, before abruptly widening), through the entire tympanum and towards the axilla of the forelimb. By contrast in *A. serrata* the line is usually absent, or if present ill defined or indistinct.

Adult *A. serrata* invariably have a distinct and noticeable blueish green upper iris area, which while present in *A. adelynhoserae sp. nov.* is somewhat indistinct in most, but not all specimens.

Scattered tubercles on the upper forearms of *A. serrata* are somewhat pointed or jagged, versus slightly blunted in *A. adelynhoserae sp. nov.*. The lower iris of *A. serrata* is orange, versus brown in *A. adelynhoserae sp. nov.*. The tip of the snout of *A. serrata* is either dark or heavily peppered, versus light or not heavily peppered in *A. adelynhoserae sp. nov.*. Dark markings or cross bands occupy less than half the surface area of the upper surface of the rear hind leg below the knee in *A. adelynhoserae sp. nov.* versus more than half in *A. serrata.*

The lower flanks of *A. serrata* are yellowish in colour, versus whitish in *A. adelynhoserae sp. nov.*.

Both *A. serrata* and *A. adelynhoserae sp. nov.* are readily separated from the other species in the genus *Adelynhoserhylea gen. nov.* by the call of the males which is a slow to barely medium paced "tic", versus a very fast paced series of "tics" or "tocs" or series of short growls as in all the other species.

Species of tree frogs within the genus *Adelynhoserhylea gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Vomerine teeth present. Fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger. A conspicuous serrated ridge along the forearm and another along the hind edge of the foot. The morphologically similar genus *Jackyhoserhylea gen. nov.* with species confined to the New Guinea subregion is readily separated from *Adelynhoserhylea gen. nov.* by having dermal fringes on limbs poorly defined, fingers only part-webbed and they do not not have a well-developed crenulated fold along the outer edge of the fore and hind-limbs, this always being either reduced or absent.

Frogs within the subgenus *Yikesanura subgen. nov.* are readily separated from other species in the nominate subgenus *Adelynhoserhylea subgen. nov.* by having a large triangular skin flap on each heel and a call that is a series of short growls, as opposed to a small skin flap in the form of a tubercle or short spine on each heel and a call that ranges from a series of soft ticks to a faster-paced series of "tocs" in the nominate subgenus.

A photos of *A. serrata* in life can be found in Vanderduys (2012) on page 70 at bottom right, with a photo of *A. adelynhoserae sp. nov.* on the same page on the left.

Photos of both species in life can also be seen in Anstis (2013) at page 306 with *A. serrata* on top right and *A. adelynhoserae sp. nov.* in the other two images.

Dozens of images of both taxa can be found online at: http://www.flickr.com

Distribution: *A. adelynhoserae sp. nov.* is an endemic from the northern wet tropics of far north Queensland, Australia, in a region of coastal ranges between Mount Lewis Lat. -16.583 S., Longitude 145.283 E. in the south and Endeavour River, Cape York Peninsula, Latitude -15.47 S., Longitude 145.25 E. in the north.

A. serrata is therefore restricted to mountainous areas between Cairns in the North and Mount Spec, Paluma Range in the south.

Etymology: The newly named species *A. adelynhoserae sp. nov.* is named in honour of Adelyn Hoser, the eldest daughter of this author in recognition of over 21 years of services with Australia's best reptiles shows, educating others about Australian wildlife and their conservation.

ADELYNHOSERHYLEA* (*YIKESANURA*) *YIKES SP. NOV.

LSIDurn:lsid:zoobank.org:act:DB7788A3-73F9-4A65-9EDE-12AA33B90B36

Holotype: A preserved male specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J67706 collected at the Upper Peach Creek in the McIlwraith Range on Cape York, Queensland, Australia, Latitude -13.73 S. Longitude 143.3361 E.

This government-owned facility allows access to its holdings.

Paratypes: Thirteen preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J60905, J67703, J67714, J70581, J70588, J70599, J70600, J74444, J74447, J74452, J74454, J74457 and J86917 all from within 10 km of the type locality, being the Upper Peach Creek in the McIlwraith Range on Cape York, Queensland, Australia, Latitude -13.73 S. Longitude 143.3361 E.

Diagnosis: Until now the species *Adelynhoserhylea* (*Yikesanura*) *yikes sp. nov.* has been treated as an Australian population of the species *A. eucnemis* (Lönnberg, 1900) with a type locality in New Guinea,

known in most texts as "*Litoria eucnemis*" (e.g. Cogger 2014, Anstis 2013), or alternatively as "*Ranoidea eucnemis* " (e.g. at https://amphibiansoftheworld.amnh.org/Amphibia/Anura/Pelodryadidae/Pelodryadinae/Ranoidea/Ranoidea-eucnemis) or "*Dryopsophus eucnemis*" (Duellman *et al*. 2016).

With a divergence of more than 20 MYA from all three above-named genera, based on the results of Duellman *et al*. 2016, it is clear that a separate genus was warranted for this putative taxon and nearest relatives and hence the formal erection of *Adelynhoserhylea gen. nov.*.

A. yikes sp. nov. would key out as *A. eucnemis* in both Cogger (2014) and Anstis (2013) and is morphologically very similar to that species.

A. yikes sp. nov. is however readily separated from *A. eucnemis* by having an iris that is dominantly orange in colour, versus yellow-gold in *A. eucnemis.* The flared skin folds or tubercles on the lower hind feet and rear of front limbs are extremely large and prominent in *A. eucnemis* versus only moderately so in *A. yikes sp. nov.*. The webbing between the first and second toe reaches the disc in *A. yikes sp. nov.* but not quite so in *A. eucnemis.* While colour of both species varies significantly, Australian *A. yikes sp. nov.* are invariably a mainly a yellow to yellow brown colour dorsally, whereas *A. eucnemis* from New Guinea is dominantly a green colouration on top with brown or beige spots, blotches, flecks or peppering.

A. yikes sp. nov. is depicted in life in photos in Vanderduys (2012) on page 39, bottom left, Anstis (2013) on page 195 (all photos), Cogger (2014) on page 163 (both images) and Eipper (2018) on page 129 (top image).

A. eucnemis is depicted in life in Menzies (1976) plate 5 at bottom right, Menzies (2016) colour photo 48 and Richards *et al*. (2010), Figure 4A.

A. eucnemis (Lönnberg, 1900) is believed to be a species complex. *Hyla rhacophorus* Van Kampen, 1909, Type locality: "Etna Bai", Papua, New Guinea, Indonesia, and *Nyctimystes loveridgei* Neill, 1954 Type locality: "small stream near Taburi, a native village about 2 miles southeast of Rouna Fall, [Southeast Peninsula,] Papua [New Guinea]" are available names for two populations. However the molecular results of Richards *et al*. (2010) were ambiguous and so both are tentatively treated as synonyms herein.

A. yikes sp. nov. and *A. eucnemis*, consisting the subgenus *Yikesanura subgen. nov.* are readily separated from other species in the nominate subgenus *Adelynhoserhylea gen. nov.* by having a large triangular skin flap on each heel and a call that is a series of short growls, as opposed to a small skin flap in the form of a tubercle or short spine on each heel and a call that ranges from a series of soft ticks to a faster-paced series of "tocs" in the nominate subgenus.

Species of tree frogs within the genus *Adelynhoserhylea gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Vomerine teeth present. Fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger. A conspicuous serrated ridge along the forearm and another along the hind edge of the foot. The morphologically similar genus *Jackyhoserhylea gen. nov.* with species confined to the New Guinea subregion is readily separated from *Adelynhoserhylea subgen. nov.* by having dermal fringes on limbs poorly defined, fingers only part-webbed and they do not not have a well-developed crenulated fold along the outer edge of the fore and hind-limbs, this always being either reduced or absent.

Distribution: As far is is known, this taxon is restricted to isolated pockets on Cape York Peninsula, far north Queensland, Australia.

Etymology: As for the subgenus *Yikesanura subgen. nov.*.

JACKYHOSERHYLEA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:D57B03A7-9A0C-4BCD-B47E-D31BC69567FA

Type species: *Hyla genimaculata* Horst, 1883.

Diagnosis: The genus *Jackyhoserhylea gen. nov*. includes all the frogs in the *Hyla genimaculata* Horst, 1883 species complex.

The putative species *Hyla genimaculata* Horst, 1883, has been treated by most authors since as being within the genus *Litoria* Tschudi, 1838 (e.g. Anstis 2013, Cogger 2014), although also sometimes placed within *Ranoidea* Tschudi, 1838 (e.g. https://amphibiansoftheworld.amnh.org/Amphibia/Anura/Pelodryadidae/Pelodryadinae/Ranoidea/Ranoidea-genimaculata), or even *Dryopsophus* Fitzinger, 1843 (e.g. Duellman *et al.* 2016).

It is in fact so divergent from the types of each of those genera, that there is no logical alternative but to place the taxon within a separate genus.

According to Duellman *et al.* (2016), this putative species has a 20.2 MYA divergence from its nearest relatives (being *Adelynhoserhylea gen. nov.*) and due to significant morphological divergence, it makes sense for it to be placed within a newly erected genus as done herein.

That the putative species is composite has been known for many years (e.g. Richards *et al.* 2010) and this paper formally names two of them for the first time, meaning this newly erected genus currently has three species, although this number may well expand.

Species of tree frogs within the genus *Jackyhoserhylea gen. nov.* with species confined to the New Guinea subregion are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Vomerine teeth present. Fingers only partly webbed and not with conspicuous webbing that would reach at least as far as the base of the penultimate phalanx of the fourth finger. The serrated ridge along the forearm and another along the hind edge of the foot is either reduced or absent, body length (head to end of back) is less than 52 mm.

The genus *Jackyhoserhylea gen. nov.* is readily separated from the morphologically similar genus *Adelynhoserhylea gen. nov.* by having dermal fringes on limbs poorly defined, fingers only part-webbed and they do not not have a well-developed crenulated fold along

the outer edge of the fore and hind-limbs, this always being either reduced or absent.

Species of tree frogs within the genus *Adelynhoserhylea gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Vomerine teeth present. Fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger. A conspicuous serrated ridge along the forearm and another along the hind edge of the foot body length less than 72 mm.

Frogs within the subgenus *Yikesanura subgen. nov.* are readily separated from other species in the nominate subgenus *Adelynhoserhylea subgen. nov.* by having a large triangular skin flap on each heel and a call that is a series of short growls, as opposed to a small skin flap in the form of a tubercle or short spine on each heel and a call that ranges from a series of soft ticks to a faster-paced series of “tocs” in the nominate subgenus.

In further detail, all three species, *J. ernieswilei sp. nov*., *J. jackyhoserae sp. nov*. and *J. genimaculata* being the entirety of the genus *Jackyhoserhylea gen. nov.* are further separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

A very high E-N/IN ratio (1.250-1.585), crenulated dermal folds on the posterior surfaces of the forearms and tarsus and a very small, triangular dermal appendage on the heel. Adult males have a snout to vent length of 30-41 mm and adult females 40-52 mm.

The head is flattened and longer than broad (HL/HW 1.055-1.103), its length more than one-third of the snout to vent length (HL/S-V 0.350-0.404).

The snout is high; when viewed from above and in profile it is truncate or very slightly rounded. The nostrils are lateral, their distance from the end of the snout considerably less than that from the eye.

The distance between the eye and the naris is greater than the internarial span (E-N/IN 1.250-1.585). The canthus rostralis is prominent and slightly curved. The eye is large, its diameter slightly greater than the distance separating it from the nostril. The tympanum is visible, its diameter equivalent to from one-quarter to almost two-thirds of the eye diameter. The vomerine teeth are in two oval series situated between and extending slightly below the level of the choanae. The tongue is small and broadly cordiform, with a slightly indented posterior border.

The fingers are long and slender with very narrow lateral fringes. In decreasing order of length 3>4>2>1. The webbing on the fourth finger reaches the sub-articular tubercle at the base of the penultimate phalanx. The terminal discs are moderate to conspicuous.

The hind limbs are long and slender with a TL/S-V ratio of 0.516-0.613. Toes in decreasing order of length 4>5=or>3>2>1. The fourth and first toes are webbed to the sub-articular tubercles at the base of the penultimate phalanx, and the remainder are webbed to the base of the terminal discs.

The skin on the dorsal surfaces is smooth or very finely tubercular.

There is a very narrow supra-tympanic fold extending from the eye to a point above the insertion of the forelimbs. The upper margin of the tympanic annulus is occasionally hidden beneath this fold. On the posterior surfaces of the

forearm and tarsus are single rows of triangular dermal appendages. These are acutely pointed on the forearm and obtusely pointed on the tarsus. There is a very small triangular dermal appendage on the heel, and a few prominent tubercles around the anus. The throat is tubercular, and the chest, abdomen and the lower surface of the thighs granular.

Males possess a sub-gular vocal sac and there is a small nuptial pad on the inner surface of the first finger.

According to Duellman *et al*. (2016), the species within this genus (*Jackyhoserhylea gen. nov.*) diverged from their nearest living relatives in the genus *Adelynhoserhylea gen. nov.* 20.2 MYA. According to Duellman *et al*. (2016), the subgenus *Yikesanura subgen. nov.* diverged from their nearest living relatives in the nominate subgenus *Adelynhoserhylea subgen. nov.* 17 MYA.

Distribution: New Guinea, including north and south of the central cordillera as well as on nearby offshore islands, at least as far west as Pulau Gebe, the type locality for *J. genimaculata* (Horst, 1883).

Etymology: *Jackyhoserhylea gen. nov.* is named in honour of Jacky Hoser, the youngest daughter of this author in recognition of over 18 years of services with Australia’s best reptiles shows, educating others about Australian wildlife and their conservation.

Content: *Jackyhoserhylea genimaculata* (Horst, 1883); *J. ernieswilei sp. nov*.; *J. jackyhoserae sp. nov*..

JACKYHOSERHYLEA ERNIESWILEI SP. NOV.

LSIDurn:lsid:zoobank.org:act:A0559864-890B-498E-B844-3DB810C95C97

Holotype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138, United States of America, specimen number MCZ Herp A-109000 collected from Weiana, Gold Province, Papua New Guinea, Latitude -6.7626811 S., Longitude 144.875 E.

This facility allows access to its holdings.

Paratypes: Seven preserved specimens at the Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138, United States of America, specimen number MCZ Herp A-109001- A-109007 collected from Weiana, Gulf Province, Papua New Guinea, Latitude -6.7626811 S., Longitude 144.875 E.

Diagnosis: *Jackyhoserhylea jackyhoserae sp. nov*. from Madang and *J. ernieswilei sp. nov*. from the Huon Peninsula south-east and including the Gulf Province of Papua New Guinea, south of the central cordillera have until now been treated as populations of *Jackyhoserhylea genimaculata* (Horst, 1883), with a type locality of Pulau Gebe and a range extending east through nearby islands along the northern side of New Guinea in Irian Jaya to north-west Papua New Guinea.

All three morphologically similar frogs would have been identified as *Hyla genimaculata* as defined and diagnosed by Tyler (1968).

The three species are however separated from one another as follows:

J. genimaculata is a light brownish to beige coloured frog with minimal obvious markings on the body or head. The flanks and nearby underbelly are bright yellowish in colour and this often runs onto the limbs. The serrated edges at the back of the forearm and feet are moderate. Upper iris is yellow and lower iris is orange.

J. jackyhoserae sp. nov. is a frog with a mottled dorsum being a mix of yellowish and brown, again with flanks and nearby underbelly being bright yellowish in colour and often running onto the limbs. The serrated edges at the back of the forearm and feet are reduced as compared to *J. genimaculata.* The iris is generally orange top and bottom with a slight blue tinge at the very edge of top and bottom.

J. ernieswilei sp. nov. has green and brown on the dorsum which becomes yellow on the flanks and whitish below. There are scattered tiny tubercles on the dorsal surface, including most of the time a distinct small pointed one on top of either eye. The top of the iris is yellow and the bottom brown. The serrated edges at the back of the forearm and feet are expanded and the folds tend to merge.

J. jackyhoserae sp. nov. is separate to the other two species in that the front toe pads are much wider than the digits, versus only marginally so in each of the other species.

All three species, *J. ernieswilei sp. nov*., *J. jackyhoserae sp. nov*. and *J. genimaculata* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

A very high E-N/IN ratio (1.250-1.585), crenulated dermal folds on the posterior surfaces of the forearms and tarsus and a very small, triangular dermal appendage on the heel. Adult males have a snout to vent length of 30-41 mm and adult females 40-52 mm.

The head is flattened and longer than broad (HL/HW 1.055-1.103), its length more than one-third of the snout to vent length (HL/S-V 0.350-0.404). The snout is high; when viewed from above and in

profile it is truncate or very slightly rounded. The nostrils are lateral, their distance from the end of the snout considerably less than that from the eye.

The distance between the eye and the naris is greater than the internarial span (E-N/IN 1.250-1.585). The canthus rostralis is prominent and slightly curved. The eye is large, its diameter slightly greater than the distance separating it from the nostril. The tympanum is visible, its diameter equivalent to from one-quarter to almost two-thirds of the eye diameter. The vomerine teeth are in two oval series situated between and extending slightly below the level of the choanae. The tongue is small and broadly cordiform, with a slightly indented posterior border.

The fingers are long and slender with very narrow lateral fringes. In decreasing order of length 3>4>2>1. The webbing on the fourth finger reaches the sub-articular tubercle at the base of the penultimate phalanx. The terminal discs are moderate to conspicuous.

The hind limbs are long and slender with a TL/S-V ratio of 0.516-0.613. Toes in decreasing order of length 4>5=or>3>2>1. The fourth and first toes are webbed to the sub-articular tubercles at the base of the penultimate phalanx and the remainder are webbed to the base of the terminal discs.

The skin on the dorsal surfaces is smooth or very finely tubercular. There is a very narrow supra-tympanic fold extending from the eye to a point above the insertion of the forelimbs. The upper margin of the tympanic annulus is occasionally hidden beneath this fold. On the posterior surfaces of the

forearm and tarsus are single rows of triangular dermal appendages. These are acutely pointed on the forearm and obtusely pointed on the tarsus. There is a very small triangular dermal appendage on the heel and a few prominent tubercles around the anus. The throat is tubercular and the chest, abdomen and the lower surface of the thighs granular.

Males possess a sub-gular vocal sac and there is a small nuptial pad on the inner surface of the first finger.

But in summary, species of tree frogs within the genus *Jackyhoserhylea gen. nov.* with species confined to the New Guinea subregion are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Vomerine teeth present. Fingers only partly webbed and not with conspicuous webbing that would reach at least as far as the base of the penultimate phalanx of the fourth finger. The serrated ridge along the forearm and another along the hind edge of the foot is either reduced or absent, body length (head to end of back) is less than 52 mm.

The genus *Jackyhoserhylea gen. nov.* is readily separated from the morphologically similar genus *Adelynhoserhylea gen. nov.* by having dermal fringes on limbs poorly defined, fingers only part-webbed and they do not not have a well-developed crenulated fold along the outer edge of the fore and hind-limbs, this always being either reduced or absent.

Distribution: *J. ernieswilei sp. nov*. is a species from the Gulf Province of Papua New Guinea and appears to be found elsewhere south of central cordillera of New Guinea as well as north of the cordillera in south-east Papua New Guinea east of the Huon Peninsula.

Etymology: Named in honour of Ernest Swile of Cape Town in South Africa in recognition for his services to wildlife conservation through assisting this author's team in our research activities on African wildlife, in particular with the venomous snakes including Cobras and Vipers.

JACKYHOSERHYLEA JACKYHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:75774B36-DF46-4163-A80B-3D76E6D651D7

Holotype: A preserved male specimen at the Bernice P. Bishop Museum, Honolulu, Hawaii, USA, specimen number BPBM 12422 (also in register as 12233) collected from 1km south west of Markham Point, on the Lae to Wau Road, Madang Province, Papua New Guinea.

This facility allows access to its holdings.

Diagnosis: *Jackyhoserhylea jackyhoserae sp. nov*. from Madang and *J. ernieswilei sp. nov*. from the Huon Peninsula south-east and including the Gulf Province of Papua New Guinea, south of the central cordillera have

until now been treated as populations of *Jackyhoserhylea genimaculata* (Horst, 1883), with a type locality of Pulau Gebe and a range extending east through nearby islands along the northern side of New Guinea in Irian Jaya to north-west Papua New Guinea.

All three morphologically similar frogs would have been identified as *Hyla genimaculata* as defined and diagnosed by Tyler (1968).

The three species are however separated from one another as follows:

J. genimaculata is a light brownish to beige coloured frog with minimal obvious markings on the body or head. The flanks and nearby underbelly are bright yellowish in colour and this often runs onto the limbs. The serrated edges at the back of the forearm and feet are moderate. Upper iris is yellow and lower iris is orange.

J. jackyhoserae sp. nov. is a frog with a mottled dorsum being a mix of yellowish and brown, again with flanks and nearby underbelly being bright yellowish in colour and often running onto the limbs. The serrated edges at the back of the forearm and feet are reduced as compared to *J. genimaculata.* The iris is generally orange top and bottom with a slight blue tonge at the very edge of top and bottom.

J. ernieswilei sp. nov. has green and brown on the dorsum which becomes yellow on the flanks and whitish below. There are scattered tiny tubercles on the dorsal surface, including most of the time a distinct small pointed one on top of either eye. The top of the iris is yellow and the bottom brown. The serrated edges at the back of the forearm and feet are expanded and the folds tend to merge.

J. jackyhoserae sp. nov. is separate to the other two species in that the front toe pads are much wider than the digits, versus only marginally so in each of the other species.

All three species, *J. ernieswilei sp. nov*., *J. jackyhoserae sp. nov*. and *J. genimaculata* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

A very high E-N/IN ratio (1.250-1.585), crenulated dermal folds on the posterior surfaces of the forearms and tarsus and a very small, triangular dermal appendage on the heel. Adult males have a snout to vent length of 30-41 mm and adult females 40-52 mm.

The head is flattened and longer than broad (HL/HW 1.055-1.103), its length more than one-third of the snout to vent length (HL/S-V 0.350-0.404). The snout is high; when viewed from above and in

profile it is truncate or very slightly rounded. The nostrils are lateral, their distance from the end of the snout considerably less than that from the eye.

The distance between the eye and the naris is greater than the internarial span (E-N/IN 1.250-1.585). The canthus rostralis is prominent and slightly curved. The eye is large, its diameter slightly greater than the distance separating it from the nostril. The tympanum is visible, its diameter equivalent to from one-quarter to almost two-thirds of the eye diameter. The vomerine teeth are in two oval series situated between and extending slightly below the level of the choanae. The tongue is small and broadly cordiform, with a slightly indented posterior border.

The fingers are long and slender with very narrow lateral fringes. In decreasing order of length 3>4>2> 1. The webbing on the fourth finger reaches the sub-articular tubercle at the base of the penultimate phalanx. The terminal discs are moderate to conspicuous.

The hind limbs are long and slender with a TL/S-V ratio of 0.516-0.613. Toes in decreasing order of length 4>5=or>3>2>1. The fourth and first toes are webbed to the sub-articular tubercles at the base of the penultimate phalanx, and the remainder are webbed to the base of the terminal discs.

The skin on the dorsal surfaces is smooth or very finely tubercular. There is a very narrow supra-tympanic fold extending from the eye to a point above the insertion of the forelimbs. The upper margin of the tympanic annulus is occasionally hidden beneath this fold. On the posterior surfaces of the

forearm and tarsus are single rows of triangular dermal appendages. These are acutely pointed on the forearm and obtusely pointed on the tarsus. There is a very small triangular dermal appendage on the heel, and a few prominent tubercles around the anus. The throat is tubercular, and the chest, abdomen and the lower surface of the thighs granular.

Males possess a sub-gular vocal sac and there is a small nuptial pad on the inner surface of the first finger.

But in summary, species of tree frogs within the genus *Jackyhoserhylea gen. nov.* with species confined to the New Guinea subregion are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Vomerine teeth present. Fingers only partly webbed and not with conspicuous webbing that would reach at least as far as the base of the penultimate phalanx of the fourth finger. The serrated ridge along the forearm and another along the hind edge of the foot is either reduced or absent, body length (head to end of back) is less than 52 mm.

The genus *Jackyhoserhylea gen. nov.* is readily separated from the morphologically similar genus *Adelynhoserhylea gen. nov.* by having dermal fringes on limbs poorly defined, fingers only part-webbed and they do not not have a well-developed crenulated fold along the outer edge of the fore and hind-limbs, this always being either reduced or absent.

Distribution: *Jackyhoserhylea jackyhoserae sp. nov*. is currently known only from Northern Papua New Guinea in the general region of Madang, generally west of the Huon Peninsula.

Etymology: The species *Jackyhoserhylea jackyhoserae sp. nov*. is named in honour of Jacky Hoser, the youngest daughter of this author in recognition of over 19 years of services with Australia's best reptiles shows, educating others about Australian wildlife and their conservation.

LEUCODIGIRANINA SUBTRIBE NOV.

LEUCODIGIRANA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:919C4E4C-C489-44FE-9D13-E880D94935C1

Type species: *Litoria andiirrmalin* McDonald, 1997.

Diagnosis: The monotypic species compring the entirety

of the genus *Leucodigirana gen. nov.* is readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Brown to golden brown across most of the dorsum, the body and limbs with numerous scattered dark or light brown spots and blotches, among which are usually smaller pale brown or cream spots and blotches. Venter is white and lower flanks greyish-white, often with brown under the throat. Axilla and groin are flesh coloured. Hind side of thighs is mottled with pale and dark brown. Skin is smooth to leathery above and granular on the venter. Vomerine teeth are present and between the choanae. There is no pectoral fold. There is no enlarged tubercle or crenulated ridge along the hind edge of the forearm. Finger and toe discs are large. Fingers lack webbing and toes are nearly completely webbed, with webbing reaching the base of the penultimate phalanx of the fourth toe. There is a prominent inner metatarsal tubercle and no outer one. Heel of adpressed hind limb goes well beyond the eye. Tympanum is large and obvious, with a well-developed supratympanic fold. Above this, there is a semidistinct beige coloured stripe, extending to form broken blotches along a line running along the margin of the upper flank. This is not however in the form of a distinct, well marked whitish stripe. There is also no pale line along the posterior edge of the upper jaw, although this region of the head is usually a light bluey, purplish grey in colour. Second finger is much longer than the first, the tip of the first finger goes no further than the base of the disc of the second finger when they are pressed togeather. Males get to 80 mm in body length and females 100 mm.

Duellman *et al.* (2016) found that the type species for this monotypic genus diverged from its nearest living relative 23.5 MYA. Being morphologicaly divergent from the nearest living relatives in the genus *Euscelis* Fitzinger, 1843, the case for the erection of the new genus *Leucodigirana gen. nov.* was compelling.

Distribution: Known only from the type locality, being the Melville Range at Cape Melville, Cape York Peninsula, far north Queensland.

Etymology: The name *leucodigirana* literally means white toed frog, in reference to the usual character state of adults, in particular with reference to the discs which are a distinctive white colour.

“Rana” means frog.

Content: *Leucodigirana andiirrmalin* (McDonald, 1997) (monotypic).

***EUSCELIS* FITZINGER, 1843**

Type species: *Hyla lesueurii* Dümeril and Bibron, 1841.

Diagnosis: The genus *Euscelis* Fitzinger, 1843 is separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Colouration is a pale fawn to dark brown above, usually immaculate, or with darker markings, ranging from flecks to blotches and including one that forms a transverse bar between the eyes; the tympanum has a pale rim; dorsal surface generally smooth or sometimes leathery, with one species having slight warts; webbing may reach the disc of the fifth toe, but usually not, and generally extending no more than halfway along the penultimate phalanx; discs on fingers and toes are small and inconspicuous and barely wider than digits; fingers unwebbed; second finger slightly longer than first; anterior head stripe is present, usually narrow but always continuous, but sometimes ill-defined, not interrupted by a vertical bar in front of the eye; posterior head stripe is narrow, no more than half as wide as and not enclosing the tympanum; there is a moderate inner metatarsal tubercle and a small outer metatarsal tubercle is present; vomerine teeth present; groin is yellow and heavily blotched with black. Whistish ventrally with granular skin. No dorsolateral skin fold.

Duellman *et al.* (2016) found that the nearest living relative of this genus diverged from these species 23.5 MYA.

Distribution: Wetter parts of the east coast of south-east Australia, extending, from Victoria, through New South Wales and south east Queensland and then to the wet tropics of north-east Queensland.

Content: *Euscelis lesueurii* (Dümeril and Bibron, 1841) (type species); *E. booroolongensis* (Moore, 1961); *E. jungguy* (Donnellan and Mahony, 2004); *E. wilcoxi* (Günther, 1864).

EUSCELIS BOOROOLONGENSIS DORSARUBER SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:5C0EDE3D-FB06-4EA1-8E38-D696B86423DC

Holotype: A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D73149, collected from Killimicat Creek, New South Wales, Australia, Latitude -35.2 S., Longitude 148.33 E. This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D73109 and D73123, both collected from Bombowlee Creek, New South Wales, Australia, Latitude -35.27 S., Longitude 148.33 E.

Diagnosis: The species *E. booroolongensis* (Moore, 1961), with a type locality of Ebor, on the eastern edge of the New England Tableland, New South Wales, Australia, is found from the New England region of New South Wales, south along the Great Dividing Range and nearby slopes to north-east Victoria. Within this range, specimens are known from three general areas, each separated by well known biogeographical barriers. The populations are as follows:

1/ The nominate form, found in the New Engand Region of New South Wales, generally bounded in the south by the Hunter Valley and north to near the Queensland, New South Wales border, and:

2/ A second population in the general region south of the Hunter Valler intrusion, including elevated areas west of Sydney, New South Wales, generally west of the Great Divide in a region bounded by Kandos in the north, Orange in the West, Blackheath in the east and Taralga in the south, herein identified as the subspecies *E. booroolongensis occultatum subsp. nov.* and:

3/ The third population is found in a region generally east and west of the Australian Capital Territory, generally south of Tarago, New South Wales, into Victoria on the western side of the Great Dividing Range, herein identified as *E. booroolongensis dorsaruber subsp. nov.*.

All three populations would be keyed as *E. booroolongensis* using the key in Cogger (2014), as "*Litoria booroolongensis*" but are sufficiently morphologically divergent to be formally identified as subspecies as done herein.

E. booroolongensis dorsaruber subsp. nov. is the most distinctive of the three subspecies and is readily separated from the other two by the following suite of characters: A strongly dark reddish-brown dorsal colouration, which is in stark contrast to the other two subspecies. *E. booroolongensis occultatum subsp. nov.* is only slightly reddish in colour, being generally greyish with an orange tinge, while *E. booroolongensis booroolongensis* is strongly yellowish. *E. booroolongensis dorsaruber subsp. nov.* is also separated from the other two subspecies by having a significant amount of dark pigment in the form of blotches, spots or thick peppering on the upper surface of the lower forearms, versus minimal in the other two subspecies.

Both *E. booroolongensis booroolongensis* and *E. booroolongensis occultatum subsp. nov.* have a strong yellow colour or tinge in the armpits and groin, versus white or only slightly yellow in *E. booroolongensis dorsaruber subsp. nov.*.

The black peppering or other markings on the back of *E. booroolongensis dorsaruber subsp. nov.* is distinct versus slight or semi-distinct in both *E. booroolongensis booroolongensis* and *E. booroolongensis occultatum subsp. nov.*

E. booroolongensis occultatum subsp. nov. is separated from the other two subspecies by lacking the strong reddish-brown hue of *E. booroolongensis dorsaruber subsp. nov.* or the strong yellow hue of *E. booroolongensis booroolongensis.*

The orange dorsal warts on both *E. booroolongensis occultatum subsp. nov.* and *E. booroolongensis booroolongensis* strongly contrast with the lighter colour of the back, which is not the case in *E. booroolongensis dorsaruber subsp. nov.*.

E. booroolongensis booroolongensis is readily separated from both other subspecies by having a lower iris that is almost black, versus not so in the other two subspecies, as well as a having a strongly yellowish hue through the dorsal colouration, dorsal warts of contrasting colour to the skin on the back; a prominent orange bar between the front part of the eyes, and minimal dark pigment on the upper surfaces of the lower forearms, or if present, it is invariably very faded and indistinct.

E. booroolongensis booroolongensis in life is depicted in Anstis (2013) on page 154 left, Cogger (2014) at page 152 and online at:
https://www.flickr.com/photos/23031163@N03/24027547442/

E. booroolongensis occultatum subsp. nov. in life is depicted in Anstis (2013) on page 154 right and in Hansen and Crosby (2016) on pages 166, 167 and 168, and online at:
https://www.flickr.com/photos/mattsummerville/16396285454/

Images of *E. booroolongensis dorsaruber subsp. nov.* can be found online at:
https://www.flickr.com/photos/88708273@N03/49657691666/
and
https://www.flickr.com/photos/137559394@N07/45899029804/
and
https://www.flickr.com/photos/euprepiosaur/16184175046/
and
https://www.flickr.com/photos/137559394@N07/46570626562/

Distribution: *E. booroolongensis dorsaruber subsp. nov.* is found in a region generally east and west of the Australian Capital Territory, generally south of Tarago, New South Wales, into Victoria on the western side of the Great Dividing Range.

Etymology: The name "*dorsaruber*" is derived from Latin and effectively means red dorsum, in reflection of the strong dark reddish-brown colouration of the relevant frogs.

EUSCELIS BOOROOLONGENSIS OCCULTATUM SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:A4BA98D3-7CBC-4499-A19A-41CCD36B7C27

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia specimen number R.85580, collected 2 miles from the Hampton-Jenolan Caves Road on the Oberon Road, about 8 km (5 miles) east of Oberon, New South Wales, Australia, Latitude -33.700 S., Longitude 150.016 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia specimen number R.85579, collected 2 miles from the Hampton-Jenolan Caves Road on the Oberon Road, about 8 km (5 miles) east of Oberon, New South Wales, Australia, Latitude -33.700 S., Longitude 150.016 E.

Diagnosis: The species *E. booroolongensis* (Moore, 1961), with a type locality of Ebor, on the eastern edge of the New England Tableland, New South Wales, Australia, is found from the New England region of New South Wales, south along the Great Dividing Range and nearby slopes to north-east Victoria. Within this range, specimens are known from three general areas, each separated by well known biogeographical barriers. The populations are as follows:

1/ The nominate form, found in the New Engand Region of New South Wales, generally bounded in the south by the Hunter Valley and north to near the Queensland, New South Wales border, and:

2/ A second population in the general region south of the Hunter Valler intrusion, including elevated areas west of Sydney, New South Wales, generally west of the Great Divide in a region bounded by Kandos in the north, Orange in the West, Blackheath in the east and Taralga in the south, herein identified as the subspecies *E. booroolongensis occultatum subsp. nov.* and:

3/ The third population is found in a region generally east and west of the Australian Capital Territory, generally south of Tarago, New South Wales, into Victoria on the

western side of the Great Dividing Range, herein identified as *E. booroolongensis dorsaruber subsp. nov.*.

All three populations would be keyed as *E. booroolongensis* using the key in Cogger (2014), as "*Litoria booroolongensis*" but are sufficiently morphologically divergent to be formally identified as subspecies as done herein.

E. booroolongensis dorsaruber subsp. nov. is the most distinctive of the three subspecies and is readily separated from the other two by the following suite of characters: A strongly dark reddish-brown dorsal colouration, which is in stark contrast to the other two subspecies. *E. booroolongensis occultatum subsp. nov.* is only slightly reddish in colour, being generally greyish with an orange tinge, while *E. booroolongensis booroolongensis* is strongly yellowish. *E. booroolongensis dorsaruber subsp. nov.* is also separated from the other two subspecies by having a significant amount of dark pigment in the form of blotches, spots or thick peppering on the upper surface of the lower forearms, versus minimal in the other two subspecies.

Both *E. booroolongensis booroolongensis* and *E. booroolongensis occultatum subsp. nov.* have a strong yellow colour or tinge in the armpits and groin, versus white or only slightly yellow in *E. booroolongensis dorsaruber subsp. nov.*.

The black peppering or other markings on the back of *E. booroolongensis dorsaruber subsp. nov.* is distinct versus slight or semi-distinct in both *E. booroolongensis booroolongensis* and *E. booroolongensis occultatum subsp. nov.*

E. booroolongensis occultatum subsp. nov. is separated from the other two subspecies by lacking the strong reddish-brown hue of *E. booroolongensis dorsaruber subsp. nov.* or the strong yellow hue of *E. booroolongensis booroolongensis.*

The orange dorsal warts on both *E. booroolongensis occultatum subsp. nov.* and *E. booroolongensis booroolongensis* strongly contrast with the lighter colour of the back, which is not the case in *E. booroolongensis dorsaruber subsp. nov.*.

E. booroolongensis booroolongensis is readily separated from both other subspecies by having a lower iris that is almost black, versus not so in the other two subspecies, as well as a strongly yellowish hue through the dorsal colouration, dorsal warts of contrasting colour to the skin on the back; a prominent orange bar between the front part of the eyes, and minimal dark pigment on the upper surfaces of the lower forearms, or if present, it is invariably very faded and indistinct.

E. booroolongensis booroolongensis in life is depicted in Anstis (2013) on page 154 left, Cogger (2014) at page 152 and online at:
https://www.flickr.com/photos/23031163@N03/24027547442/

E. booroolongensis occultatum subsp. nov. in life is depicted in Anstis (2013) on page 154 right and in Hansen and Crosby (2016) on pages 166, 167 and 168, and online at:
https://www.flickr.com/photos/mattsummerville/16396285454/

Images of *E. booroolongensis dorsaruber subsp. nov.* can be found online at:
https://www.flickr.com/photos/88708273@N03/49657691666/
and
https://www.flickr.com/photos/137559394@N07/45899029804/
and
https://www.flickr.com/photos/euprepiosaur/16184175046/
and
https://www.flickr.com/photos/137559394@N07/46570626562/

Distribution: *E. booroolongensis occultatum subsp. nov.* occurs in the general region south of the Hunter Valler intrusion, including elevated areas west of Sydney, New South Wales, generally west of the Great Divide in a region bounded by Kandos in the north, Orange in the West, Blackheath in the east and Taralga in the south.

Etymology: The name "*occultatum*" is derived from Latin and effectively means hidden and in as much as this form has been hidden in terms of taxonomy until now, the name is appropriate.

COGGERDONIANI TRIBE NOV.

GENUS *COGGERDONIA* WELLS AND WELLINGTON, 1985.

Type species: *Hyla adelaidensis* Gray, 1841.

Diagnosis: Living frogs in the genus *Coggerdonia* Wells and Wellington, 1985 are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: A slender frog being light brown, fawn or light green above, with dark brown patches or flecks arranged in distinct longitudinal lines. There is a dark brown to black stripe running from the tip of the snout below the canthus to the eye, somewhat triangular in shape as it widens towards the eye and then remaining broad as it extends across the tympanum and beyond along the flank to the rear of the body. This dark coloured stripe is bordered on the lower edge with a well-defined line of white, also running from the upper lip. Sometimes this stripe will break up into a series of adjacent spots. The hind parts of the thighs are dark brown with orange or reddish spots. Belly is whitish to light brown. Skin is smooth above and coarsely granular below, except under the throat, which is also smooth. Vomerine teeth are prominent between and behind the choanae. There is a distinct pectoral fold. Finger and toe discs are small and not much wider than the digits. Fingers have basal webbing only and toes are about three quarters webbed. Inner metatarsal tubercle is large and there is no outer one. Tympanum is large and distinct and the second finger is longer than the first. Adult size 50 to 60 mm (derived from Cogger, 2014).

According to Duellman *et al.* (2016), the single living member of this genus diverged from its nearest living relatives 30.8 MYA.

Distribution: Wetter parts of south-western Western Australia, Australia.

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

CYCLORANININI TRIBE NOV.

GENUS *CYCLORANA* STEINDACHNER, 1867

Type species: *Cyclorana novaehollandiae* Steindachner, 1867.

Diagnosis: The genus concept of *Cyclorana* Steindachner, 1867 herein is narrower than that of most extant publications (e.g. Cogger 2014), but wholly in line with the taxonomy formally proposed by Wells and Wellington (1985). While a bunch of liars, thieves and ratbags, known as the Wolfgang Wüster gang will claim my doing so is purely out of friendship to Wells and Wellington and in the absence of scientific evidence, the reverse is in fact the case.

The evidence for accepting and using the Wells and Wellington taxonomy is effectively compelling.

Duellman *et al.* (2016) found that the species within *Cyclorana* as defined by Wells and Wellington (1985) diverged from their nearest living relatives 13.4 MYA, these being those species placed within each of the genera *Neophractops* Wells and Wellington (1985), with type species *Chiroleptes platycephalus* Günther, 1873 and *Mitrolysis* Cope, 1889 with type species *Chiroleptes alboguttatus* Günther, 1867.

As this is genus-level divergence, it makes sense to divide the relevant species accordingly and using existing available names.

The latter genus *Mitrolysis* Cope, 1889 was inadvertently renamed by Wells and Wellington (1985) as *Brendananura* with the same type species and so it is an objective junior synonym. Hence the latter name is effectively unavailable according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999).

One divergent taxon within *Mitrolysis* is also herein placed in a new subgenus *Paramitrolysis subgen. nov.*.

Species within the genera *Cyclorana*, *Mitrolysis* and *Neophractops* are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: They are heavily built, often rotund, frogs; Inner metatarsal tubercle is shovel-shaped; no fronto-parietal foramen in adults; vomerine teeth are present and largely between the choanae; tongue large and oval-shaped; Pupil horizontal; tympanum distinct in all but one species group (*Invisibiliaauris subgen. nov*.); phlanges are simple and tips with tiny discs or none at all; first finger opposed to remainder and toes are webbed.

The genus *Cyclorana* is readily separated from the genera *Mitrolysis* and *Neophractops* by having a marked, straight dorsolateral skin fold and a very stout build; toes one third webbed; hind side of thighs lacking white spots.

The genus *Neophractops* is readily separated from the genera *Mitrolysis* and *Cyclorana* by having no definite straight dorsolateral skin fold and toes that are three quarters webbed.

The genus *Mitrolysis* is separated from the genera *Cyclorana* and *Neophractops* by one or other of:

1/ Having no definite straight dorsolateral skin fold and toes that are less than half webbed, or:

2/ Having a marked, straight dorsolateral skin fold and a very slender build; toes half webbed; hind side of thighs has numerous white spots.

The subgenus *Paramitrolysis subgen. nov.* with the type species of *Cyclorana verrucosa* Tyler and Martin, 1977 is readily separated from the nominate subgenus (of *Mitrolysis*) by having the following unique combination of characters: A blunt snout with nostril distinctly nearer to the tip than to the eye; a blackish stripe on the side of the head from the snout through the eye and distinct tympanum to the forelimb; a dorsum with numerous skin folds or large tubercles, with either: 1/ Many being white-tipped, highlighted by being surrounded by dark blackish pigment as well as a dorsal colouration dominated by brilliant dark lime green or large patches of brilliant dark lime green, or 2/ A dorsum with numerous skin folds or large tubercles not marked in any way and a dorsal colouration of beige, overlain with scattered and faded light olive green patches or blotches in irregular fashion.

Duellman *et al.* (2016) found the species in the subgenus *Paramitrolysis subgen. nov.* to have diverged from nearest congeners outside the subgenus by 12 MYA.

The subgenus *Invisibiliaauris subgen. nov*. with the type species *Cyclorana cryptotis* Tyler and Martin, 1977 is readily separated from the other two subgenera by having a hidden ear, being covered by skin, in stark contrast to the other subgenera which have an obvious and exposed tympanum.

Duellman *et al.* (2016) found that species within *Invisibiliaauris subgen. nov*. diverged from their nearest living relatives (within the nominate subgenus *Mitrolysis*) 11.2 MYA.

Distribution: Most of the top half of continental Australia.

Content: *Cyclorana novaehollandiae* Steindachner, 1867 (type species); *C. australis* (Gray, 1842).

GENUS *MITROLYSIS* COPE, 1889.

Type species: *Chiroleptes alboguttatus* Günther, 1867.

Diagnosis: Species within the genera *Cyclorana*, *Mitrolysis* and *Neophractops* are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: They are heavily built, often rotund, frogs; Inner metatarsal tubercle is shovel-shaped; no fronto-parietal foramen in adults; vomerine teeth are present and largely between the choanae; tongue large and oval-shaped; Pupil horizontal; tympanum distinct in all but one species group

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(*Invisibiliaauris subgen. nov.*); phlanges are simple and tips with tiny discs or none at all; first finger opposed to remainder and toes are webbed.

The genus *Cyclorana* is readily separated from the genera *Mitrolysis* and *Neophractops* by having a marked, straight dorsolateral skin fold and a very stout build; toes one third webbed; hind side of thighs lacking white spots.

The genus *Neophractops* is readily separated from the genera *Mitrolysis* and *Cyclorana* by having no definite straight dorsolateral skin fold and toes that are three quarters webbed.

The genus *Mitrolysis* is separated from the genera *Cyclorana* and *Neophractops* by one or other of:

1/ Having no definite straight dorsolateral skin fold and toes that are less than half webbed, or:

2/ Having a marked, straight dorsolateral skin fold and a very slender build; toes half webbed; hind side of thighs has numerous white spots.

The subgenus *Paramitrolysis subgen. nov.* with the type species of *Cyclorana verrucosa* Tyler and Martin, 1977 is readily separated from the nominate subgenus (of *Mitrolysis*) by having the following unique combination of characters: A blunt snout with nostril distinctly nearer to the tip than to the eye; a blackish stripe on the side of the head from the snout through the eye and distinct tympanum to the forelimb; a dorsum with numerous skin folds or large tubercles, with either: 1/ Many being white-tipped, highlighted by being surrounded by dark blackish pigment as well as a dorsal colouration dominated by brilliant dark lime green or large patches of brilliant dark lime green, or 2/ A dorsum with numerous skin folds or large tubercles not marked in any way and a dorsal colouration of beige, overlain with scattered and faded light olive green patches or blotches in irregular fashion.

Duellman *et al.* (2016) found the species in the subgenus *Paramitrolysis subgen. nov.* to have diverged from nearest congeners outside the subgenus by 12 MYA.

The subgenus *Invisibiliaauris subgen. nov*. with the type species *Cyclorana cryptotis* Tyler and Martin, 1977 is readily separated from the other two subgenera by having a hidden ear, being covered by skin, in stark contrast to the other subgenera which have an obvious and exposed tympanum. Duellman *et al.* (2016) found that species within *Invisibiliaauris subgen. nov*. diverged from their nearest living relatives (within nominate subgenus *Mitrolysis*) 11.2 MYA.

Distribution: Most parts of the top third of Australia.

Content: *Mitrolysis alboguttata* (Günther, 1867) (type species); *M. brevipes* (Peters, 1871); *M. cryptotis* (Tyler and Martin, 1977); *M. cultripes* (Parker, 1940); *M. longipes* (Tyler and Martin, 1977); *M. maculosa* (Tyler and Martin, 1977); *M. maini* (Tyler and Martin, 1977); *M. manya* (van Buerden and Macdonald, 1980); *M. vagitus* (Tyler, Davies and Martin, 1981); *M. verrucosa* (Tyler and Martin, 1977).

MITROLYSIS* (*MITROLYSIS*) *ALBOGUTTATA DUMPTRASHENSIS SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:2A17B806-9DFA-4BC0-B4BA-7E2231EC4756

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.54762, collected by Richard W. Wells under trash at the rubbish dump (tip) at Collarenebri, New South Wales, Australia, Latitude -29.550 S., Longitude 148.583 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.33294 collected from Wee Waa, New South Wales, Australia, Latitude -30.20 S., Longitude 149.333 E.

Diagnosis: The subspecies *Mitrolysis alboguttata dumptrashensis subsp. nov*. is a morphologically distinct southern form of the species originally described as *Chiroleptes alboguttatus* Günther, 1867.

Chiroleptes alboguttatus Günther, 1867 was originally described with two syntypes being from Bowen and Cape York in Queensland.

While it is contended that neither of the syntypes Günther, 1867 of are of the subspecies *Mitrolysis alboguttata dumptrashensis subsp. nov.*, they are themselves both morphologically divergent and so to remove confusion as to which taxon or specimen the name *Chiroleptes alboguttatus* Günther, 1867 should be applied to, I herein make the Cape York specimen (BMNH 1947.2.20.6-7) as the lectotype.

The syntype from Bowen in Queensland (BMNH 1947.2.18.50-51) herein ceases to have nomenclatural status.

This is done in accordance with paragraph 6, and Article 74, including all of 74.1 and 74.73, of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999), including this being an “express statement of the taxonomic purpose of the designation”, this being to remove potential doubt as to which subspecies or species should retain the name *alboguttatus* Günther, 1867 on the basis of divergence, either morphological or molecular between the two syntype specimens.

Occurring generally in a region encompassing areas drained by the upper Darling River basin, *Mitrolysis alboguttata dumptrashensis subsp. nov*. is readily separated from the nominate form of

M. alboguttata on the basis of colour and morphology.

Adult *M. alboguttata dumptrashensis subsp. nov.* are generally beige in colour with a general absence of dark blackish markings on the body save for those on the warts, bumps and prominent folds arranged both longitudinally down the dorsum and also irregularly scattered. By contrast *M. alboguttata alboguttata* has considerable amounts of dark pigment scattered across the dorsum giving a colouration that is “Blackish ashy above, indistinctly marbled with black” as stated by Günther (1867) in his original description. Furthermore the dorsum of *M. alboguttata alboguttata* is fairly smooth and without the massive folds and numerous warts and bumps seen in *M. alboguttata dumptrashensis subsp. nov.*. This black marbling or peppering on the upper body in the nominate subspecies is not seen in *M. alboguttata dumptrashensis subsp. nov*..

A second colour difference between the two froms is that of the vertebral stripe running from snout to rear. In *M. alboguttata alboguttata* it is generally very thin and whitish or occasionally light yellow in colour. By contrast,

in *M. alboguttata dumptrashensis subsp. nov.* it is either green or yellowish green and of moderate thickness as opposed to being thin.

Many adult specimens of *M. alboguttata dumptrashensis subsp. nov*. have large amounts of green on various parts of the body, but this is not consistent among all specimens of the subspecies.

The significant difference between the two subspecies in the degree and intensity of the skin folds and warts on the upper body is noteworthy and implies significant divergence between the two forms.

Nominate *M. alboguttata alboguttata* is “smooth above; hinder lower parts very finely granulated” as stated by Günther (1867) in his original description. As already noted this is not the case in *M. alboguttata dumptrashensis subsp. nov*. and based on morphological divergence alone, a strong case would be made for species-level recognition.

However in the absence of detail about specimens that occur within the region the two subspecies may meet and whether or not there is interbreeding between the two forms and any significant hybridisation / introgression, I have formally identified the divergent southern form as a subspecies instead of species.

In terms of the coastal Queensland specimens of *M. alboguttata alboguttata* from the region of Mackay and north, all are of the smoother skinned form as opposed to the more warty specimens of *M. alboguttata dumptrashensis subsp. nov*., and all have the dark ash coloured mottling on the dorsum as noted by Günther (1867) in his original description of two specimens from this general region. However what becomes immediately apparent when inspecting specimens is that those from the wet tropics zone commencing north of Townsville, have considerably greater amounts of dark pigment on the body as compared to those from further south (including Bowen, in Queensland), indicating divergence between these populations as well.

It was on this basis that the lectoptype was selected from the two divergent syntypes of Günther (1867) in his original description.

Colour photos of specimens of *Mitrolysis alboguttata dumptrashensis subsp. nov*. in life can be found on page 134 of Cogger (2014) on bottom left and Anstis (2013) page 87 at top left.

Colour photos of specimens of *M. alboguttata alboguttata* in life can be found in Anstis (2013) page 87 at top right.

Distribution: The subspecies *Mitrolysis alboguttata dumptrashensis subsp. nov.* is found in north-west New South Wales and south-west Queensland, generally in the region encompassed by the upper Darling River system, in a region extending north to between Augathella and Blackhall in central Queensland, after which the nominate form of the species occurs in a more-or-less continuous distribution to include most of the rest of Queensland, including most of Cape York, Queensland and extending across the lower Gulf of Carpentaria to be found in the adjoining section of the Northern Territory.

Etymology: Named after the collection site and locality for the holotype, being under a piece of trash at the council rubbish dump at Collarenebri, New South Wales, Australia.

PARAMITROLYSIS SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:BB3D6237-CDCC-428F-BE99-78F8DA0F3981

Type species: *Cyclorana verrucosa* Tyler and Martin, 1977.

Diagnosis: The subgenus *Paramitrolysis subgen. nov.* with the type species of *Cyclorana verrucosa* Tyler and Martin, 1977 is readily separated from the nominate subgenus (of *Mitrolysis*) by having the following unique combination of characters: A blunt snout with nostril distinctly nearer to the tip than to the eye; a blackish stripe on the side of the head from the snout through the eye and distinct tympanum to the forelimb; a dorsum with numerous skin folds or large tubercles, with either:

1/ Many being white-tipped, highlighted by being surrounded by dark blackish pigment as well as a dorsal colouration dominated by brilliant dark lime green or large patches of brilliant dark lime green, or:

2/ A dorsum with numerous skin folds or large tubercles not marked in any way and a dorsal colouration of beige, overlain with scattered and faded light olive green patches or blotches in irregular fashion.

Duellman *et al.* (2016) found the species in the subgenus *Paramitrolysis subgen. nov.* to have diverged from nearest congeners outside the subgenus by 12 MYA.

The subgenus *Invisibiliaauris subgen. nov*. with the type species *Cyclorana cryptotis* Tyler and Martin, 1977 is readily separated from the other two subgenera by having a hidden ear, being covered by skin, in stark contrast to the other subgenera which have an obvious and exposed tympanum.

Duellman *et al.* (2016) found that species within *Invisibiliaauris subgen. nov*. diverged from their nearest living relatives (within the nominate subgenus *Mitrolysis*) 11.2 MYA.

Species within the genera *Cyclorana*, *Mitrolysis* and *Neophractops* are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: They are heavily built, often rotund, frogs; Inner metatarsal tubercle is shovel-shaped; no fronto-parietal foramen in adults; vomerine teeth are present and largely between the choanae; tongue large and oval-shaped; Pupil horizontal; tympanum distinct in all but one species group (*Invisibiliaauris subgen. nov.*); phlanges are simple and tips with tiny discs or none at all; first finger opposed to remainder and toes are webbed.

The genus *Cyclorana* is readily separated from the genera *Mitrolysis* and *Neophractops* by having a marked, straight dorsolateral skin fold and a very stout build; toes one third webbed; hind side of thighs lacking white spots.

The genus *Neophractops* is readily separated from the genera *Mitrolysis* and *Cyclorana* by having no definite straight dorsolateral skin fold and toes that are three quarters webbed.

The genus *Mitrolysis* is separated from the genera *Cyclorana* and *Neophractops* by one or other of:

1/ Having no definite straight dorsolateral skin fold and toes that are less than half webbed, or:

2/ Having a marked, straight dorsolateral skin fold and a very slender build; toes half webbed; hind side of thighs

has numerous white spots.

Duellman *et al.* (2016) found that the species within *Cyclorana* as defined by Wells and Wellington (1985) diverged from their nearest living relatives 13.4 MYA, these being those species placed within each of the genera *Neophractops* Wells and Wellington (1985), with type species *Chiroleptes platycephalus* Günther, 1873 and *Mitrolysis* Cope, 1889 with type species *Chiroleptes alboguttatus* Günther, 1867.

Distribution: Northern New South Wales and southern Queensland in inland areas usually away from the coast and ranges.

Content: *Mitrolysis* (*Paramitrolysis*) *verrucosa* (Tyler and Martin, 1977).

Etymology: As a prefefix, "para" means beyond or distinct from. As the species in this subgenus are distinct from those in the nominate subgenus, the name is appropriate and hence "*Paramitrolysis*".

MITROLYSIS* (*PARAMITROLYSIS*) *VERRUCOSA INORNATA SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:9500B2FF-61B1-4A02-9058-D628E2DE0DE7

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number: R.5149 collected at Wilcannia, New South Wales, Latitude -31.5590 S., Longitude 143.3785 E.

This facility allows access to its holdings.

Paratypes: Two preserved specimens at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, specimen numbers MCZ 3585 and MCZ 3586 collected at Wilcannia, New South Wales, Latitude -31.5590 S., Longitude 143.3785 E.

Diagnosis: *Mitrolysis verrucosa inornata subsp. nov*. has until now been treated as a western population of *M. verrucosa* (Tyler and Martin, 1977), which it would key as in both Cogger (2014) and Anstis (2013).

However Anstis (2013) flagged that this taxon was not the same as nominate *M. verrucosa verrucosa*, referring to it as "Form 2".

Anstis (2013) also hypothesised that *Mitrolysis verrucosa inornata subsp. nov*. may be a rough-skinned form of *M. cultripes* (Parker, 1940) or alternatively be an intermediate between *M. verrucosa* and *M. cultripes* (Parker, 1940) and therefore an undescribed species.

The results of Duellman *et al.* (2016) effectively scuttled the first of these propositions by finding that *M. cultripes* was not closely related to *M. verrucosa*, having diverged some 11.2 MYA, meaning that the "Form 2" of Anstis was either a hitherto unnamed species or perhaps just a subspecies of *M. verrucosa*. Hence this formal description here of this subspecies, this level of distinction being based on the molecular results of Anstis *et al*. (2016b) showing both forms as broadly conspecific.

M. verrucosa verrucosa is readily separated from *M. verrucosa inornata subsp. nov*. by having a dorsum with numerous skin folds or large tubercles many being white-tipped, highlighted by being surrounded by dark blackish pigment as well as a dorsal colouration dominated by brilliant dark lime green or large patches of brilliant dark lime green.

Mitrolysis verrucosa inornata subsp. nov. is readily separated from *M. verrucosa verrucosa* by having a dorsum with numerous skin folds or large tubercles not marked in any way and a dorsal colouration of beige, overlain with scattered and faded light olive green patches or blotches in irregular fashion, as opposed to that described for *M. verrucosa verrucosa* above.

The colouration of *M. verrucosa verrucosa* is brilliant, intense and well defined, versus dull and ill-defined in *M. verrucosa inornata subsp. nov*..

An image of *M. verrucosa verrucosa* in life can be found in Cogger (2014) at page 142, or Anstis (2013) on page 118 (two photos on right), Vandersuys (2012) on page 75, or Eipper and Rowland (2018) at page 113 bottom.

Images of *Mitrolysis verrucosa inornata subsp. nov*. both adult and tadpole, can be found on page 119 of Anstis (2013).

Distribution: *Mitrolysis verrucosa inornata subsp. nov*. is found in the general region of north-west New South Wales, generally west of Dubbo and Moree, including areas associated with the Macquarie, Bogan and Darling River systems and potentially into Queensland north-west of this zone.

M. verrucosa verrucosa (Tyler and Martin, 1977) is found in the north-east of New South Wales, west of the coastal ranges to about Warialda, extending north-west of here into southern Queensland, west at least as far as Roma and north to at least Kilcummin.

Etymology: Named in reflection of the relatively inornate colouration of this subspecies.

INVISIBILIAAURIS SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:04A5DE6A-5C22-4F0C-AC9A-DA14819EE4E8

Type species: *Cyclorana cryptotis* Tyler and Martin, 1977.

Diagnosis: The subgenus *Invisibiliaauris subgen. nov*. with the type species *Cyclorana cryptotis* Tyler and Martin, 1977 is readily separated from the other two subgenera of *Mitrolysis* Cope, 1889 and the genera *Cyclorana* Steindachner, 1867 and *Neophractops* Wells and Wellington, 1985 by having a hidden ear, being covered by skin, in stark contrast to the other subgenera and morphologically similar genera which have an obvious and exposed tympanum.

Duellman *et al.* (2016) found that species within *Invisibiliaauris subgen. nov*. diverged from their nearest living relatives (within the subgenus genus *Mitrolysis*) 11.2 MYA.

Species within the genera *Cyclorana* Steindachner, 1867, *Mitrolysis* and *Neophractops* Wells and Wellington, 1985 are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

They are heavily built, often rotund, frogs; Inner metatarsal tubercle is shovel-shaped; no fronto-parietal foramen in adults; vomerine teeth are present and largely between the choanae; tongue large and oval-shaped; Pupil horizontal; tympanum distinct in all but one species group (*Invisibiliaauris subgen. nov.*); phlanges are simple and tips with tiny discs or none at all; first finger opposed to remainder and toes are webbed.

The genus *Cyclorana* is readily separated from the genera *Mitrolysis* and *Neophractops* by having a marked, straight dorsolateral skin fold and a very stout build; toes one third webbed; hind side of thighs lacking white spots.

The genus *Neophractops* is readily separated from the genera *Mitrolysis* and *Cyclorana* by having no definite straight dorsolateral skin fold and toes that are three quarters webbed.

The genus *Mitrolysis* is separated from the genera *Cyclorana* and *Neophractops* by one or other of:

1/ Having no definite straight dorsolateral skin fold and toes that are less than half webbed, or:

2/ Having a marked, straight dorsolateral skin fold and a very slender build; toes half webbed; hind side of thighs has numerous white spots.

The subgenus *Paramitrolysis subgen. nov.* with the type species of *Cyclorana verrucosa* Tyler and Martin, 1977 is readily separated from the nominate subgenus (of *Mitrolysis*) by having the following unique combination of characters: A blunt snout with nostril distinctly nearer to the tip than to the eye; a blackish stripe on the side of the head from the snout through the eye and distinct tympanum to the forelimb; a dorsum with numerous skin folds or large tubercles, with either:

1/ Many being white-tipped, highlighted by being surrounded by dark blackish pigment as well as a dorsal colouration dominated by brilliant dark lime green or large patches of brilliant dark lime green, or:

2/ A dorsum with numerous skin folds or large tubercles not marked in any way and a dorsal colouration of beige, overlain with scattered and faded light olive green patches or blotches in irregular fashion.

Duellman *et al.* (2016) found the species in the subgenus *Paramitrolysis subgen. nov.* to have diverged from nearest congeners outside the subgenus by 12 MYA.

Distribution: The drier tropics of Australia from near Derby in Western Australia, across the Kimberley Division of Western Australia, through the top end of the Northern Territory, to the edge of the arid zone and across the Gulf of Carpentaria to the east side of drier parts of Cape York in north Queensland.

Etymology: The subgenus name *Invisibiliaauris* is taken directly from the Latin words meaning invisible ear, in reflection of this character state in all relevant species, being unique to species within the entire genus *Mitrolysis* Cope, 1889.

Content: *Mitrolysis* (*Invisibiliaauris*) *cryptotis* (Tyler and Martin, 1977) (type species); *M.* (*Invisibiliaauris*) *flavoranae sp. nov.*; *M.* (*Invisibiliaauris*) *leucodorsalinea sp. nov.*.

MITROLYSIS* (*INVISIBILIAAURIS*) *FLAVORANAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:4D2AF343-E2E0-45C6-8DF2-EC0B74D31B97

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R17962, collected from near Derby (10-18 km south of the town), Western Australia, Australia, Latitude -17.38 S., Longitude 123.68 E. This government-owned facility allows access to its holdings.

Paratypes: Nine preserved specimens at the South Australian Museum, Adelaide, South Australia, Australia, specimen numbers R17957, R17963, R17964, R17965, R17967, R17968, R17970, R29118 and R29121, from the same location as the holotype.

Diagnosis: The morphologically variable putative species *Mitrolysis cryptotis* (Tyler and Martin, 1977) with a type locality of Daly Waters in the Northern Territory, has been found across the drier parts of the tropical north of Australia in an area stretching from near Derby in Western Australia in the west, across to drier parts of Cape York in far north Queensland. Populations in the Kimberley division of Western Australia and those from Cape York and south-eastern parts of the Gulf of Carpentaria are morphologically divergent from the nominate form and are therefore formally named as new species herein.

All can be readily separated on the basis of colouration.

M. cryptotis from the Northern Territory is coloured as follows. “The dorsal surface is pale grey suffused with irregular darker markings” (Tyler and Martin (1977). The markings are a rich purplish-orange-brown colour. Some specimens of this species (including Tyler’s holotype) have a semi-distinct narrow white and broken mid-dorsal stripe running from snout to rear. There is a dark purplish coloured stripe running from the front of the snout, through the eye and beyond to the pit of the forearm. The stripe is distinct anterior to the eye and indistinct and mottled after the eye. The lower flanks are whitish with purple marbling. The iris is orange on top and purple below.

M. flavoranae sp. nov. from the Kimberley District of Western Australia is separated from *M. cryptotis* and *M. leucodorsalinea sp. nov.* by being a dominantly yellowish coloured frog, as in the over-riding dorsal colouration, with the irregular darker markings on the body being either brown (southern Kimberley) or orange (north-east Kimberley) and arranged more-or-less in the linear manner running down the body or flanks. Some specimens of this species have a semi-distinct narrow white and broken mid-dorsal stripe running from snout to rear.

There is a brown coloured stripe running from the front of the snout, through the eye and beyond to the pit of the forearm. The stripe is indistinct and broken both anterior to the eye posterior to it.

The iris is yellow on top and brown below.

M. leucodorsalinea sp. nov. from Cape York and the eastern Gulf of Carpentaria in Queensland is separated from *M. cryptotis* and *M. flavoranae sp. nov.* by having a prominent and well defined narrow white and broken mid-dorsal stripe running from snout to rear. While the dorsal surface of all three species in the subgenus *Invisibiliaauris subgen. nov.* is covered with numerous densely aggregated and flattened tubercles, these are significantly larger and more prominent in *M. leucodorsalinea sp. nov.*. Furthermore in *M. leucodorsalinea sp. nov.*, the largest tubercular protrusions on the anterior part of the dorsal surface invariably have yellowish-white tips. In this species, these tubercles tend to merge on the anterior dorsal surface to form small folds running down the dorsum in a linear manner. The elongate (rectangular) folds seen in this

species are not seen in the other two, which instead have more-or-less rounded tubercles only. The dorsal colouration is an indistinct pattern of beige, brown and yellow (tricolour), with a heavy overlay of orange across most, but not all of the dorsum. The stripe from snout to eye is brownish-grey in colour and prominent, but indistinct and broken between the eye and the top of the forearm. The iris is purple-grey below and orange on top.

All of *M. cryptotis* (Tyler and Martin, 1977), *M. flavoranae sp. nov.* and *M. leucodorsalinea sp. nov.* being the entirety of the subgenus *Invisibiliaauris subgen. nov*. can be readily separated from all other species within the genus *Mitrolysis* Cope, 1889, and the morphologically similar genera *Cyclorana* Steindachner, 1867 and *Neophractops* Wells and Wellington, 1985 by having a hidden ear, being covered by skin, in stark contrast to the other subgenera and morphologically similar genera which have an obvious and exposed tympanum.

M. cryptotis in life can be seen online at: https://www.flickr.com/photos/88708273@N03/49490850576/

M. flavoranae sp. nov. in life can be seen in Anstis (2013) on page 94 (top right).

M. leucodorsalinea sp. nov. in life can be seen in Vanderduys (2012) on page 33 (2 images).

Distribution: *M. flavoranae sp. nov.* is believed to be confined to the Kimberley District of Western Australia.

Etymology: Taken from Latin the species name "*flavoranae*" literally means "yellow frog".

MITROLYSIS* (*INVISIBILIAAURIS*) *LEUCODORSALINEA SP. NOV.

LSIDurn:lsid:zoobank.org:act:386ACE8F-667B-4FD8-A1BD-B3134BD85BB6

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.149848 collected from 8.2km west of Wakooka Outstation, Cape York, North Queensland, Australia, Latitude -14.583 S., Longitude 144.4978 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J66538 collected from 8.2km west of Wakooka Outstation, Cape York, North Queensland, Australia, Latitude -14.583 S., Longitude 144.4978 E.

Diagnosis: The morphologically variable putative species *Mitrolysis cryptotis* (Tyler and Martin, 1977) with a type locality of Daly Waters in the Northern Territory, has been found across the drier parts of the tropical north of Australia in an area stretching from near Derby in Western Australia in the west, across to drier parts of Cape York in far north Queensland. Populations in the Kimberley division of Western Australia and those from Cape York and south-eastern parts of the Gulf of Carpentaria are morphologically divergent from the nominate form and are therefore formally named as new species herein.

All can be readily separated on the basis of colouration.

M. cryptotis from the Northern Territory is coloured as follows. "The dorsal surface is pale grey suffused with irregular darker markings" (Tyler and Martin (1977). The markings are a rich purplish-orange-brown colour. Some specimens of this species (including Tyler's holotype) have a semi-distinct narrow white and broken mid-dorsal stripe running from snout to rear. There is a dark purplish coloured stripe running from the front of the snout, through the eye and beyond to the pit of the forearm. The stripe is distinct anterior to the eye and indistinct and mottled after the eye. The lower flanks are whitish with purple marbling. The iris is orange on top and purple below.

M. flavoranae sp. nov. from the Kimberley District of Western Australia is separated from *M. cryptotis* and *M. leucodorsalinea sp. nov.* by being a dominantly yellowish coloured frog, as in the over-riding dorsal colouration, with the irregular darker markings on the body being either brown (southern Kimberley) or orange (north-east Kimberley) and arranged more-or-less in the linear manner running down the body or flanks. Some specimens of this species have a semi-distinct narrow white and broken mid-dorsal stripe running from snout to rear.

There is a brown coloured stripe running from the front of the snout, through the eye and beyond to the pit of the forearm. The stripe is indistinct and broken both anterior to the eye posterior to it.

The iris is yellow on top and brown below.

M. leucodorsalinea sp. nov. from Cape York and the eastern Gulf of Carpentaria in Queensland is separated from *M. cryptotis* and *M. flavoranae sp. nov.* by having a prominent and well defined narrow white and broken mid-dorsal stripe running from snout to rear. While the dorsal surface of all three species in the subgenus *Invisibiliaauris subgen. nov.* is covered with numerous densely aggregated and flattened tubercles, these are significantly larger and more prominent in *M. leucodorsalinea sp. nov.*. Furthermore in *M. leucodorsalinea sp. nov.*, the largest tubercular protrusions on the anterior part of the dorsal surface invariably have yellowish-white tips. In this species, these tubercles tend to merge on the anterior dorsal surface to form small folds running down the dorsum in a linear manner. The elongate (rectangular) folds seen in this species are not seen in the other two, which instead have more-or-less rounded tubercles only. The dorsal colouration is an indistinct pattern of beige, brown and yellow (tricolour), with a heavy overlay of orange across most, but not all of the dorsum. The stripe from snout to eye is brownish-grey in colour and prominent, but indistinct and broken between the eye and the top of the forearm. The iris is purple-grey below and orange on top.

All of *M. cryptotis* (Tyler and Martin, 1977), *M. flavoranae sp. nov.* and *M. leucodorsalinea sp. nov.* being the entirety of the subgenus *Invisibiliaauris subgen. nov*. can be readily separated from all other species within the genus *Mitrolysis* Cope, 1889, and the morphologically similar genera *Cyclorana* Steindachner, 1867 and *Neophractops* Wells and Wellington, 1985 by having a hidden ear, being covered by skin, in stark contrast to the other subgenera and morphologically similar genera which have an obvious and exposed tympanum.

M. cryptotis in life can be seen online at: https://www.flickr.com/photos/88708273@N03/49490850576/

M. flavoranae sp. nov. in life can be seen in Anstis (2013) on page 94 (top right).
M. leucodorsalinea sp. nov. in life can be seen in Vanderduys (2012) on page 33 (2 images).

Distribution: *M. leucodorsalinea sp. nov.* is believed to be confined to Cape York and the eastern Gulf of Carpentaria in Queensland.

Etymology: Taken from Latin the species name "*leucodorsalinea*" literally means "white-mid dorsal line" in reflection of the trait of this species.

GENUS *NEOPHRACTOPS* WELLS AND WELLINGTON, 1985.

Type species: *Chiroleptes platycephalus* Günther, 1873.

Diagnosis: The genus *Neophractops* Wells and Wellington, 1985 is readily separated from the genera *Mitrolysis* and *Cyclorana* by having no definite straight dorsolateral skin fold and toes that are three quarters webbed.

Species within the genera *Cyclorana*, *Mitrolysis* and *Neophractops* are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: They are heavily built, often rotund, frogs; Inner metatarsal tubercle is shovel-shaped; no fronto-parietal foramen in adults; vomerine teeth are present and largely between the choanae; tongue large and oval-shaped; Pupil horizontal; tympanum distinct in all but one species group (*Invisibiliaauris subgen. nov*.); phlanges are simple and tips with tiny discs or none at all; first finger opposed to remainder and toes are webbed.

The genus *Cyclorana* is readily separated from the genera *Mitrolysis* and *Neophractops* by having a marked, straight dorsolateral skin fold and a very stout build; toes one third webbed; hind side of thighs lacking white spots.

The genus *Mitrolysis* is separated from the genera *Cyclorana* and *Neophractops* by one or other of:

1/ Having no definite straight dorsolateral skin fold and toes that are less than half webbed, or:

2/ Having a marked, straight dorsolateral skin fold and a very slender build; toes half webbed; hind side of thighs has numerous white spots.

The subgenus *Paramitrolysis subgen. nov.* with the type species of *Cyclorana verrucosa* Tyler and Martin, 1977 is readily separated from the nominate subgenus (of *Mitrolysis*) by having the following unique combination of characters: A blunt snout with nostril distinctly nearer to the tip than to the eye; a blackish stripe on the side of the head from the snout through the eye and distinct tympanum to the forelimb; a dorsum with numerous skin folds or large tubercles, with either: 1/ Many being white-tipped, highlighted by being surrounded by dark blackish pigment as well as a dorsal colouration dominated by brilliant dark lime green or large patches of brilliant dark lime green, or 2/ A dorsum with numerous skin folds or large tubercles not marked in any way and a dorsal colouration of beige, overlain with scattered and faded light olive green patches or blotches in irregular fashion.

Duellman *et al.* (2016) found the species in the subgenus *Paramitrolysis subgen. nov.* to have diverged from nearest living congeners outside the subgenus by 11.2 MYA.

Duellman *et al.* (2016) found that the species in the *Neophractops* to have diverged from nearest living species 13.4 MYA.

Until recently all populations of the type species for this genus, namely *N. platycephalus*, across Australia have been treated as a single species. Having caught and inspected specimens of this putative species in all mainland states that they occur, I learnt decades ago that this was clearly not the case. The The Western Australian form was recently described and named as "*Clyclorana occidentalis* Anstis, Price, Roberts, Catalano, Hines, Doughty and Donnellan 2016".

An unnamed form from northern Australia is formally named in this paper.

The type form is from Bourke in north-west New South Wales. *Cyclorana slevini* Loveridge, 1950, was resurrected from synonymy by Wells and Wellington (1985) in the mistaken belief that the type for *Chiroletes platycephalus* was from central Australia. They stated this belief in their paper, believing that the Central Australian population was specifically distinct from the western New South Wales / southern Queensland one. While their taxonomy was in fact correct, their nomenclature was not.

Cyclorana slevini is therefore relegated back to the synonym of *N. platycephalus* and the name is unavailable for any other unnamed populations of the putative species.

Distribution: Arid parts of all mainland Australian states (including the Northern Territory), excluding Victoria.

Content: *Neophractops platycephala* (Günther, 1873) (type species); *N. occidentalis* (Anstis, Price, Roberts, Catalano, Hines, Doughty and Donnellan, 2016); *N. rosea sp. nov.*.

NEOPHRACTOPS ROSEA SP. NOV.

LSIDurn:lsid:zoobank.org:act:7A3777FD-71F4-4FE4-A7A1-BFBA40F6800E

Holotype: A preserved specimen at the Northern Territory Art Gallery and Museum, Darwin, Northern Territory, Australia, specimen number R09674 collected from 8 km south of Dunmarra, Northern Territory, Australia, Latitude -16.75 S., Longitude 133.75 E.

This government-owned facility allows access to its holdings.

Paratypes: 1/ A preserved specimen at the Northern Territory Art Gallery and Museum, Darwin, Northern Territory, Australia, specimen number R09715 collected at number 26 bore at Alroy Downs Station, Northern Territory, Australia, Latitude -19.1 S., Longitude 136.067 E.

2/ A preserved specimen at the Northern Territory Art Gallery and Museum, Darwin, Northern Territory, Australia, specimen number R30140 collected from Morphett Creek, Northern Territory, Australia, Latitude -18.883 S., Longitude 134.083 E.

Diagnosis: Until recently, all three species *Neophractops platycephala* (Günther, 1873), *N. rosea sp. nov.* and *N. occidentalis* (Anstis, Price, Roberts, Catalano, Hines, Doughty and Donnellan 2016) have been treated as populations of the same putative species *N. platycephala.*

However, it was no secret among herpetologists that

more than one species had been lumped under the single name. As far back as 1985, Wells and Wellington (1985), who at the time had conducted considerable fieldwork on frogs across all Australian states wrote “We believe that this is a species complex”.
The same view was echoed by Tyler (1992) and again by Anstis (2013) who on pages 112 to 115 provided detailed descriptions of each of three identified forms, including colour photos of adults, tadpoles and newly metamorphosed frogs.

These three obvious species were identified as follows:

1/ “Eastern form” from inland New South Wales, Queensland, Southern Northern Territory and north-east South Australia. This is in fact the nominate form of *Neophractops platycephala*, placed by Anstis in the genus *Cyclorana* Steindachner, 1867.

2/ “Northern Form”, herein formally named *Neophractops rosea sp. nov.* from the Northern Territory in a zone between the Barkly Tableland in the east and the Northern Territory / Western Australian border in the west, in a zone bound by the tropical savannahs to the north and the arid deserts to the south.

3/ “Central to Western Form”, formally named by Anstis, Price, Roberts, Catalano, Hines, Doughty and Donnellan, 2016 as *Neophractops occidentalis* from most of Western Australia except for the northern third and far south, with a distribution extending into the far south-west of the Northern Territory.

Because it was untenable that the relevant forms were unnamed, they are formally diagnosed herein.
Anstis (2013) provides excellent photos on pages 112 and 113 of typical adults of each species (one photo of each), which clearly show obvious differences between the three species and as lead author does much the same in Anstis *et al.* (2016).
Anstis (2013) on page 115 provides comparative photos of typical metamorphosed frogs of each species (one photo of each), which clearly show obvious differences between the three species.
Anstis (2013) on page 114 provides comparative photos of typical large tadpoles of each species (one photo of each), which clearly show obvious differences between the three species.

Adult *N. platycephala* are are separated from the other two species as follows: It is dorsally a greenish-grey frog with either a general hue of that colour, or alternatively indistinct blotches, flecks or markings incorporating both colours to give a greenish-grey appearance. On the sides of the back are a limited number of well spaced and tiny raised and pointed tubercles arranged in a somewhat linear manner. The limbs are greyish or greenish in colour with closely spaced distinct small purple flecks. The iris is orangeish yellow.

Adult *N. rosea sp. nov.* are are separated from the other two species as follows: The frog is grey infused with pink in dorsal colour, sometimes ranging to be an immaculate grey-pink with broad pink areas, including indistinct stripes from nostril to eye and then through ear, past upper armpit to the upper flank, with or without diffuse slightly darker flecks or mottling on the dorsum. The iris is a light yellow colour. On the dorsum, but mainly the sides are a number of raised warts of irregular but rounded shape, of moderate to large size.

Adult *N. occidentalis* are are separated from the other two species as follows: The frog is of a uniform yellowish to dark brown colour, with marbling on the mid to lower flanks. Warts on the upper surface are numerous and merge to form a series of elongated skin folds, arranged in an indistinct but linear manner down the dorsum. The iris is orangeish yellow on top and bluey-purple to aqua below. The upper surfaces of the limbs have darker marbling on the otherwise brown skin, versus flecks or spots on light coloured limbs on the other two species.

The skin fold above the tympanum is prominent in *N. occidentalis* but only moderately so in the other two species.

Adult females of *N. platycephala* and *N. rosea sp. nov.* grow to 72 mm total length, versus 110 mm for *N. occidentalis.* This makes adult female *N. occidentalis* on average more than double the weight of the other two species.

Photos of *N. platycephala* in life can be found in Eipper (2012) on page 81 and Robinson (1993) on page 76.

A photo of *N. rosea sp. nov.* in life can be found in Eipper and Rowland (2018) page 112, top photo.

A photo of *N. occidentalis* in life can be found in Tyler, Smith and Johnstone (1994) on plate 7, image 1.

Distribution: *N. rosea sp. nov.* is found in the Northern Territory, in a zone between the Barkly Tableland in the east and the Northern Territory / Western Australian border in the west, in a zone bound by the tropical savannahs to the north and the arid deserts to the south.

Etymology: The species name “rosea” comes from the Latin word for pink, noting that specimens of this species usually have a pinkish hue.

CROTTYANURA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:65B73B1E-867E-46CE-89E7-255574B1B615

Type species: *Crottyanura crottyi sp. nov*. (this paper).

Diagnosis: Until now, the best known species in this genus (*Crottyanura gen. nov.*), originally described as *Chiroleptes dahlii* Boulenger, 1896, has been generally known as *Litoria dahlii.* However the molecular phylogenies of Pyron and Weins (2011) and Duellman *et al.* (2016), have clearly shown that species not to be closely related to any other Australasian Tree Frogs (Pelodryadidae).

In the absence of any available generic name for the species, it was necessary to erect a new genus for the species as is done here.
However it has long been known to me that putative *Chiroleptes dahlii* Boulenger, 1896 is in fact composed of two related but different species.

These two taxa from northern Australia are morphologically divergent, geographically allopatric, divided by a biogeographic barrier of known antiquity and therefore are two separate species by any reasonable interpretation.
The type species for this new genus is the newly named species *Crottyanurua crottyi sp. nov.*.

The genus *Crottyanura gen. nov.* consists of two species, namely *C. dahlii* (Boulenger, 1896), with a type locality of Daly River, Northern Territory and found in the general

region of the type locality, being the western half of the top end of the Northern Territory and into immediately adjacent north-west Western Australia, as well as the newly named species *Crottyanurua crottyi sp. nov*. from the eastern side of the Gulf of Carpentaria and the western side of Cape York in Queensland.

Both species are readily separated from other Australasian Tree Frogs (Pelodryadidae) by the following diagnosis.

Ranoidea Tschudi, 1838 as defined herein includes only the Bell Frog group of species, excluding the species associated with the *Chirodryas raniformis* Keferstein, 1867 species group, herein placed in the resurrected genus *Chirodryas* Keferstein, 1867 and the two tropical species *Chiroleptes dahlii* Boulenger, 1896, and *Crottyanurua crottyi sp. nov*. herein placed in the new genus *Crottyanura gen. nov.*.

All species within *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* as defined herein, while morphologically similar, are sufficiently divergent from one another to warrant beling treated as separate genera.

All species within the genera *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following suite of characters:

Vomerine teeth are present; fingers are free or webbed only at the base; first finger is longer than, equal to or only slightly shorter than the second finger; no outer metatarsal tubercle.

The genera *Ranoidea* and *Chirodryas* are separated from the genus *Crottyanura gen. nov.* by having flanks that are strongly granular below a distinct, glandular dorso-lateral skin fold with densely packed, large, rounded, usually pale coloured granules, contrasting with the smooth tubercular skin on the back above the skin fold.

In contrast *Crottyanura gen. nov.* has flanks that are smooth or with a few scattered granules, not contrasting with the skin on the back.

Ranoidea species are readily separated from species within the genus *Chirodryas* by having either a smooth dorsum with few if any rounded warts or tubercles, or if present in any number or size, are arranged in regular longitudinal rows near the vertebral line.

By contrast *Chirodryas* species have large warts on the back that are irregularly scattered and not configured in regular longitudinal rows.

The two subgenera within *Ranoidea* are separated as follows: Subgenus *Ranoidea* has a generally smooth dorsum with at most a few scattered, low tubercles. By contrast subgenus *Sandgroperanura subgen. nov*. has obvious flat warts on the back that are arranged in regular longitudinal rows near the vertebral line.

The build of *Crottyanura gen. nov.* while solid, is slender when compared to both *Ranoidea* and *Chirodryas.* The species in *Crottyanura gen. nov.* are further diagnosed by being olive green with brownish tinge above and a distinctive light mid-vertebral line (in *C dahlii* but not often in *C. crottyi sp. nov*.); having the hind side of the thighs mottled, marbled or spotted with white (in *C dahlii* but not in *C. crotty sp. nov*.); a finely granular dorsum; smooth white-coloured venter; no dorsolateral skin fold; fully webbed toes; no outer metatarsal tubercle and inner metatarsal tubercle is not shovel-shaped.

It should be noted that the phylogeny for the Bell Frog frog group of species by Burns and Crayn (2006) used *C. crotty sp. nov*. as their samples for *C. dahlii.*

Duellman *et al*. (2016) found their sample of putative *C. dahlii* had an 18 MYA divergence from its nearest living relative, that being the species within the genus *Cyclorana sensu lato* and not the so-called Bell frogs in the genera *Ranoidea* and *Chirodryas*, which they found had a 22 MYA divergence.

In terms of divergences of the populations of each species within this genus, this can be inferred in the absence of molecular data.

The populations are in separate drainage systems which remained disconnected even in times of glacial minima. It is noted that extant distributions and museum collection locations of both species are strongly correlated with river drainages, this being connected with the riverine swamp and floodplain dwelling nature of the relevant species.

C. dahlii with a centre of distribution around the Daly and Victoria River systems occupies a zone that drained west of the western Australian Papuan landbridge in the last glacial minima, thereby preventing eastern mixture of populations from the Gulf of Carpentaria that occupied watersheds that drained into the Arafura Sea, thereby confirming ancient divergence of each group.

Distribution: *C. dahlii* (Boulenger, 1896), with a type locality of Daly River, Northern Territory is found in the general region of the type locality, being the western half of the top end of the Northern Territory and into immediately adjacent north-west Western Australia. The newly named species *Crottyanurua crottyi sp. nov*. occurs on the eastern side of the Gulf of Carpentaria within Queensland and the western side of Cape York in far north Queensland, Australia.

Etymology: "Crotty", was the abbreviated name of a now deceased Great Dane cross Rottweiller dog that protected this author's scientific research facility for nearly 13 years. It is appropriate that a genus and species (formally described below) are formally named in his honour. His full name was "*Crotalus*", being the generic name for a group of large venomous North American Pit Viper snakes with a rattle on the tail.

Content: *Crottyanura crottyi sp. nov.* (type species); *C. dahlii* (Boulenger, 1896).

CROTTYANURA CROTTYI SP. NOV.

LSIDurn:lsid:zoobank.org:act:12A08B9C-7BFD-44EA-B630-2E352B503950

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R67895 collected from near Normanton, Queensland, Australia, Latitude -17.6611 S., Longitude 141.1039 E.

This government-owned facility allows access to its holdings.

Paratypes: 1/ Two preserved specimens at the South Australian Museum, Adelaide, South Australia, Australia, specimen numbers R67892 and R67894 collected from near Normanton, Queensland, Australia, Latitude -17.6611 S., Longitude 141.1039 E.

2/ A preserved specimen at the Queensland Museum,

Brisbane, Queensland, Australia, specimen number J66143, collected from Rutland Plains, Frenchs Lagoon, Cape York, Queensland, Australia, Latitude -15.8 S., Longitude 141.5 E.

Diagnosis: It is astounding that the species *Crottyanura crottyi sp. nov.* has been unquestionably treated by all Australian herpetologists as an eastern population of *C. dahlii* (Boulenger, 1896). Any comparative inspection of specimens from both widely separated areas of distribution of the two species (north western NT for *C. dahlii* and the eastern Gulf of Carpentaria region of Queensland for *Crottyanura crottyi sp. nov.*) clearly shows two separate species are involved. Hence the formal naming of *C. crottyi sp. nov.* herein.

The species *C. dahlii* has a dorsal pattern reminiscent of *Ranoidea aurea* (Lesson 1829) from south-east Australia. In *C. dahlii* the dorsal colour is greenish with well-defined largeish brown blotches covering the back and thighs. There is invariably a reasonably thick and well defined mid-dorsal stripe running from snout to rear. The hind side of the thighs is prominently spotted, mottled or marbled with white which invariably has a well defined dark coloured outer edge bordering the white parts.

By contrast *C. crottyi sp. nov*. has a dorsal colouration of well defined green markings over a light grey to beige background, the green markings being of small size, jagged and irregular edged and close spaced, giving a very different view to that seen in *C. dahlii*. Most specimens of *C. crottyi sp. nov*. lack any mid-dorsal line runing down the midline from snout to rear and those that have such a line, have one that is indistinct and not white, but rather simply green, brown or greyish, in line with the dominant dorsal colouration. The hind side of the thighs are not prominently spotted, mottled or marbled with white which invariably have a well defined dark coloured outer edge bordering the white parts.

The upper surfaces of the hind limbs in *C. crottyi sp. nov*. have well defined dark patches, flecks or spots that contrast and are obvious on an otherwise light coloured background. There are no similar markings and configuration on the upper surfaces of the hind limbs in *C. dahlii*.

Photos of *C. dahlii* in life can be found in Anstis (2013) on pages 180-182 and Cogger (2014) on page 160 bottom left.

Photos of *C. crottyi sp. nov*. in life can be found in Vanderduys (2012) on page 35.

The genus *Crottyanura gen. nov.* consists of two species, namely *C. dahlii* (Boulenger, 1896), with a type locality of Daly River, Northern Territory and found in the general region of the type locality, being the western half of the top end of the Northern Territory and into immediately adjacent north-west Western Australia, as well as the newly named species *Crottyanurua crottyi sp. nov*. from the eastern side of the Gulf of Carpentaria and the western side of Cape York in Queensland.

Both species are readily separated from other Australasian Tree Frogs (Pelodryadidae) by the following diagnosis.

Ranoidea Tschudi, 1838 as defined herein includes only the Bell Frog group of species, excluding the species associated with the *Chirodryas raniformis* Keferstein, 1867 species group, herein placed in the resurected genus *Chirodryas* Keferstein, 1867 and the two tropical species *Chiroleptes dahlii* Boulenger, 1896, and *Crottyanurua crottyi sp. nov*. herein placed in the new genus *Crottyanura gen. nov.*.

All species within *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* as defined herein, while morphologically similar, are sufficiently divergent from one another to warrant beling treated as separate genera.

All species within the genera *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following suite of characters:

Vomerine teeth are present; fingers are free or webbed only at the base; first finger is longer than, equal to or only slightly shorter than the second finger; no outer metatarsal tubercle.

The genera *Ranoidea* and *Chirodryas* are separated from the genus *Crottyanura gen. nov.* by having flanks that are strongly granular below a distinct, glandular dorso-lateral skin fold with densely packed, large, rounded, usually pale coloured granules, contrasting with the smooth tubercular skin on the back above the skin fold.

In contrast *Crottyanura gen. nov.* has flanks that are smooth or with a few scattered granules, not contrasting with the skin on the back.

Ranoidea species are readily separated from species within the genus *Chirodryas* by having either a smooth dorsum with few if any rounded warts or tubercles, or if present in any number or size, are arranged in regular longitudinal rows near the vertebral line.

By contrast *Chirodryas* species have large warts on the back that are irregularly scattered and not configured in regular longitudinal rows.

The two subgenera within *Ranoidea* are separated as follows: Subgenus *Ranoidea* has a generally smooth dorsum with at most a few scattered, low tubercles. By contrast subgenus *Sandgroperanura subgen. nov*. has obvious flat warts on the back that are arranged in regular longitudinal rows near the vertebral line.

The build of *Crottyanura gen. nov.* while solid, is slender when compared to both *Ranoidea* and *Chirodryas.* The species in *Crottyanura gen. nov.* are further diagnosed by being olive green with brownish tinge above and a distinctive light mid-vertebral line (in *C dahlii* but not often in *C. crottyi sp. nov.*); having the hind side of the thighs mottled, marbled or spotted with white (in *C dahlii* but not in *C. crotty sp. nov.*); a finely granular dorsum; smooth white-coloured venter; no dorsolateral skin fold; fully webbed toes; no outer metatarsal tubercle and inner metatarsal tubercle is not shovel-shaped.

Distribution: The newly named species *Crottyanurua crottyi sp. nov*. occurs on the eastern side of the Gulf of Carpentaria within Queensland and the western side of Cape York in far north Queensland, Australia. *C. dahlii* (Boulenger, 1896), with a type locality of Daly River, Northern Territory is found in the general region of the type locality, being the western half of the top end of the Northern Territory and into immediately adjacent north-west Western Australia.

Etymology: “Crotty”, was the abbreviated name of a now deceased Great Dane cross Rottweiller dog that

protected this author's scientific research facility for nearly 13 years. It is appropriate that a genus and species (formally described above) are formally named in his honour.

His full name was "*Crotalus*", being the generic name for a group of large venomous North American Pit Viper snakes with a rattle on the tail.

RANOIDEINA SUBTRIBE NOV.

***RANOIDEA* TSCHUDI, 1838**

Type species: *Ranoidea jacksionensis* Tschudi, 1838 = *Rana aurea* Lesson, 1831.

Diagnosis: *Ranoidea* Tschudi, 1838 as defined herein includes only the Bell Frog group of species, excluding the species associated with the *Chirodryas raniformis* Keferstein, 1867 species group, herein placed in the genus *Chirodryas* Keferstein, 1867 and the two tropical species *Chiroleptes dahlii* Boulenger, 1896, and *Crottyanurua crottyi sp. nov.* herein placed in the new genus *Crottyanura gen. nov.*.

All species within *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* as defined herein, while morphologically similar, are sufficiently divergent from one another to warrant beling treated as separate genera.

All species within the genera *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following suite of characters:

Vomerine teeth are present; fingers are free or webbed only at the base; first finger is longer than, equal to or only slightly shorter than the second finger; no outer metatarsal tubercle.

The genera *Ranoidea* and *Chirodryas* are separated from the genus *Crottyanura gen. nov.* by having flanks that are strongly granular below a distinct, glandular dorso-lateral skin fold with densely packed, large, rounded, usually pale coloured granules, contrasting with the smooth tubercular skin on the back above the skin fold. In contrast *Crottyanura gen. nov.* has flanks that are smooth or with a few scattered granules, not contrasting with the skin on the back.

Ranoidea species are readily separated from species within the genus *Chirodryas* by having either a smooth dorsum with few if any rounded warts or tubercles, or if present in any number or size, are arranged in regular longitudinal rows near the vertebral line.

By contrast *Chirodryas* species have large warts on the back that are irregularly scattered and not configured in regular longitudinal rows.

The two subgenera within *Ranoidea* are separated as follows: Subgenus *Ranoidea* has a generally smooth dorsum with at most a few scattered, low tubercles.

By contrast subgenus *Sandgroperanura subgen. nov.* has obvious flat warts on the back that are arranged in regular longitudinal rows near the vertebral line.

Distribution: Coastal New South Wales (Australia) and immediately adjacent parts of north-east Victoria (subgenus *Ranoidea*), or wetter parts of south-west Australia (subgenus *Sandgroperanura subgen. nov.*).

Content: *Ranoidea aurea* (Lesson, 1831) (type species); *R. cyclorhyncha* (Boulenger, 1892); *R. moorei* (Copland, 1957).

SANDGROPERANURA SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:B5658E8E-49A5-450A-B908-EA91ED60ACF6

Type species: *Hyla aurea cyclorhynchus* Boulenger, 1882.

Diagnosis: The two subgenera within *Ranoidea* Tschudi, 1838 are separated as follows: Nominate subgenus *Ranoidea* has a generally smooth dorsum with at most a few scattered, low tubercles.

By contrast subgenus *Sandgroperanura subgen. nov.* has obvious flat warts on the back that are arranged in regular longitudinal rows near the vertebral line.

Duellman *et al.* (2016) found that the two recognized species in this subgenus, from Western Australia diverged from one another 1.1 MYA.

They also found that these two species diverged from their nearest living congener, *R. aurea* from eastern Australia some 12 MYA, confirming that genus level recognition of the two divergent, western Australian taxa is warranted.

Ranoidea Tschudi, 1838 as defined herein includes only the Bell Frog group of species, excluding the species associated with the *Chirodryas raniformis* Keferstein, 1867 species group, herein placed in the resurrected genus *Chirodryas* Keferstein, 1867 and the two tropical species *Chiroleptes dahlii* Boulenger, 1896, and *Crottyanurua crottyi sp. nov.* herein placed in the new genus *Crottyanura gen. nov.*.

All species within *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* as defined herein, while morphologically similar, are sufficiently divergent from one another to warrant beling treated as separate genera.

All species within the genera *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following suite of characters:

Vomerine teeth are present; fingers are free or webbed only at the base; first finger is longer than, equal to or only slightly shorter than the second finger; no outer metatarsal tubercle.

The genera *Ranoidea* and *Chirodryas* are separated from the genus *Crottyanura gen. nov.* by having flanks that are strongly granular below a distinct, glandular dorso-lateral skin fold with densely packed, large, rounded, usually pale coloured granules, contrasting with the smooth tubercular skin on the back above the skin fold. In contrast *Crottyanura gen. nov.* has flanks that are smooth or with a few scattered granules, not contrasting with the skin on the back.

Ranoidea species are readily separated from species within the genus *Chirodryas* by having either a smooth dorsum with few if any rounded warts or tubercles, or if present in any number or size, are arranged in regular longitudinal rows near the vertebral line.

By contrast *Chirodryas* species have large warts on the back that are irregularly scattered and not configured in regular longitudinal rows.

Distribution: *Sandgroperanura subgen. nov.* occurs in wetter parts of south-west Australia. The nominate subgenus *Ranoidea* is found in coastal New South Wales (Australia) and immediately adjacent parts of north-east Victoria.

Etymology: Named in reflection of where the frogs live, as in south-western Australia, being a generally sandy region, where the local people are referred to as “sand gropers” in reflection of their alleged habits of groping in the sand. The “anura” part of the name refers to the genus being of frogs.

Content: *Sandgroperanura cyclorhyncha* (Boulenger, 1892) (type species); *S. moorei* (Copland, 1957).

***CHIRODRYAS* KEFERSTEIN, 1867**

Type species: *Chirodryas raniformis* Keferstein, 1867.

Diagnosis: *Ranoidea* Tschudi, 1838 as defined herein includes only the Bell Frog group of species, excluding the species associated with the *Chirodryas raniformis* Keferstein, 1867 species group, herein placed in the resurrected genus *Chirodryas* Keferstein, 1867 and the two tropical species *Chiroleptes dahlii* Boulenger, 1896, and *Crottyanurua crottyi sp. nov*. herein placed in the new genus *Crottyanura gen. nov.*.

All species within *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* as defined herein, while morphologically similar, are sufficiently divergent from one another to warrant beling treated as separate genera.

All species within the genera *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following suite of characters:

Vomerine teeth are present; fingers are free or webbed only at the base; first finger is longer than, equal to or only slightly shorter than the second finger; no outer metatarsal tubercle.

The genera *Ranoidea* and *Chirodryas* are separated from the genus *Crottyanura gen. nov.* by having flanks that are strongly granular below a distinct, glandular dorso-lateral skin fold with densely packed, large, rounded, usually pale coloured granules, contrasting with the smooth tubercular skin on the back above the skin fold. In contrast *Crottyanura gen. nov.* has flanks that are smooth or with a few scattered granules, not contrasting with the skin on the back.

Ranoidea species are readily separated from species within the genus *Chirodryas* by having either a smooth dorsum with few if any rounded warts or tubercles, or if present in any number or size, are arranged in regular longitudinal rows near the vertebral line.

By contrast *Chirodryas* species have large warts on the back that are irregularly scattered and not configured in regular longitudinal rows.

The two subgenera within *Ranoidea* are separated as follows: Subgenus *Ranoidea* has a generally smooth dorsum with at most a few scattered, low tubercles. By contrast subgenus *Sandgroperanura subgen. nov*. has obvious flat warts on the back that are arranged in regular longitudinal rows near the vertebral line.

Duellman *et al.* (2016) found that the species within *Chirodryas* diverged from their nearest living relatives (*Ranoidea*) some 15.3 MYA supporting the contention that genus-level division and recognition is warranted.

Distribution: The three species within *Chirodryas* are all confined to Victoria, Tasmania, far south-east South Australia and cooler parts of eastern New South Wales (NSW), in NSW generally in higher altitude areas away from the coast and immediately adjacent ranges.

Content: *Chirodryas raniformis* (Keferstein, 1867) (type species); *C. castanea* (Steindachner, 1867); *C. sloppi sp. nov.*.

CHIRODRYAS SLOPPI SP. NOV.

LSIDurn:lsid:zoobank.org:act:9D4BD424-D271-4B67-AA83-4E344AD05D9F

Holotype: A preserved female specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D19286, collected 16 km south of Boorowa, New South Wales, Australia, Latitude -34.6 S., Longitude 148.73 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D19494, collected 11.2 km south of Tumut, New South Wales, Latitude -35.4 S., Longitude 148.22 E.

Diagnosis: Until now, *Chirodryas sloppi sp. nov.* has been treated as a southern population of *C. castanea* (Steindachner, 1867), with an unknown type locality, but of the same form and colouration as “*Litoria flavipunctata* Courtice and Grigg, 1975”, with a type locality of Guyra in the New England region of New South Wales (NSW), Australia, as detailed by Thomson *et al.* (1996).

Thomson *et al.* (1996) established that *C. castanea* (Steindachner, 1867) and “*Litoria flavipunctata* Courtice and Grigg, 1975” are one and the same species.

They also established that the southern NSW and Australian Capital Territory (ACT) population of putative *C. castanea* are significantly different morphologically and on this basis, the species is herein formally described as a new species.

Herein identified as *Chirodryas sloppi sp. nov.* it would until now have been identified as *C. castanea* using the relevant keys in Cogger (2014) or Anstis (2013).

The three species of “Bell Frog” within the genus *Chirodryas* Keferstein, 1867 are separated from morphologically similar species by having large warts on the back that are irregularly scattered and not configured in regular longitudinal rows.

The species *Chirodryas sloppi sp. nov.* and *C. castanea* are both separated from congener *C. raniformis* (Keferstein, 1867) and the sometimes sympatric and morphologically similar species *Ranoidea aurea* (Lesson, 1831) by having a black and yellow marbled pattern present on the ventral surface of the legs; toes fully webbed; warty dorsum; large black-ringed yellow spots in the inguinal region and a series of yellow spots on the hind edge of the thigh.

By contrast congener *C. raniformis* is diagnosed by having the ventral surface of the thighs immaculate and cream coloured; toes slightly less than fully webbed; warty dorsum; no large yellow spots in the inguinal region and if spots are present on the posterior of the thigh, they tend to be randomly arranged.

The sometimes sympatric and morphologically similar species *Ranoidea aurea* (Lesson, 1831) is in turn separate from all species in *Chirodryas* by having expanded toe discs; toes half to three-quarter webbed;

no warts on the dorsum or if so, they are small and pimple like only and spots are absent from the inguinal region, vent and posterior edge of the thigh.

Chirodryas sloppi sp. nov. from the New South Wales (NSW) southern highlands and adjacent western slopes region is separated from *C. castanea* from the New England Tableland region of NSW as follows.

Although the black and yellow marbling on the ventral surface of the thigh is present in both species, the extent and definition of these markings is different. In *C. castanea* the marbling extends to the

latero-ventral surface; whilst in *C. sloppi sp. nov.* it stops at the inguinal area. Furthermore, the intensity or definition of this patterning is sharp and clear in *C. castanea* and not in *C. sloppi sp. nov..*

C. sloppi sp. nov. lacks white or yellow spots on the feet as seen in *C. castanea.*

C. sloppi sp. nov. is generally a deep emerald-green colour when compared to the lime green colouration of *C. castanea.*

Most adult *C. sloppi sp. nov.* have a distinctive vertebral stripe.

C. sloppi sp. nov. in life are depicted on page 155 of Cogger (2014), Anstis (2013) on page 164 (two photos) and Eipper and Rowland (2018) on page 121 (top).

O. castanea in life are depicted in Barker and Grigg (1977) on page 83 (top) and Tyler (1992) on page 19 (top).

In habit, I have observed specimens usually alone in fast flowing stream environments in grazing country. They are usually detected by day as they make a “plop” sound as they jump into the water as one approaches, having been resting in the open on a perch of some sort. Typically the frog remains underwater until the threat passes (or it is caught).

At night in heavy rain in warmer months, specimens are found crossing roads. On such nights, this species is not found in the large numbers of other sympatric forms of frog.

Ranoidea Tschudi, 1838 as defined herein includes only the Bell Frog group of species, excluding the species associated with the *Chirodryas raniformis* Keferstein, 1867 species group, herein placed in the resurrected genus *Chirodryas* Keferstein, 1867 and the two tropical species *Chiroleptes dahlii* Boulenger, 1896, and *Crottyanurua crottyi sp. nov.* herein placed in the new genus *Crottyanura gen. nov..*

All species within *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* as defined herein, while morphologically similar, are sufficiently divergent from one another to warrant beling treated as separate genera.

All species within the genera *Ranoidea*, *Chirodryas* and *Crottyanura gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following suite of characters:

Vomerine teeth are present; fingers are free or webbed only at the base; first finger is longer than, equal to or only slightly shorter than the second finger; no outer metatarsal tubercle.

The genera *Ranoidea* and *Chirodryas* are separated from the genus *Crottyanura gen. nov.* by having flanks that are strongly granular below a distinct, glandular dorso-lateral skin fold with densely packed, large, rounded, usually pale coloured granules, contrasting with the smooth tubercular skin on the back above the skin fold. In contrast *Crottyanura gen. nov.* has flanks that are smooth or with a few scattered granules, not contrasting with the skin on the back.

Ranoidea species are readily separated from species within the genus *Chirodryas* by having either a smooth dorsum with few if any rounded warts or tubercles, or if present in any number or size, are arranged in regular longitudinal rows near the vertebral line.

By contrast *Chirodryas* species have large warts on the back that are irregularly scattered and not configured in regular longitudinal rows.

The two subgenera within *Ranoidea* are separated as follows: Subgenus *Ranoidea* has a generally smooth dorsum with at most a few scattered, low tubercles. By contrast subgenus *Sandgroperanura subgen. nov*. has obvious flat warts on the back that are arranged in regular longitudinal rows near the vertebral line.

Duellman *et al.* (2016) found that the species within *Chirodryas* diverged from their nearest living relatives (*Ranoidea*) some 15.3 MYA supporting the contention that genus-level division and recognition is warranted.

Distribution: *C. sloppi sp. nov.* is found in the Southern Tablelands region of New South Wales, Australia and immediately adjacent colder parts of the western slopes, in a region generally bound by Holbrook, in southern New South Wales in the south-west, Mount Clear, south of Canberra in the ACT in the south-east, Oberon / Jenolan Caves, NSW in the north-east and Orange, NSW in the northwest. The species *O. castanea* (Steindachner, 1867) is found in the New England region of NSW, specifically known from an area bounded by Armidale in the south, Cobbadah in the west, Inverell in the north-west and between Guyra and Glen Innes in the north-east, with the vast majority of records being from within 30 km of Guyra.

Etymology: Slop (AKA Slopp) was the name of the author’s Great Dane dog (aged 8 in 2020) that protected this author’s scientific research facility from thieves for 8 years.

It is appropriate that a species (formally described above) is formally named in his honour.

GEDYERANINA SUBTRIBE NOV.

GEDYERANA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:BF631A5E-E1A7-4E2C-BCBC-B4C35564AC57

Type species: *Gedyerana gedyei sp. nov.*

Diagnosis: The genus *Gedyerana gen. nov.* includes the species originally described as *Hyla dayi* Günther, 1897 and a closely related species herein formally described as *Gedyerana gedyei sp. nov..*

Until now, both had been treated as the same putative species, known in most texts as *Nyctimystes dayi* (Günther, 1897) as seen in Cogger (2014) or alternatively “*Litoria dayi*” in recent texts such as Anstis (2013) and Eipper and Rowland (2018).

Numerous molecular phylogenies, including that of Duellman *et al.* (2016) found this putative species to have

diverged from the type species of the genus *Nyctimystes* Stejneger, 1916, type species *Nyctimantis papua* Boulenger, 1897, 41 MYA.

With a divergence of that magnitude, clearly "*Hyla dayi*" needs to be assigned to a separate genus.

Mosleyia Wells and Wellington, 1985 is the closest match according to Duellman *et al.* (2016), but having a divergence of 21 MYA and with species that are very morphologically divergent. The next nearest match is 26.1 MYA for several other generic groupings.

With a minimum divergence of 21 MYA from nearest available genus group, it is clear that a new genus needed to be erected for this species group and hence the erection of *Gedyerana gen. nov.* herein.

Gedyerana gen. nov. is readily separated from all other Australasian Tree Frogs (Pelodryadidae) by being the only Australasian Tree Frog species having a lower eyelid with a characteristic reticulatum or palpebral venation of fine, pigmented lines and a horizontally elliptical pupil. All other species within this region with a lower eyelid with a characteristic reticulatum or palpebral venation of fine, pigmented lines have a vertically elliptical pupil, including species within *Nyctimystes* Stejneger, 1916 *sensu lato*, as defined by other authors including Cogger (2014) at page 197 under the heading "genus *Nyctimystes* Stejneger, 1916".

Both species within the genus *Gedyerana gen. nov.* would be diagnosed as either "*Litoria dayi*" in Anstis (2013) or "*Nyctimystes dayi*" in Cogger (2014).

These frogs have large protruding eyes, with a dark iris, a broad head and a slender body. Males get to about 45 mm in body length, but females are considerably larger and get to about 60 mm in length. Their tadpoles have large sucker mouths. Dorsal colour ranges from grey, brown, yellow, orange or red, with or without mottling, spots or flecks and with or without discrete white or cream blotches or ocelli on the upper surfaces. Snout is moderately rounded or acuminate (tending to be pointed) and the genus occurs in rainforest stream habitats.

Distribution: *Gedyerana gen. nov.* is endemic to the wet tropics region of far North Queensland. For more detail see the description of *Gedyerana gedyei sp. nov.* in this paper.

Etymology: The genus is named in honour of Andrew Gedye of Cairns, Queensland, Australia, in recognition of his services to herpetology in Australia, in particular through his breeding of rare and threatened species of pythons and elapids (snakes).

Content: *Gedyerana gedyei sp. nov.* (type species); *G. dayi* (Günther, 1897).

GEDYERANA GEDYEI SP. NOV.

LSIDurn:lsid:zoobank.org:act:EEBA7E33-3788-4440-AAC7-49D7FBE245CA

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J136323 collected from Cape Tribulation, North Queensland, Australia, Latitude -16.0878 S., Longitude 145.4548 E.

This government-owned facility allows access to its holdings.

Paratypes: Four preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J136326-9 collected from Cape Tribulation, North Queensland, Australia, Latitude -16.0878 S., Longitude 145.4548 E.

Diagnosis: Until now *Gedyerana gedyei sp. nov.* has been treated as a northern population of *G. dayi* (Günther, 1897), known in most texts under the genus names of *Nyctimystes* Stejneger, 1916 type species *Nyctimantis papua* Boulenger, 1897, or *Litoria* Tschudi, 1838 type species *Litoria freycineti* Tschudi, 1838. The two species are herein treated as the entire content of the genus *Gedyerana gen. nov.*.

Both species within the genus *Gedyerana gen. nov.* would be diagnosed as either "*Litoria dayi*" in Anstis (2013) or "*Nyctimystes dayi*" in Cogger (2014).

These frogs have large protruding eyes, with a dark iris, a broad head and a slender body. Males get to about 45 mm in body length, but females are considerably larger and get to about 60 mm in length.

Their tadpoles have large sucker mouths. Dorsal colour ranges from grey, brown, yellow, orange or red, with or without mottling, spots or flecks and with or without discrete white or cream blotches or ocelli on the upper surfaces. Snout is moderately rounded or acuminate (tending to be pointed) and the genus occurs in rainforest stream habitats.

Both species within *Gedyerana gen. nov.* are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by being the only Australasian Tree Frog species having a lower eyelid with a characteristic reticulatum or palpebral venation of fine, pigmented lines and a horizontally elliptical pupil. All other species within this region with a lower eyelid with a characteristic reticulatum or palpebral venation of fine, pigmented lines have a vertically elliptical pupil, including species within *Nyctimystes* Stejneger, 1916 *sensu lato*, as defined by other authors including Cogger (2014) at page 197 under the heading "genus *Nyctimystes* Stejneger, 1916".

Gedyerana gedyei sp. nov. is readily separated from *G. dayi* by having a snout that is acuminate (tending to be pointed) and a dorsal colouration being generally creamish, light yellow or light grey, versus having a snout being moderately rounded and a dorsal colouration being generally brown, orange or reddish in *G. dayi.*

Gedyerana gedyei sp. nov. tend to lack the white dorsal spots and ocelli that are commonly seen in specimens of *G. dayi.* Spotting or marks on *G. gedyei sp. nov.* if present tend to be dark or blackish in colour.

There are a number of available synonyms for putative *G. dayi*, being as follows:

Hyla dayi Gunther 1897 with a type locality of Bartle Frere Mountains, North East Queensland.

Hyla tympanocryptis Andersson (1916) from Malanda on the Atherton Tableland near Mount Bartle Frere, North East Queensland.

Nyctimystes hosmeri Tyler, 1964 from Tully Falls on the southern edge of the Atherton Tablelands, North East Queensland.

Nyctimystes vestigea Tyler, 1964 from Mount Bartle Frere, North East Queensland.

All names and specimens apply to frogs from the

southern wet tropics, in a region south of the so-called Black Mountain Corridor (or Gap) as detailed in Hoser (2020c).

As there was no available name in the literature for the northern specimens of putative "*Hyla dayi*" the species *Gedyerana gedyei sp. nov.* had to be erected based on material from north of the Black Mountain Corridor (or Gap) as detailed in Hoser (2020c).

Gedyerana gedyei sp. nov. in life, and showing the diagnostic features outlined above, can be found online at:
https://www.flickr.com/photos/outstarwild/49663732508/
and
https://www.flickr.com/photos/akashsherping/36614786851/
and
https://www.flickr.com/photos/126237772@N07/36120089595/
and
https://www.flickr.com/photos/shaneblackfnq/14996849032/
and
https://www.flickr.com/photos/shaneblackfnq/15494532365/

G. dayi in life is depicted in Barker and Grigg (1977) on page 43 (both images) and page 84 bottom, Vanderduys (2012) on page 36 (all images), Anstis (2013) on pages 186-188 (all images) and Cogger (2014) on page 197 (both images) and online at:
https://www.flickr.com/photos/edwardevans/48935973742/
and
https://www.flickr.com/photos/edwardevans/31847701407/

Distribution: *Gedyerana gedyei sp. nov.* is found in the northern wet tropics of far north Queensland.

More specifically it is known from within a region bound by Bushy Creek, near Julatten, Latitude -16.6 S., Longitude 145.3333 E. in the south, O'Keefe Creek, on Big Tableland, Latitude -15.7 S., Longitude 145.25 E. in the north and on the Windsor Tableland, Latitude -16.2083 S., Longitude 144.8778 E. in the west, based on holdings within the Queensland Museum, Brisbane, Australia.

G. dayi is found in the southern wet tropics of far north Queensland.

More specifically this is, Mount Spec, (north of Townsville), Latitude -18.95 S., Longitude 146.1833 E, in the south, Upper Barron River, immediately west of Cairns, Latitude -17.00 S., Longitude 145.4333 E. in the north and Charmillan Creek, Tully Falls Road, 13 km south of Ravenshoe, Latitude -17.7 S., Longitude 145.5167 E. in the west.

Etymology: The new species is named in honour of Andrew Gedye of Cairns, Queensland, Australia, in recognition of his services to herpetology in Australia, in particular through his breeding of rare and threatened species of pythons and elapids (snakes).

***MOSLEYIA* WELLS AND WELLINGTON, 1985.**

Type species: *Hyla nannotis* Andersson, 1916.

Diagnosis: Duellman *et al.* (2016) found that the species within the genus *Mosleyia* Wells and Wellington, 1985 as defined by Wells and Wellington (1985), a diagnosis adopted wholly within this paper, diverged from their nearest living relative 21 MYA, that species group being the genus *Gedyerana gen. nov*. formally described elsewhere in this paper.

The genus *Mosleyia* is readily separated from all other Australasian Tree Frogs (Pelodryadidae) by one or other of the two unique suites of characters:

1/ Vomerine teeth prominent and largely between the choanae. No pectoral fold; A series of small enlarged tubercles along the hind edge of the forearm forming a low but distinct crenulated ridge; fingers with strong basal webbing; toes nearly fully webbed; a prominent inner metatarsal tubercle and a small outer one. Heel of adpressed hind limb reaches to eye or beyond; first finger much smaller and shorter than the second and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; tympanum indistinct; no pale stripe along the supratympanic ridge or along posterior edge of upper jaw; adult snout-vent length 65 mm; dorsal pattern is mostly grey or dull green, almost blackish and consists of a series of relatively narrow dark lines and spots forming a fine, continuous reticulum over the back, head and limbs. The flanks have a bluish metal sheen. White below, commonly with brown on the throat; axilla and groin flesh coloured; hind side of thighs are dark brown. Skin leathery, finely granular, or with numerous small scattered warts. Granular below (*M. nannotis* (Andersson, 1916), *M. cottoni sp. nov*. *M. lorica* (Davies and McDonald, 1979)) (nominate subgenus), or:

2/ Vomerine teeth conspicuous in two rows on a line with the hind edge of the choanae; with or without pectoral fold; fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger; hind edge of forearm is smooth or with at most a few, low, discontinuous tubercles; hind edge of foot is smooth; hind side of thighs more or less uniform and without black and yellow markings or marbling; colour brown to blackish above, never green, with or without a broad, darker vertebral patch and other contrasting markings; a dark dorsal patch, if present, is inconspicuous and commencing from a line joining the centre of each eye; tympanum covered by skin (adult size is 35-50 mm body length) (*M. michaelsmythi sp. nov.*; *M. nyakalensis* (Liem, 1974); *M. pilloti sp. nov.*; *M. rheocola* (Liem, 1974)) (subgenus *Amnisrana subgen. nov.*).

According to Duellman *et al*. (2016) species within the subgenus *Amnisrana subgen. nov*. diverged from those in the subgenus *Mosleyia* 12.1 MYA.

Due to the significant morphological divergence between the often sympatric forms, subgenus level recognition of the latter group was deemed essential.

Distribution: Restricted to the wet tropics of North-east Queensland, Australia.

Content: *Mosleyia nannotis* (Andersson, 1916) (type species); *M. cottoni sp. nov.*; *M. lorica* (Davies and McDonald, 1979); *M. michaelsmythi sp. nov.*; *M. pilloti sp. nov.*; *M. nyakalensis* (Liem, 1974); *M. rheocola* (Liem, 1974).

Hoser 2020 - Australasian Journal of Herpetology 44-46:1-192.

AMNISRANA SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:06568884-50B6-4A86-8282-DF689642F1F6

Type species: *Litoria rheocolus* Liem, 1974.

Diagnosis: Duellman *et al.* (2016) found that the species within the genus *Mosleyia* Wells and Wellington, 1985 as defined by Wells and Wellington (1985), a diagnosis adopted wholly within this formal description, diverged from their nearest living relative 21 MYA, that species group being the genus *Gedyerana gen. nov.* formally described elsewhere in this paper.

The genus *Mosleyia* is readily separated from all other Australasian Tree Frogs (Pelodryadidae) by one or other of the two unique suites of characters:

1/ Vomerine teeth conspicuous in two rows on a line with the hind edge of the choanae; with or without pectoral fold; fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger; hind edge of forearm is smooth or with at most a few, low, discontinuous tubercles; hind edge of foot is smooth; hind side of thighs more or less uniform and without black and yellow markings or marbling; colour brown to blackish above, never green, with or without a broad, darker vertebral patch and other contrasting markings; a dark dorsal patch, if present, is inconspicuous and commencing from a line joining the centre of each eye; tympanum covered by skin (adult size is 35-50 mm body length) (*M. michaelsmythi sp. nov.*; *M. nyakalensis* (Liem, 1974); *M. pilloti sp. nov.*; *M. rheocola* (Liem, 1974)) (subgenus *Amnisrana subgen. nov.*) (this being a formal diagnosis for this subgenus), or:

2/ Vomerine teeth prominent and largely between the choanae. No pectoral fold; A series of small enlarged tubercles along the hind edge of the forearm forming a low but distinct crenulated ridge; fingers with strong basal webbing; toes nearly fully webbed; a prominent inner metatarsal tubercle and a small outer one. Heel of adpressed hind limb reaches to eye or beyond; first finger much smaller and shorter than the second and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; tympanum indistinct; no pale stripe along the supratympanic ridge or along posterior edge of upper jaw; adult snout-vent length 65 mm; dorsal pattern is mostly grey or dull green, almost blackish and consists of a series of relatively narrow dark lines and spots forming a fine, continuous reticulum over the back, head and limbs. The flanks have a bluish metal sheen. White below, commonly with brown on the throat; axilla and groin flesh coloured; hind side of thighs are dark brown. Skin leathery, finely granular, or with numerous small scattered warts. Granular below (*M. nannotis* (Andersson, 1916), *M. cottoni sp. nov.* and *M. lorica* (Davies and McDonald, 1979)) (nominate subgenus).

According to Duellman *et al.* (2016) species within the subgenus *Amnisrana subgen. nov.* diverged from those in the subgenus *Mosleyia* 12.1 MYA.

Due to the significant morphological divergence between the often sympatric forms, subgenus level recognition of the latter group was deemed eminently sensible.

Distribution: Restricted to the wet tropics of North-east Queensland, Australia.

Etymology: "Amnis" in Latin means stream and "Rana" means frog, hence the genus name *Amnisrana* or "stream frog".

Content: *M.* (*Amnisrana*) *rheocola* (Liem, 1974) (type species); *M.* (*Amnisrana*) *michaelsmythi sp. nov.*; *M.* (*Amnisrana*) *pilloti sp. nov.*; *M.* (*Amnisrana*) *nyakalensis* (Liem, 1974).

MOSLEYIA* (*MOSLEYIA*) *COTTONI SP. NOV.

LSIDurn:lsid:zoobank.org:act:EFC50F6C-85A5-4FB6-98BA-C1B7DC0F712F

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J5570, collected from Mount Spurgeon, North Queensland, Australia, Latitude 16.4327 S., Longitude 145.2042 E.

This government-owned facility allows access to its holdings.

Paratypes: Three preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J17861-3 collected from Parrot Creek, 50 km south of Cooktown, North Queensland, Australia, Latitude -15.8 S., Longitude 145.25 E.

Diagnosis: Until now, *Mosleyia cottoni sp. nov.* has been treated as a northern outlier population of *Mosleyia nannotis* (Andersson, 1916), more commonly known as "*Litoria nannotis*" as defined by Liem (1974), Anstis (2013) and Cogger (2014).

The two species are readily separated as follows: Tympanum is distinct in *M. cottoni sp. nov.*, as opposed to barely visible in *M. nannotis*.

The toes of *M. nannotis* are light in colour, but with obvious dark centres, versus light in colour and without obvious dark centres in *M. cottoni sp. nov.*.

Colouration of specimens varies considerably both between and within localities and sub-populations and with sex, age and time of day so it is difficult to quantify differences, save for the general observation that dorsal pattern in the form of indistinct mottling, specks and flecks is more dense and intense in *M. nannotis* than in *M. cottoni sp. nov.*.

Both these species within the nominate subgenus *Mosleyia*, Wells and Wellington, 1985, are separated from the four species in the other subgenus (*Amnisrana subgen. nov.*) by the following suite of characters: Snout is shorter than the eye diameter; snout bluntly rounded but the head in general is not; loreal region strongly concave; prepollex enlarged; nuptial pad large with coarse spinules; single outer metacarpal tubercle; adults grow to more than 40 mm in body length. IN/EN ratio less than 0-970; web on first toe does not extend beyond the proximal subarticular tubercle; ventral surfaces of posterior portion of body are not cream with a reddish brown or pinkish red tinge and an absence of a dense large black nupital spines around the base of the thumb.

The third species in the subgenus *Mosleyia*, *M. lorica* (Davies and McDonald, 1979) is separated from the other two species by its far smaller adult size (37 mm in body length or less, vs 65 mm in body length in the other two species) and the fact that males have dense large black nupital spines around the base of the thumb.

The genus *Mosleyia* is readily separated from all other

Australasian Tree Frogs (Pelodryadidae) by one or other of the two unique suites of characters:

1/ Vomerine teeth prominent and largely between the choanae. No pectoral fold; A series of small enlarged tubercles along the hind edge of the forearm forming a low but distinct crenulated ridge; fingers with strong basal webbing; toes nearly fully webbed; a prominent inner metatarsal tubercle and a small outer one. Heel of adpressed hind limb reaches to eye or beyond; first finger much smaller and shorter than the second and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; tympanum indistinct; no pale stripe along the supratympanic ridge or along posterior edge of upper jaw; adult snout-vent length 65 mm; dorsal pattern is mostly grey or dull green, almost blackish and consists of a series of relatively narrow dark lines and spots forming a fine, continuous reticulum over the back, head and limbs. The flanks have a bluish metal sheen. White below, commonly with brown on the throat; axilla and groin flesh coloured; hind side of thighs are dark brown. Skin leathery, finely granular, or with numerous small scattered warts. Granular below (*M. nannotis* (Andersson, 1916), *M. cottoni sp. nov*. and *M. lorica* (Davies and McDonald, 1979)) (nominate subgenus), or:

2/ Vomerine teeth conspicuous in two rows on a line with the hind edge of the choanae; with or without pectoral fold; fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger; hind edge of forearm is smooth or with at most a few, low, discontinuous tubercles; hind edge of foot is smooth; hind side of thighs more or less uniform and without black and yellow markings or marbling; colour brown to blackish above, never green, with or without a broad, darker vertebral patch and other contrasting markings; a dark dorsal patch, if present, is inconspicuous and commencing from a line joining the centre of each eye; tympanum covered by skin (adult size is 35-50 mm body length) (*M. michaelsmythi sp. nov*.; *M. nyakalensis* (Liem, 1974); *M. pilloti sp. nov*.; *M. rheocola* (Liem, 1974)) (subgenus *Amnisrana subgen. nov*.).

According to Duellman *et al*. (2016) species within the subgenus *Amnisrana subgen. nov*. diverged from those in the subgenus *Mosleyia* 12.1 MYA. Due to the significant morphological divergence between the often sympatric forms, subgenus level recognition of the latter group was deemed essential.

M. cottoni sp. nov. in life is depicted in Anstis (2013) on page 253 at top right and P. 245 at top left.

M. nannotis in life is depicted in Vanderduys (2012) on page 56 (two images) and Cogger (2014) on page 176 at bottom.

Distribution: *M. cottoni sp. nov.* is restricted to the northern wet tropics of North-east Queensland, Australia in a region bound by Hunter Creek, Brookland Nature Reserve (adjacent to Mount Lewis), about 60 km north of Cairns, Latitude -16.6205 S., Longitude 145.3064 E, and Mungumby Creek, about 25 km south of Cooktown in Far North Queensland, Latitude -15.700 S., Longitude 145.250 E, bounded to the east by the Pacific Ocean, dry habitats to the west and drier lowlands immediately north and south.

Etymology: Named in honour of Thomas Cotton, formerly of Ringwood, Victoria who for many years played an important role in the wildlife conservation efforts of the team this author works with.

This includes in fieldwork across Australia as well as a displayer of reptiles with Snakebusters: Australia's best reptiles shows, being the only hands-on reptile exhibitions in Australia that let people hold the animals.

MOSLEYIA* (*AMNISRANA*) *MICHAELSMYTHI SP. NOV.

LSIDurn:lsid:zoobank.org:act:B04C0456-EFB5-4246-9559-BD26BF63FE44

Holotype: A preserved male specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J29447 collected 16.7 km from the Mossman-Mount Molloy Road on the Mount Lewis Road, far north Queensland, Australia, Latitude -16.5833 S., Longitude 145.25 E.

This government-owned facility allows access to its holdings.

Paratypes: Three preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J29455 and J29446 collected 16.7 km from the Mossman-Mount Molloy Road on the Mount Lewis Road, far north Queensland, Australia, Latitude -16.5833 S., Longitude 145.25 E and specimen number J52942 collected from Mount Lewis, Queensland, Australia, Latitude -16.5736 S., Longitude 145.2633 E.

Diagnosis: Until now, *Mosleyia michaelsmythi sp. nov.* has been treated as a northern outlier population of *Mosleyia nyakalensis* (Liem, 1974), more commonly known as "*Litoria nyakalensis*" as defined by Liem (1974), Anstis (2013) and Cogger (2014).

The two species are readily separated as follows: In life adult *M. nyakalensis* are a uniform slate colour to greyish brown dorsally, sometimes with irregular dark markings in the form of spots of mottling. By contrast *M. michaelsmythi sp. nov.* is a markedly lighter coloured frog being cream, yellow or beige dorsally, sometimes with irregular dark markings in the form of spots or mottling. *M. nyakalensis* of both sexes has a brown iris. By contrast *M. michaelsmythi sp. nov.* males have an orangeish-red iris in males and in females it is beige on top and greyish below.

In *M. nyakalensis* the ventral surfaces of the posterior portion of body is cream with reddish brown overlay, versus pinkish-red in *M. michaelsmythi sp. nov..*

In *M. nyakalensis* on the fingers, the web extends to one-third down the length of the proximal phalanx on outer margin of the third finger, but does not extend this far in *M. michaelsmythi sp. nov..*

M. michaelsmythi sp. nov. in life is depicted in Anstis (2013) on pages 266 and 267 (all photos), including adults of both sexes and also tadpoles. A photo of this species in life is also seen in Vanderduys (2012) on page 60.

Both *M. michaelsmythi sp. nov.* and *M. nyakalensis* are separated from all other species in the genus *Mosleyia* Wells and Wellington, 1985 by the following unique suite of characters: Head rounded; IN/EN ratio more than 0-970; web on first toe on or just beyond the proximal subarticular tubercle; ventral surfaces of posterior portion

of body cream with reddish brown overlay or pinkish-red and an absence of dense large black nupital spines around the base of the thumb.

The genus *Mosleyia* is readily separated from all other Australasian Tree Frogs (Pelodryadidae) by one or other of the two unique suites of characters:

1/ Vomerine teeth conspicuous in two rows on a line with the hind edge of the choanae; with or without pectoral fold; fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger; hind edge of forearm is smooth or with at most a few, low, discontinuous tubercles; hind edge of foot is smooth; hind side of thighs more or less uniform and without black and yellow markings or marbling; colour brown to blackish above, never green, with or without a broad, darker vertebral patch and other contrasting markings; a dark dorsal patch, if present, is inconspicuous and commencing from a line joining the centre of each eye; tympanum covered by skin (adult size is 35-50 mm body length) (*M. michaelsmythi sp. nov.*; *M. nyakalensis* (Liem, 1974); *M. pilloti sp. nov.*; *M. rheocola* (Liem, 1974)) (subgenus *Amnisrana subgen. nov.*) (this being a formal diagnosis for this subgenus), or:

2/ Vomerine teeth prominent and largely between the choanae. No pectoral fold; A series of small enlarged tubercles along the hind edge of the forearm forming a low but distinct crenulated ridge; fingers with strong basal webbing; toes nearly fully webbed; a prominent inner metatarsal tubercle and a small outer one. Heel of adpressed hind limb reaches to eye or beyond; first finger much smaller and shorter than the second and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; tympanum indistinct; no pale stripe along the supratympanic ridge or along posterior edge of upper jaw; adult snout-vent length 65 mm; dorsal pattern is mostly grey or dull green, almost blackish and consists of a series of relatively narrow dark lines and spots forming a fine, continuous reticulum over the back, head and limbs. The flanks have a bluish metal sheen. White below, commonly with brown on the throat; axilla and groin flesh coloured; hind side of thighs are dark brown. Skin leathery, finely granular, or with numerous small scattered warts. Granular below (*M. nannotis* (Andersson, 1916), *M. cottoni sp. nov.* and *M. lorica* (Davies and McDonald, 1979)) (nominate subgenus).

According to Duellman *et al.* (2016) species within the subgenus *Amnisrana subgen. nov.* diverged from those in the subgenus *Mosleyia* 12.1 MYA.

Distribution: *Mosleyia michaelsmythi sp. nov.* is restricted to the northern wet tropics region of Australia with a range extending north from the southern side of Mount Lewis, far north Queensland, Latitude -16.5903 S., Longitude 145.2750 E. and south of Mungumby Creek, 25 km south of Cooktown, far north Queensland, Latitude -15.72 S., Longitude 145.25 E.

Conservation: Neither *M. michaelsmythi sp. nov.* or *M. nannotis* have been seen alive in the wild since about 1990 (Hero and Fickling, 1994) and the two species may already be extinct.

The reckless Queensland Government policy of prohibiting the establishment of captive breeding populations to safeguard the two species (at the time treated as a single species) can be blamed for the presumed extinction of the two species, as similarly noted in comments in Hoser (1991).

The cause of decline is believed to be an introduced pathogen in the form of a fungus (Anstis 2013).

Etymology: Named in honour of Michael Smyth, formerly of Ringwood, Victoria who for many years played an important role in the wildlife conservation efforts of the team this author works with. This includes in fieldwork across Australia as well as a displayer of reptiles with Snakebusters: Australia's best reptiles shows, being the only hands-on reptile exhibitions in Australia that let people hold the animals.

MOSLEYIA* (*AMNISRANA*) *PILLOTI SP. NOV.

LSIDurn:lsid:zoobank.org:act:4EC060C6-0B7C-476E-AC25-BC7E2FCF85AC

Holotype: A preserved female specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J22643 collected from Cape Tribulation, North Queensland, Australia, Latitude -16.0878 S., Longitude 145.4548 E.

This government-owned facility allows access to its holdings.

Paratypes: Two preserved female specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J22644 collected from the type locality above and specimen number J22645 collected from Shiptons Flat, 50 km south of Cooktown, North Queensland, Australia, Latitude -15.8000 S., Longitude 145.2500 E.

Diagnosis: Until now, *Mosleyia pilloti sp. nov.* has been treated as a northern outlier population of *Mosleyia rheocola* (Liem, 1974), more commonly known as "*Litoria rheocola*" as defined by Liem (1974), Anstis (2013) and Cogger (2014).

The two species are readily separated as follows: Resting male *M. rheocola* show an obvious pale crescent shaped mark on the upper flank. This is either abent or very indistinct in *M. pilloti sp. nov.*.

While both species posess small scattered spinose tubercles on the dorsum and uppel limbs, these are prominent in *M. pilloti sp. nov.* versus reduced and blunted in form in *M. rheocola.*Tubercles on the lower flanks of *M. rheocola* are numerous, obvious and raised, versus not so in *M. pilloti sp. nov.*.

As mid-sized pre-metamophosing tadpoles, *M. pilloti sp. nov.* have a dorsum that is light grey in colour, with bold and distinctive dark brownish-black markings. At the same life stage *M. rheocola* tadpoles are with a yellowish dorsum which has a thick peppering of orange and brown, especially posterior to the eyes and anterior to the tail. Comparative photos of tadpoles of both species are in Anstis (2013) on page 295 with *M. pilloti sp. nov.* identified as "Carbine Tableland, Qld" and *M. rheocola* identified as "Henrietta Creek, Palmerston National Park, Qld".

Both *M. piloti* and *M. rheocola* are separated from all other species in the genus *Mosleyia* Wells and Wellington, 1985 by the following unique suite of characters: Head not rounded; IN/EN ratio less than 0-970; web on first toe not beyond proximal subarticular

tubercle; webbing on outer margin of third finger reaches base of penultimate phalanx; ventral surfaces of posterior portion of body not cream with reddish brown or pinkish red tinge; snout longer than eye diameter; snout bluntly rounded; loreal region not strongly concave; prepollex normal and not enlarged; nuptial pad small, spinules fine and not large with coarse spinules; forearm of males normal, not robust; single outer metacarpal tubercle on base of palm and an elongated inner metacarpal tubercle on the proximo-ventral inner surface of the metacarpal of first finger; Fingers moderately webbed: between first and second fingers free of web; web present between second and third and third and fourth fingers; adult less than 40 mm in body length.

The genus *Mosleyia* is readily separated from all other Australasian Tree Frogs (Pelodryadidae) by one or other of the two unique suites of characters:

1/ Vomerine teeth conspicuous in two rows on a line with the hind edge of the choanae; with or without pectoral fold; fingers with conspicuous webbing, reaching at least as far as the base of the penultimate phalanx of the fourth finger; hind edge of forearm is smooth or with at most a few, low, discontinuous tubercles; hind edge of foot is smooth; hind side of thighs more or less uniform and without black and yellow markings or marbling; colour brown to blackish above, never green, with or without a broad, darker vertebral patch and other contrasting markings; a dark dorsal patch, if present, is inconspicuous and commencing from a line joining the centre of each eye; tympanum covered by skin (adult size is 35-50 mm body length) (*M. michaelsmythi sp. nov.*; *M. nyakalensis* (Liem, 1974); *M. pilloti sp. nov.*; *M. rheocola* (Liem, 1974)) (subgenus *Amnisrana subgen. nov.*) (this being a formal diagnosis for this subgenus), or:

2/ Vomerine teeth prominent and largely between the choanae. No pectoral fold; A series of small enlarged tubercles along the hind edge of the forearm forming a low but distinct crenulated ridge; fingers with strong basal webbing; toes nearly fully webbed; a prominent inner metatarsal tubercle and a small outer one. Heel of adpressed hind limb reaches to eye or beyond; first finger much smaller and shorter than the second and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; tympanum indistinct; no pale stripe along the supratympanic ridge or along posterior edge of upper jaw; adult snout-vent length 65 mm; dorsal pattern is mostly grey or dull green, almost blackish and consists of a series of relatively narrow dark lines and spots forming a fine, continuous reticulum over the back, head and limbs. The flanks have a bluish metal sheen. White below, commonly with brown on the throat; axilla and groin flesh coloured; hind side of thighs are dark brown. Skin leathery, finely granular, or with numerous small scattered warts. Granular below (*M. nannotis* (Andersson, 1916), *M. cottoni sp. nov.* and *M. lorica* (Davies and McDonald, 1979)) (nominate subgenus).

According to Duellman *et al.* (2016) species within the subgenus *Amnisrana subgen. nov.* diverged from those in the subgenus *Mosleyia* 12.1 MYA.

Mosleyia pilloti sp. nov. in life is depicted in Vanderduys (2012) on page 67, bottom right as well as Anstis (2013) on page 294 middle and bottom right and in Cogger (2014) on page 186 at top right.

M. rheocola in life is depicted in Vanderduys (2012) on page 67, bottom left and Anstis (2013) on page 294 top right.

Distribution: *Mosleyia pilloti sp. nov.* is restricted to the northern wet tropics region of Australia with a range extending north of Port Douglas, far north Queensland Latitude 16.4836 S., Longitude 145.4653 E. and south of Cooktown in far North Queensland (northern limit of range being near the small village of Rossville, Latitude 15.7005 S., Longitude 145.2542 E.).

Conservation: A major decline in numbers in the late 1980's appears to have reversed in some (mainly lower elevation) areas. However the species must be deemed at high risk of extinction.

Refer to the relevant comments in Hoser (1991, 2019a, 2019b).

Etymology: Named in honour of Christian Pillot, formerly of Ringwood, Victoria who for many years played an important role in the wildlife conservation efforts of the team this author works with. This includes in fieldwork across Australia as well as a displayer of reptiles with Snakebusters: Australia's best reptiles shows, being the only hands-on reptile exhibitions in Australia that let people hold the animals.

DARANINANURINI TRIBE NOV.

DARANINANURA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:E6C1197B-B538-443D-996F-9AA74B74A1BE

Type species: *Litoria brevipalmata* Tyler, Martin and Watson, 1972.

Diagnosis: The genus *Daraninanura gen. nov.* monotypic for the type species *D. brevipalmata* (Tyler, Martin and Watson, 1972) is readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Rich brown to chocolate brown above, occasionally with scattered small black flecks. There is a wide canthal stripe running from snout to eye, continuing past the eye as a wide black band, almost over-writing the standard (for frogs) sized tympanum, continuing to the flank and sometimes bordered above with white or yellow. The upper lip has a narrow white or yellow stripe, narrowly edged below with brown, which continues as a glandular stripe from the angle of the mouth to the base of the forearm. The lower flanks are yellowish with scattered black spots, flecks or peppering. Groin is green or blue green. There are no red or orange spots on the hind side of the thighs. There is a dark stripe along the front edge of the hindlimb. Venter is white to light yellow. Top of iris is silver to gold in colour. Skin is smooth to slightly leathery above and coarsely granular below. Snout is rounded in shape. Vomerine teeth are prominent between the choanae. There is no pectoral fold. Finger and toe discs are of medium size, fingers are unwebbed and toes about one third webbed. There is a prominent inner metatarsal tubercle and an indistinct small outer tubercle. The second finger is longer than the first, the first finger being so short that when pressed together with the second, it reaches no further than the base of the disc of the second.

Duellman *et al.* (2016) found the type and only species in

the genus *Daraninanura gen. nov.* to have diverged from its nearest living relative 35.1 MYA, necessitating the transfer of this species to a new genus and the genus to a new tribe as done within this paper.

Photos of *Daraninanura brevipalmata* (Tyler, Martin and Watson, 1972), can be found in Cogger (2014) on page 153 (two images), Vanderduys (2012) on page 27, Eipper and Rowland (2018) on page 119 at top and Anstis (2013) on pages 156 (right side), 157 and 158.

Distribution: Known only from wet sclerophyll forests of the north coast of New South Wales, north from about Gosford and into the wetter parts of south-east Queensland, Australia.

Etymology: Named in honour of Dara Nin of Ringwood, Victoria, Australia, who for many years has been a member of the team doing Reptile Parties and Reptile Shows, with Snakebusters: Australia's best reptiles shows. He has helped to educate Australians about wildlife and wildlife conservation, with Australia's only hands on reptile shows that let people hold the animals.

Content: *Daraninanura brevipalmata* (Tyler, Martin and Watson, 1972) (monotypic).

FIACUMMINGANURINI TRIBE NOV.

FIACUMMINGANURA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:91ADD2D0-9D5C-4882-90B7-277A74B6E7B5

Type species: *Fiacumminganura fiacummingae sp. nov*. (this paper).

Diagnosis: Until now the single putative species within this genus, has been known under various names.

It was originally described as *Hyla maculata* Spencer, 1901, later transferred to the genus *Litoria* Tschudi, 1838 by Cogger *et al.* (1983). Dubois (1984) assigned a replacement name *Litoria spenceri* to the same taxon, as the species name *maculata* had been earlier applied to a different species (preoccupied by *Hyla maculata* Gray, 1830). The putative taxon "*Litoria spenceri*", has been kept in that genus by most authors since. See for example Tyler (1992), Anstis (2013), Cogger (2014) and Eipper and Rowland (2018).

Contrary to this has been a realisation by many herpetologists that the continued placement of morphologically and genetically divergent species within the single putative genus *Litoria* is untenable.

Ranoidea spenceri (Dubois, 1984) (Dubois and Frétey, 2016), was one such attempt to place this divergent taxon in another genus. Duellman *et al.* (2016) placed putative "*Litoria spenceri*" within the genus *Dryopsophus* Fitzinger, 1843, with the type spcies *Hyla citropa* Dümeril and Bibron, 1841.

In line with Pyron and Weins (2011), Duellman *et al.* (2016) found that the divergent "*Litoria spenceri*" was most closely related to the species group including *Dryopsophus citropa*. However there was still a 22.3 MYA divergence between the two groups of species.

Hence the erection of a new genus to accommodate putative "*Litoria spenceri*" as done herein.

Investigations have also shown that putative "*Litoria spenceri*" in fact consists of three divergent species and the two unnamed forms are formally named herein, one of them being assigned the type species for this new genus named *Fiacumminganurea gen. nov.*.

The three morphologically similar species within *Fiacumminganurea gen. nov*. are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: A colouration that is grey to green above, with irregular darker mottling, marbling or flecks, the latter often forming irregular cross-bands on the limbs.

Ventral surface white or yellow or white becoming yellow towards the rear. Lower and concealed surface of limbs are yellowish. Skin is somewhat leathery, with a few tiny whitish tubercles on the back becoming numerous on the sides. Skin below is granular. Small but prominent vomerine teeth are located mostly behind the choanae. A pectoral fold is indistinct. Finger and toes discs are moderate, being only a little wider than the digits. Fingers with distinct basal webbing and the toes are fully webbed. There is a small but prominent inner metatarsal tubercle, no outer one. Tympanum is indistinct. Second finger is larger than the first; adult size to 45 mm in lenth.

The tadpole is free-swimming, elongated and flattened, and reaches a total length of 40 mm prior to metamorphosis. The body is dark brown to black above, with fine silver chromatophores extending onto the flanks. Darker spots may be present on the dorsal surface, while the ventral surface is darkly pigmented. The tail fin and muscle are covered with fine melanophores. The tail is moderately thick and has a rounded tip. The eyes are dorso-lateral, and the mouth is ventral. The oral disc is large relative to closely-related species, and the oral papillae have a wide anterior gap. There are two rows of anterior labial teeth and three posterior rows (Hero *et al*. 1995; Anstis 2013).

In terms of morphologically similar and potentially sympatric species the warty back of *Fiacumminganurea gen. nov*. distinguishes species in this genus from the morphologically similar species *Dryopsophus nudidigita* (Copland, 1962) and its lack of a distinct tympanum distinguishes it from *Dryopsophus citropa* (Dümeril and Bibron, 1841).

Distribution: Eastern Victoria and immediately adjacent southern New South Wales, on both sides of the Great Dividing Range.

Etymology: The genus and type species are named in honour of Fia Cumming of Canberra, ACT, Australia, in recognition for her services to wildlife conservation in Australia as detailed in Hoser (1993) and Hoser (1996).

Content: *Fiacumminganurea fiacummingae sp. nov.* (type species); *F. spenceri* (Dubois, 1984); *F. timdalei sp. nov.*

FIACUMMINGANUREA FIACUMMINGAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:93A202C8-5C46-41A5-93F3-0486501B4B43

Holotype: A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D73096 collected at Bogong Creek, Kosciuszko National Park, New South Wales, Australia, Latitude -36.1 S., Longitude 148.4 E.

This government-owned facility allows access to its holdings.

Paratypes: Fifteen preserved specimens at the National

Museum of Victoria, Melbourne, Victoria, Australia, specimen numbers D72995, D72996, D72997, D72998, D72999, D73060, D73061, D73062, D73063, D73064, D73065, D73097, D73098, D73099 and D73100 all collected at Bogong Creek, Kosciuszko National Park, New South Wales, Australia, Latitude -36.1 S., Longitude 148.4 E.

Diagnosis: That there are three highly divergent species until now all placed within the single species described as *Litoria spenceri* (Dubois, 1984), herein placed in the new genus *Fiacumminganurea gen. nov.* has been known for some time (Minister for the Environment, Commonwealth Government of Australia. 2017).

All three populations (species) have declined sharply due to the effects of *Batrachochytrium dendrobatidis* (Gillespie *et al.* 2015) and therefore with reference to Hoser (2019a, 2019b) it is of critical importance that all three species be formally identified and named immediately so that all can have proper conservation management plans enacted.

With reference to Hoser (2020a), it is also important that all three species (AKA divergent genetic lineages) be kept intact and not otherwise be destroyed by well-meaning but unwise translocations of specimens.

The type form of *L. spenceri* and *Hyla maculata* Spencer, 1901 are both based on a holotype specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number D8498 allegedly from "Powong [= Poowong], Victoria", Australia.

To date this locality information has not been questioned in the literature, but clearly the location is in error.

The Poowong area in West Gippsland is relatively flat and devoid of the mountain stream habitats occupied by the putative species.

Furthermore this site is disconnected from all known populations by way of drainage systems and potential migration routes.

No further specimens have been found there since the lodgement of the holotype and none would be expected to be found there either.

Inspection of the said specimen and also the original descriptions of Spencer (1901) and Dubois (1984) confirms it is of the nearest geographically proximal lineage, being that from the south-side of the Great Dividing Range, currently known from the Wongungarra River drainage, being part of the Mitchell River system in eastern Victoria. Hence it is that form that must be treated as nominate *F. spenceri.*

Even allowing for human-created declines in the last 250 years, the nearest potential drainage system for the taxon to occur near the the alleged type locality would be those of the Latrobe Valley which like the Mitchell River drain into Victoria's East Gippsland Lakes region, the likely collection point still being a watershed on the south-side of the Great Dividing Range.

Nominate *F. spenceri* is therefore treated as the form currently only known with certainty from the Wongungarra River system in eastern Victoria and at its widest those from south of the Great Dividing Range.

All other forms previously treated as that taxon are herein described as new species.

F. fiacummingae sp. nov. is found in the Upper Murray Basin, comprising the West Kiewa, Mitta Mitta, Indi and Bundarra Rivers as well as Buffalo, Snowy, Lightning, Wheeler and Bogong Creeks.

F. timdalei sp. nov. previously known as the so-called "Green Form" of "*Litoria spenceri*" is found in the upper Goulburn River basin including the Goulburn, Taponga, Big, Black, North Jamieson and Howqua Rivers as well as Snake, White and Still Creeks.

The three species are readily separated from one another on the basis of colour of adult specimens.

F. spenceri is olive grey above, blotched with darker markings, with the same on the upper surfaces of the limbs. The flanks are generally light, but with prominent large dark spots or blotches.

There is a purply-grey line running from the snout, through the top of the eye and down to the top of the forelimb, where it terminates. Below this line, the snout is generally green. The top of the head is prominently spotted.

F. timdalei sp. nov. is generally lime green above no markings on the upper surfaces of the limbs save for limited peppering on the front limbs. Unlike both other species it also has a distinctive yellow-gold line (occasionally whitish) running from the snout, through the nostril, above the eye and down to the upper arm, where it widens and fades on the anterior flank. There is a blackish-grey border to the lower edge of this line on the snout and to the back of the head. The flanks are whitish with purply-grey mottling.

F. fiacummingae sp. nov. is generally an olive grey colour above, like in *F. spenceri*, but is separated from that species by having no obvious contrasting dark blotches on the upper body or upper surfaces of the limbs.

Any markings on the body are indistinct and consist of numerous tiny darker spots and patches, giving the frog a peppered appearance. Limbs are greenish to grey and have indistinct lighter markings in the form of spots, peppering or patches.

F. fiacummingae sp. nov. is also characterised by a distinctive lime-green semicircle under the eye, which spreads in less intensity to the nearby upper lip, posterior to the nostril.

There is no obvious spotting on the upper surface of the head in this species as seen in *F. spenceri*.

Both *F. fiacummingae sp. nov*. and *F. timdalei sp. nov.* have larger tubercles or warts on the upper surface of the body, being generally tubercular across the entire upper body than is seen in *F. spenceri.*

Comparative illustrative photos of *F. timdalei sp. nov.* and *F. spenceri* can be seen (in that order) on pages 36 and 37 of Hero *et al*. (1991).

The three morphologically similar species within *Fiacumminganurea gen. nov*. are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: A colouration that is grey to green above, with irregular darker mottling, marbling or flecks, the latter often forming irregular cross-bands on the limbs. Ventral surface white or yellow or white becoming yellow towards the rear. Lower and concealed surface of limbs are yellowish. Skin is somewhat leathery, with a few tiny whitish tubercles on

the back becoming numerous on the sides. Skin below is granular. Small but prominent vomerine teeth are located mostly behind the choanae. A pectoral fold is indistinct. Finger and toes discs are moderate, being only a little wider than the digits. Fingers with distinct basal webbing and the toes are fully webbed. There is a small but prominent inner metatarsal tubercle, no outer one. Tympanum is indistinct. Second finger is larger than the first; adult size to 45 mm in lenth.

The tadpole is free-swimming, elongated and flattened, and reaches a total length of 40 mm prior to metamorphosis. The body is dark brown to black above, with fine silver chromatophores extending onto the flanks. Darker spots may be present on the dorsal surface, while the ventral surface is darkly pigmented. The tail fin and muscle are covered with fine melanophores. The tail is moderately thick and has a rounded tip. The eyes are dorso-lateral and the mouth is ventral. The oral disc is large relative to closely-related species, and the oral papillae have a wide anterior gap. There are two rows of anterior labial teeth and three posterior rows (Hero *et al.* 1995; Anstis 2013).

In terms of morphologically similar and potentially sympatric species the warty back of *Fiacumminganurea gen. nov*. distinguishes species in this genus from the morphologically similar species *Dryopsophus nudidigita* (Copland, 1962) and its lack of a distinct tympanum distinguishes it from *Dryopsophus citropa* (Dümeril and Bibron, 1841).

F. fiacummingae sp. nov. in life can be found in Cogger (2014) at page 189 and Anstis (2013), on page 309, top left and second down from top on right and again on page 310 (tadpoles).

F. timdalei sp. nov. in life can be found in Hero *et al.* (1991) on page 36, Anstis (2013) on page 309, top right, as well as in Eipper and Rowland (2018) on page 152 bottom.

F. spenceri in life can be found in Hero *et al.* (1991) on page 37.

Photos of all three species can be found online on photo-sharing sites such as “www.flickr.com”, many not identifiable by location, but easily distinguished from one another on the basis of the diagnostic characters given above.

Distribution: *F. fiacummingae sp. nov*. is found in the Upper Murray Basin, comprising the West Kiewa, Mitta Mitta, Indi and Bundarra Rivers as well as Buffalo, Snowy, Lightning, Wheeler and Bogong Creeks.

Etymology: This species and the genus it is placed in are named in honour of Fia Cumming of Canberra, ACT, Australia, in recognition for her services to wildlife conservation in Australia as detailed in Hoser (1993) and Hoser (1996).

FIACUMMINGANUREA TIMDALEI SP. NOV.

LSIDurn:lsid:zoobank.org:act:19E954EC-4E8F-4D6F-9E58-4285D59BB988

Holotype: A preserved male specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D48831 collected from Bindaree Hut, Howqua River, 9.5 km West of Mount Howitt, Victoria, Australia, Latitude -37.18 S., Longitude 146.53 E.

This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the South Australian Museum, Adelaide, South Australia, Australia, specimen numbers R46682 and R46684, collected from Richies Hut at the Howkwa River, Victoria, Australia, Latitude -37.1944 S., Longitude 146.475 E.

Diagnosis: That there are three highly divergent species until now all placed within the single species described as *Litoria spenceri* (Dubois, 1984), herein placed in the new genus *Fiacumminganurea gen. nov.* has been known for some time (Minister for the Environment, Commonwealth Government of Australia. 2017).

All three populations (species) have declined sharply due to the effects of *Batrachochytrium dendrobatidis* (Gillespie *et al.* 2015) and therefore with reference to Hoser (2019a, 2019b) it is of critical importance that all three species be formally identified and named immediately so that all can have proper conservation management plans enacted.

With reference to Hoser (1995) and Hoser (2020a), it is also important that all three species (AKA divergent genetic lineages) be kept intact and not otherwise be destroyed by well-meaning but unwise translocations of specimens.

The type form of *L. spenceri* and *Hyla maculata* Spencer, 1901 are both based on a holotype specimen at the National Museum of Victoria, in Melbourne, Australia, specimen number D8498 allegedly from “Powong [= Poowong], Victoria”, Australia.

To date this locality information has not been questioned in the literature, but clearly the location is in error.

The Poowong area in west Gippsland is relatively flat and devoid of the mountain stream habitats occupied by the putative species.

Furthermore this site is disconnected from all known populations by way of drainage systems and potential migration routes.

No further specimens have been found there since the lodgement of the holotype and none would be expected to be found there either.

Inspection of the said specimen and also the original descriptions of Spencer (1901) and Dubois (1984) confirms it is of the nearest geographically proximal lineage, being that from the south-side of the Great Dividing Range, currently known from the Wongungarra River drainage, being part of the Mitchell River system in eastern Victoria.

Hence it is that form that must be treated as nominate *F. spenceri.*

Even allowing for human-created declines in the last 250 years, the nearest potential drainage system for the taxon to occur near the the alleged type locality would be those of the Latrobe Valley which like the Mitchell River drain into Victoria’s East Gippsland Lakes region, the likely collection point still being a watershed on the south-side of the Great Dividing Range.

Nominate *F. spenceri* is therefore treated as the form currently only known with certainty from the Wongungarra River system in eastern Victoria or at its widest being from south of the Great Dividing Range.

All other forms previously treated as that taxon are herein described as new species.

F. fiacummingae sp. nov. is found in the Upper Murray Basin, comprising the West Kiewa, Mitta Mitta, Indi and Bundarra Rivers as well as Buffalo, Snowy, Lightning, Wheeler and Bogong Creeks.

F. timdalei sp. nov. previously known as the so-called "Green Form" of "*Litoria spenceri*" is found in the upper Goulburn River basin including the Goulburn, Taponga, Big, Black, North Jamieson and Howqua Rivers as well as Snake, White and Still Creeks.

The three species are readily separated from one another on the basis of colour of adult specimens.

F. spenceri is olive grey above, blotched with darker markings, with the same on the upper surfaces of the limbs. The flanks are generally light, but with prominent large dark spots or blotches.

There is a purply-grey line running from the snout, through the top of the eye and down to the top of the forelimb, where it terminates. Below this line, the snout is generally green. The top of the head is prominently spotted.

F. timdalei sp. nov. is generally lime green above no markings on the upper surfaces of the limbs save for limited peppering on the front limbs. Unlike both other species it also has a distinctive yellow-gold line (occasionally whitish) running from the snout, through the nostril, above the eye and down to the upper arm, where it widens and fades on the anterior flank. There is a blackish-grey border to the lower edge of this line on the snout and to the back of the head. The flanks are whitish with purply-grey mottling.

F. fiacummingae sp. nov. is generally an olive grey colour above, like in *F. spenceri*, but is separated from that species by having no obvious contrasting dark blotches on the upper body or upper surfaces of the limbs.

Any markings on the body are indistinct and consist of numerous tiny darker spots and patches, giving the frog a peppered appearance.

Limbs are greenish to grey and have indistinct lighter markings in the form of spots, peppering or patches.

F. fiacummingae sp. nov. is also characterised by a distinctive lime-green semicircle under the eye, which spreads in less intensity to the nearby upper lip, posterior to the nostril.

There is no obvious spotting on the upper surface of the head in this species as seen in *F. spenceri*.

Both *F. fiacummingae sp. nov*. and *F. timdalei sp. nov.* have larger tubercles or warts on the upper surface of the body, being generally tubercular across the entire upper body than is seen in *F. spenceri.*

Comparative illustrative photos of *F. timdalei sp. nov.* and *F. spenceri* can be seen (in that order) on pages 36 and 37 of Hero *et al.* 1991.

The three morphologically similar species within *Fiacumminganurea gen. nov*. are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

A colouration that is grey to green above, with irregular darker mottling, marbling or flecks, the latter often forming irregular cross-bands on the limbs. Ventral surface white or yellow or white becoming yellow towards the rear. Lower and concealed surface of limbs are yellowish. Skin is somewhat leathery, with a few tiny whitish tubercles on the back becoming numerous on the sides. Skin below is granular. Small but prominent vomerine teeth are located mostly behind the choanae. A pectoral fold is indistinct. Finger and toes discs are moderate, being only a little wider than the digits. Fingers with distinct basal webbing and the toes are fully webbed. There is a small but prominent inner metatarsal tubercle, no outer one. Tympanum is indistinct. Second finger is larger than the first; adult size to 45 mm in lenth.

The tadpole is free-swimming, elongated and flattened, and reaches a total length of 40 mm prior to metamorphosis. The body is dark brown to black above, with fine silver chromatophores extending onto the flanks. Darker spots may be present on the dorsal surface, while the ventral surface is darkly pigmented. The tail fin and muscle are covered with fine melanophores. The tail is moderately thick and has a rounded tip. The eyes are dorso-lateral and the mouth is ventral.

The oral disc is large relative to closely-related species, and the oral papillae have a wide anterior gap. There are two rows of anterior labial teeth and three posterior rows (Hero *et al.* 1995; Anstis 2013).

In terms of morphologically similar and potentially sympatric species the warty back of *Fiacumminganurea gen. nov*. distinguishes species in this genus from the morphologically similar species *Dryopsophus nudidigita* (Copland, 1962) and its lack of a distinct tympanum distinguishes it from *Dryopsophus citropa* (Dümeril and Bibron, 1841).

F. fiacummingae sp. nov. in life can be found in Cogger (2014) at page 189 and Anstis (2013), on page 309, top left and second down from top on right and again on page 310 (tadpoles).

F. timdalei sp. nov. in life can be found in Hero *et al.* (1991) on page 36, Anstis (2013) on page 309, top right, as well as in Eipper and Rowland (2018) on page 152 bottom.

F. spenceri in life can be found in Hero *et al.* (1991) on page 37.

Photos of all three species can be found online on photo-sharing sites such as "www.flickr.com", many not identifiable by location, but easily distinguished from one another on the basis of the diagnostic characters given above.

Distribution: *F. timdalei sp. nov.* previously known as the so-called "Green Form" of "*Litoria spenceri*" is found in the upper Goulburn River basin including the Goulburn, Taponga, Big, Black, North Jamieson and Howqua Rivers as well as Snake, White and Still Creeks.

Etymology: *F. timdalei sp. nov*. is named in honour of Tim Dale of Warrandyte, Victoria, in recognition of his special connection with the drainages in the area this species occurs, including those that flow off Mount Buller, in which he has crashed when riding on his snowboard too many times, sometimes after hitting a grazing wombat *Vombatus ursinus* (Shaw, 1800) at very high speed.

DRYOPSOPHINA SUBTRIBE NOV.

***DRYOPSOPHUS* FITZINGER, 1843**

Type species: *Hyla citropa* Dümeril and Bibron, 1841.

Diagnosis: Frogs in the genus *Dryopsophus* Fitzinger, 1843 as defined herein, are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Vomerine teeth present and the hind edge is behind the choanae; fingers are free or only webbed at the base; the first finger is much shorter and smaller than the second and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; the heel of the adpressed hindlimb reaches to the eye or beyond; and one or other of the following three suites of characters:

1/ There is a narrow light line along at least the posterior edge of the upper jaw, from below the eye to the glandular region behind the angle of the mouth; the tympanum is distinct; the tympanic annulus is clearly visible (subgenus *Dryopsophus*), or:

2/ There is a narrow light line along at least the posterior edge of the upper jaw, from below the eye to the glandular region behind the angle of the mouth; the tympanum is indistinct; the tympanic annulus is indistinct, (subgenus *Leucolatera subgen. nov.*), or:

3/ There is no light line along the posterior edge of the upper jaw; there is a narrow light green, white or gold stripe, sometimes with indefinite edges, but always bordered below with dark brown or black along the supra-tympanic ridge; fingers have barely a trace of webbing and the white or gold supratympanic streak is sharp edged (subgenus *Ausverdarana subgen. nov.*)

The nominate subgenus *Dryopsophus* Fitzinger, 1843 only includes the type species *D. citropa* (Dümeril and Bibron, 1841), which is herein split into two morphologically divergent and apparently allopatric subspecies. It is distributed from the lower north coast of New South South Wales, southwards along the coast and nearby ranges south to north-east Victoria.

According to Duellman *et al.* (2016), the assemblage of frogs within the genus *Dryopsophus*, diverged from its nearest living relatives, being species within *Fiacumminganurea gen. nov*. (this paper), about 22.3 MYA.

Distribution: South-eastern Australia from about Kroombit Tops, Queensland in the North, generally along wetter regions near the coast and adjacent ranges to north-east Victoria.

Content: *Dryopsophus citropa* (Dümeril and Bibron, 1841) (type species); *D. barringtonensis* (Copland, 1957); *D. daviesae* (Mahony, Knowles, Foster and Donnellan, 2001); *D. jarrodthomsoni sp. nov.* (Warwick, Qld); *D. kroombitensis* (Hoskin, Hines, Meyer, Clarke and Cunningham, 2013); *D. nudidigita* (Copland, 1962); *D. pearsoniana* (Copland, 1961); *D. phyllochroa* Günther, 1863 (type species); *D. piperata* (Tyler and Davies, 1985); *D. subglandulosa* (Tyler and Anstis, 1983).

LEUCOLATERA SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:82F4DFED-E14C-4FB3-A5FE-4D52206C6E0B

Type species: *Litoria subglandulosa* Tyler and Anstis, 1983.

Diagnosis: The two recognized species in the subgenus *Leucolatera subgen. nov.* can be separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Vomerine teeth present and the hind edge is behind the choanae; fingers are free or only webbed at the base; the first finger is much shorter and smaller than the second and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; the heel of the adpressed hindlimb reaches to the eye or beyond; there is a narrow light line along at least the posterior edge of the upper jaw, from below the eye to the glandular region behind the angle of the mouth; the tympanum is indistinct; the tympanic annulus is indistinct.

In turn each of the other subgenera within *Dryopsophus* are separated from the subgenus *Leucolatera subgen. nov.* by one or other of the following suites of characters:

1/ There is a narrow light line along at least the posterior edge of the upper jaw, from below the eye to the glandular region behind the angle of the mouth; the tympanum is distinct; the tympanic annulus is clearly visible (subgenus *Dryopsophus*), or:

2/ There is no light line along the posterior edge of the upper jaw; there is a narrow light green, white or gold stripe, sometimes with indefinite edges, but always bordered below with dark brown or black along the supra-tympanic ridge; fingers have barely a trace of webbing and the white or gold supratympanic streak is sharp edged (subgenus *Ausverdarana subgen. nov.*).

Duellman *et al.* (2016) found that the species in this subgenus diverged from the other two subgenera about 15.3 MYA.

Distribution: The coast and ranges from just north (within 50 km) of the Queensland / New South Wales border, extending south for about 500 km in a straight line into northern New South Wales, Australia.

Etymology: “Leuco” in Latin means white and so the name *Leucolatera* refers to the white typically found on the flanks (lateral surfaces AKA “Latera” in Latin) of the relevant frog species.

Content: *Dryopsophus* (*Leucolatera*) *subglandulosa* (Tyler and Anstis, 1983) (type species); *D.* (*Leucolatera*) *daviesae* (Mahony, Knowles, Foster and Donnellan, 2001).

AUSVERDARANA SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:30C68D75-FF13-439E-918F-EB1CE72F9612

Type species: *Hyla phyllochroa* Günther, 1863.

Diagnosis: Frogs in the subgenus *Ausverdarana subgen. nov.* as defined herein, are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Vomerine teeth present and the hind edge is behind the choanae; fingers are free or only webbed at the base; the first finger is much shorter and smaller than the second

and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; the heel of the adpressed hindlimb reaches to the eye or beyond; there is no light line along the posterior edge of the upper jaw; there is a narrow light green, white or gold stripe, sometimes with indefinite edges, but always bordered below with dark brown or black along the supra-tympanic ridge; fingers have barely a trace of webbing and the white or gold supratympanic streak is sharp edged.

In turn the other two subgenera within *Dryopsophus* Fitzinger, 1843 are separated from *Ausverdarana subgen. nov.* by one or other of the following suites of characters:

1/ There is a narrow light line along at least the posterior edge of the upper jaw, from below the eye to the glandular region behind the angle of the mouth; the tympanum is distinct; the tympanic annulus is clearly visible (subgenus *Dryopsophus*), or:

2/ There is a narrow light line along at least the posterior edge of the upper jaw, from below the eye to the glandular region behind the angle of the mouth; the tympanum is indistinct; the tympanic annulus is indistinct, (subgenus *Leucolatera subgen. nov.*).

Duellman *et al.* (2016) found that the species in this subgenus diverged from the closest related living congener in the nominate subgenus by 14.5 MYA.

Distribution: South-eastern Australia from about Kroombit Tops, Queensland in the North, generally along wetter regions near the coast and adjacent ranges to north-east Victoria.

Etymology: The subgenus name is derived as follows: "Aus" is an abbreviation of Australia, being from where these frogs occur. "Verda" is Latin for green, being the dominant dorsal colouration of most species in the genus as adults, most of the time.

"Rana" is Latin for frog and so the full translation of the name *Ausverdarana* means "Green Australian Frog".

Content: *Dryopsophus* (*Ausverdarana*) *phyllochroa* (Günther, 1863) (type species); *D.* (*Ausverdarana*) *barringtonensis* (Copland, 1957); *D.* (*Ausverdarana*) *jarrodthomsoni sp. nov.*; *D.* (*Ausverdarana*) *kroombitensis* (Hoskin, Hines, Meyer, Clarke and Cunningham, 2013); *D.* (*Ausverdarana*) *nudidigita* (Copland, 1962); *D.* (*Ausverdarana*) *pearsoniana* (Copland, 1961); *D.* (*Ausverdarana*) *piperata* (Tyler and Davies, 1985).

DRYOPSOPHUS* (*DRYOPSOPHUS*) *CITROPA GIPPSLANDENSIS SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:AEEB16B9-31AB-4480-B9B8-BBEF4916AB03

Holotype: A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D66034 collected at a small creek at Sandpatch Track, East Gippsland, Victoria, Latitude -37.59 S., Longitude 149.553 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D56458 collected at the Tambo River, at a bridge on Collins Road, East Gippsland, Victoria, Australia, Latitude -37.55 S., Longitude 147.85 E.

Diagnosis: Until now, the taxon *Dryopsophus citropa gippslandensis subsp. nov.* has been treated by all herpetologists as the southernmost population of the species *D. citropa* (Dümeril and Bibron, 1841) and no authors I am aware of have ever speculated of differences between the Victorian form and type form (type locality of Sydney, New South Wales).

However having collected many hundreds of specimens over a period exceeding 50 years, both in and around the Sydney region as well as in north-east Victoria, I have been aware of sufficient morphological differences between the populations to warrant taxonomic division since at least the 1990's.

Both subspecies would be identified as *D. citropa* (under the name "*Litoria citropa*") using the key in Cogger (2014).

D. citropa gippslandensis subsp. nov. is essentially confined to north-east Victoria and immediately adjacent parts of south-east New South Wales, north to Merimbula.

After an apparent break in the distribution of the species (of about 20 km straight line measurement or 30 km by road), *D. citropa citropa* is found north from about Bega in New South Wales to the region of the Hunter Valley, north of Sydney and includes the form described as *Hyla jenolanensis* Copland, 1957.

The two subspecies are readily separated from one another by the following defining characters:

D. citropa citropa from the type region in New South Wales have tight spaced dark flecks all over the upper body and well defined markings on the front and back legs. There is obvious patches of bright lime green on the lower arm and feet. There is also lots of lime green anterior to eye on the snout. The lime green markings on the lower sides of the back and groin are obvious, well-defined and brilliant.

By contrast, *D. citropa gippslandensis subsp. nov.* have well spaced dark flecks on the upper body and poorly defined markings on the front and back legs. As a rule, there is no green on the lower arm or feet (except in aberrant specimens). There is also minimal green anterior to the eye on the snout. The green on the lower sides of the back and groin is faded or absent.

Frogs in the genus *Dryopsophus* Fitzinger, 1843 as defined herein, are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Vomerine teeth present and the hind edge is behind the choanae; fingers are free or only webbed at the base; the first finger is much shorter and smaller than the second and when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger; the heel of the adpressed hindlimb reaches to the eye or beyond; and one or other of the following three suites of characters:

1/ There is a narrow light line along at least the posterior edge of the upper jaw, from below the eye to the glandular region behind the angle of the mouth; the tympanum is distinct; the tympanic annulus is clearly visible (subgenus *Dryopsophus* , being monotypic for *D. citropa*), or:

2/ There is a narrow light line along at least the posterior

edge of the upper jaw, from below the eye to the glandular region behind the angle of the mouth; the tympanum is indistinct; the tympanic annulus is indistinct, (subgenus *Leucolatera subgen. nov.*), or:

3/ There is no light line along the posterior edge of the upper jaw; there is a narrow light green, white or gold stripe, sometimes with indefinite edges, but always bordered below with dark brown or black along the supra-tympanic ridge; fingers have barely a trace of webbing and the white or gold supratympanic streak is sharp edged (subgenus *Ausverdarana subgen. nov.*).

In areas where either of these subspecies of *D. citropa* occur I have found *D. citropa gippslandensis subsp. nov.* in significantly greater numbers, although as rule *D. citropa* of either subspecies are never seen in the massive numbers that other sympatric frogs in the same locations commonly occur.

Distribution: *D. citropa gippslandensis subsp. nov.* is essentially confined to north-east Victoria and immediately adjacent parts of south-east New South Wales, north to Merimbula (Latitude 36.8875 S., Longitude 149.9059 E.).

Etymology: The subspecies name *gippslandensis*, refers to where this taxon occurs.

DRYOPSOPHUS* (*AUSVERDARANA*) *JARRODTHOMSONI SP. NOV.

LSIDurn:lsid:zoobank.org:act:8E210C37-8242-4035-98D5-1D88E2FE40DE

Holotype: A preserved specimen at the Queensland Museum in Brisbane, Queensland, Australia, specimen number: J26361 collected at Farm Creek, via Warwick, Queensland, Australia, Latitude -28.3 S., Longitude 152.2 E.

This government-owned facility allows access to its holdings.

Paratypes: 1/ A preserved specimen at the Queensland Museum in Brisbane, Queensland, Australia, specimen number: J51998, collected at Girraween National Park, Queensland, Australia, Latitude -28.83 S., Longitude 151.9371 E.

2/ A preserved male specimen at the Queensland Museum in Brisbane, Queensland, Australia, specimen number: J17328 collected at Scenic Rim, Cunninghams Gap, Queensland, Australia, Latitude -28.05 S., Longitude 152.4 E.

Diagnosis: *Dryopsophus jarrodthomsoni sp. nov.* has until now been treated as a population of *D. phyllochroa* (Günther, 1863) or more recently *D. pearsoniana* (Copland, 1961) as defined by Anstis (2013) or keyed out by Cogger (2014), however the molecular evidence of Donnellan *et al.* (1999) indicated potential species level divergence for the population.

D. jarrodthomsoni sp. nov. would key out as *D. pearsoniana* in Cogger (2014) as a means of separating both species from all other Australasian tree frogs.

D. jarrodthomsoni sp. nov. is readily separated from its nearest congener *D. pearsoniana*, by colouration.

D. jarrodthomsoni sp. nov. is a light brownish to light green colour dorsally with no flecks or only tiny scattered blackish flecks.

By contrast *D. pearsoniana* has either a few, or many distinct black spots running across the back.

In *D. jarrodthomsoni sp. nov.* there is a well-defined dark brown bar running from the snout, through the eye, across all or most of the tympanum and past the top of the forelimb, with a thin white boundary on top. Significantly this bar does not narrow as it passes through the tympanum, which contrasts with the situation in *D. pearsoniana*. In that species the bar narrows significantly to become a thin line as it passes over the tympanum.

The toes of *D. jarrodthomsoni sp. nov.* are yellow, versus green or brown in *D. pearsoniana*.

D. pearsoniana has obvious moderately distinct blotches or markings on the limbs, versus none in *D. jarrodthomsoni sp. nov.*.

Numerous photos of both *D. pearsoniana* and *D. jarrodthomsoni sp. nov.* in life can be found at the website http://www.flickr.com

Distribution: *D. jarrodthomsoni sp. nov.* is presently known from the ranges and nearby areas west of the Gold Coast/Tweed Heads area, generally in the zone of the headwaters of the Condamine River and other nearby drainages, in particular to the south in New South Wales as well headwaters of some east draining watercourses as well.

Etymology: Named in in honour of Jarrod Thomson of Croydon North in Victoria, Australia, for his assistances in maintaining the infrastructure at the world-class reptile captive breeding facility held at the Snakebusters Reptiles shows business address in Victoria, Australia.

KUMANJAYIWALKERINI TRIBE NOV.

KUMANJAYIWALKERUS GEN. NOV.

LSIDurn:lsid:zoobank.org:act:666B94F4-985E-4E91-8473-F7E6926C7646

Type species: *Kumanjayiwalkerus kumanjayi sp. nov.*

Diagnosis: The genera *Pengilleyia* Wells and Wellington, 1985 as defined within this paper, and *Kumanjayiwalkerus gen. nov.* are as a pair, both readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Vomerine teeth present; fingers with conspicuous webbing reaching at least as far as the base of the penultimate phalanx of the fourth finger; hind edge of forearm is smooth, or with at most a few low, discontinuous tubercles; hind edge of foot is smooth; hind side of thighs with contrasting black and yellow bars or marbling, at least dorsally.

The genus *Pengilleyia* Wells and Wellington, 1985 is readily separated from the genus *Kumanjayiwalkerus gen. nov.* by having a back that is either very warty or moderately warty, versus virtually smooth or with well scattered small pointed tubercles on an otherwise smooth body in *Kumanjayiwalkerus gen. nov.*. Furthermore species within *Pengilleyia* invariably have green spots, flecks or blotches on the back versus none in *Kumanjayiwalkerus gen. nov.*.

Kumanjayiwalkerus gen. nov.. has a strongly contrasting reddish-brown upper iris, with grey below, versus either weakly contrasting reddish-brown upper iris or the iris being grey all over in *Pengilleyia.*

Duellman *et al.* (2016) found that the species within each of *Pengilleyia* and *Kumanjayiwalkerus gen. nov.* diverged from one another 16.7 MYA and these two genera in turn diverged from their nearest living relatives 23.2 MYA.

Distribution: Tropical Australia, extending down the east coast of Queensland as far as the wetter south-east of that State and the Fly River region of Southern Papua New Guinea.

Etymology: The genus *Kumanjayiwalkerus gen. nov*. is named in honour Kumanjayi Walker, another indigenous Australian victim of an execution by a racist white Australian police officer in the Northern Territory, being one of over 400 such victims in Australia since 1990.

The 19 year old was shot and killed by NT Police Officer Zachary Rolfe in November 2019.

The world is full of memorials and species named in honour mass murders, thieves and despots and It is appropriate that victims of these people should also be honoured.

Indigenous Australians were subjected to a British Genocide that was pro-rata significantly more destructive than the holocaust caused by the German Nazi regime to Jews and others. The British attempts to rewrite the factual historical record of Australia was far worse than that of the Nazi Propaganda Ministry, including that Australia was "uninhabited" prior to 1770 when Captain James Cook "discovered" the place, but these facts are not well known, even to many Australians.

Also not well known outside Australia is the endemic corruption of Australian police forces in the modern era.

It is hoped that by naming of a widespread and common species of frog in honour of a victim of a police muder in Australia that attention is not only drawn to the victim of the crime, but also other victims and a hope that by doing so, the crime and corruption that is endemic in Australian police forces is eventually stopped (see also etymology for *Nyctimystes* (*Asperohyla*) *georgefloydi sp. nov.* earlier in this paper).

Notable is that George Floyd was killed by police on 26 May 2020 in Minnesota, USA.

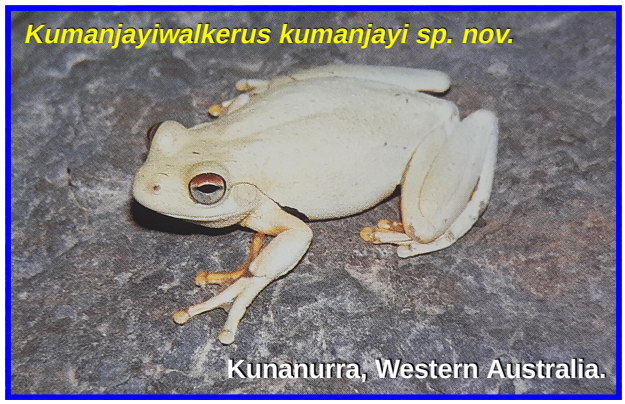
The videos of the killing made by bystanders were shared online, sparking widespread protests in over 30 cities and worldwide.

Two days later, on 28 May 2020, Victorian Police officers pulled over a motorist on the busy Monash Freeway at Dandenong North. They got out of their police car and proceeded to execute the 53 year old family man by shooting him dead in broad daylight in full view of other drivers, the entire incident being captured on dashcams and even State Government-owned freeway CCTV cameras. Unlike in Minnesota, USA, the Victorian Police successfully hijacked every video made and none was made public or shared on social media.

As a result there were no protests in Australia arising from the incident.

Police Union boss, Wayne Gatt (remember the Gatt name … and for the wrong reasons), told the media that the execution was wholly justified.

Content: *Kumanjayiwalkerus kumanjayi* (type species); *K. rothii* (De Vis, 1884).



KUMANJAYIWALKERUS KUMANJAYI SP. NOV.

LSIDurn:lsid:zoobank.org:act:9D99A68E-3A87-4AAE-B0AA-B7B31078D521

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R50585, collected at the Drysdale River National Park, Kimberley District, Western Australia, Australia, Latitude -14.7667 S., Longitude 127.0833 E.

This government-owned facility allows access to its holdings.

Paratypes: 14 preserved specimens at the Western Australian Museum, Perth, Western Australia, Australia, specimen numbers, R50377, R50382, R50581, R50582, R50583, R50805, R50806, R131681, R173564, R173578, R173579, R173580, R164955 and R164956, collected at the Drysdale River National Park, Kimberley District, Western Australia, Australia, Latitude -14.7667 S., Longitude 127.0833 E.

Diagnosis: *Kumanjayiwalkerus kumanjayi sp. nov.* has until now been treated as merely the western population of *K. rothii* (De Vis, 1884), better known as "*Litoria rothii*", with a type locality of Mackay in North Queensland, Australia.

However the possibility of there being at least two species within putative "*Litoria rothii*", has been known for decades. Hoser (1989) on page 41 had photos of the western and eastern forms of this species and Anstis 2013 on page 297 stated "it is possible there may be more than one species involved.

Kumanjayiwalkerus kumanjayi sp. nov. is the form encompassing the Kimberley District of Western Australia and the top end of the Northern Territory, including the western side of the Gulf of Carpentaria. *K. rothii* of the type form occupies most parts of Queensland, except the driest areas and the south, as well as southern New Guinea.

Both species would key out as "*Litoria rothii*" in either Anstis (2013) or Cogger (2014).

The two species are readily separated from one another as follows:

K. rothii has obvious black spots and blobs above the arm pit, on the rear flank, groin and inner and rear hind leg. In contrast these areas of black are either absent, heavily reduced as to be inconspicuous or shaded as grey.

Where the black spotting and marks are present in *K.*

Hoser 2020 - Australasian Journal of Herpetology 44-46:1-192.

rothii, *K. kumanjayi sp. nov.* has light bluish-purple flash colours instead.

Some north Queensland specimens of *K. rothii* may also have light bluish-purple in these inner areas, but in these specimens, the light bluish-purple areas are always well bounded by thick black outlines (not seen in *K. Kumanjayi sp. nov*).

K. rothii has yellow and black mottling along the inside edge of the foot, versus light bluish-purple and yellow mottling in *K. kumanjayi sp. nov.*.

Black spotting extends along the lower flank, anterior to the hind limb in *K. rothii*, whereas this is not the case in *K. kumanjayi sp. nov.*. The upper lip of *K. rothii* is whitish, versus yellow-brown in *K. kumanjayi sp. nov.*.

Both species *K. kumanjayi sp. nov.* and *K. rothii* are further defined as follows: A medim-sized, somewhat slender tree frog. Has a slender hind limb. Tongue oval, with its free hind edge rather deeply emarginate. Vomerine teeth in two small groups between the choanee. Choanae rather large and angular. Head small. Snout subacute, longer than orbit or interorbit. Nostril much nearer the tip of the snout than to the eye. Loreal region shelving is rather concave. Tympanum distinct, two-thirds of orbit. Fingers half-webbed, but fringed to the discs; discs about two-thirds of tympanum in size. Toes entirely webbed, with small discs. On protraction of the hind foot, the ankle reaches between the eye and the nostril. There is no distinct tarsal fold. There is a faint fold over the wrist. Males to 40 mm, and females to 60 mm in body length. Colour variable, but is usually lead grey, olive or reddish brown, uniform or mottled with darker patches. Colour and intensity changes significantly with time of day, temperature, activity and other factors. The the flash markings of the arm pits, groin and legs are outlined above, but invariably include yellow and one or other of black or bluish-light-purple, or sometimes both. Diagnostic of both species is the distinctive iris of the eye, which has a rediish-orange upper orbit and grey lower half.

Hoser (1989) at page 41 has comparative photos of both *K. kumanjayi sp. nov.* and *K. rothii* in life, with *K. kumanjayi sp. nov.* on middle right and *K. rothii* on bottom right. Anstis (2013) has comparative photos of both *K. kumanjayi sp. nov.* and *K. rothii* in life, with *K. kumanjayi sp. nov.* on page 297 two photos on right and *K. rothii* on page 298 on top left. Vanderduys (2012) has a photo of *K. rothii* in life, from near the type locality on page 68 bottom left and also bottom right. Eipper (2012) at page 113 bottom also has a photo of typical *K. rothii* in life, as does Eipper and Rowland (2018) on page 150 (both photos), as does Cogger (2014) at page 187 bottom. Clyne (1969) has a photo of *K. rothii* in life, on page 35 at top.

The genera *Pengilleyia* Wells and Wellington, 1985 as defined within this paper, and *Kumanjayiwalkerus gen. nov.* are as a pair, both readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Vomerine teeth present; fingers with conspicuous webbing reaching at least as far as the base of the penultimate phalanx of the fourth finger; hind edge of forearm is smooth, or with at most a few low, discontinuous tubercles; hind edge of foot is smooth; hind side of thighs with contrasting black and yellow bars or marbling, at least dorsally.

The genus *Pengilleyia* Wells and Wellington, 1985 is readily separated from the genus *Kumanjayiwalkerus gen. nov.* by having a back that is either very warty or moderately warty, versus virtually smooth or with well scattered small pointed tubercles on an otherwise smooth body in *Kumanjayiwalkerus gen. nov.*.

Furthermore species within *Pengilleyia* invariably have green spots, flecks or blotches on the back versus none in *Kumanjayiwalkerus gen. nov.*.

Kumanjayiwalkerus gen. nov.. has a strongly contrasting reddish-brown upper iris, with grey below, versus either weakly contrasting reddish-brown upper iris or the iris being grey all over in *Pengilleyia.*

Duellman *et al.* (2016) found that the species within each of *Pengilleyia* and *Kumanjayiwalkerus gen. nov.* diverged from one another 16.7 MYA and these two genera in turn diverged from their nearest living relatives 23.2 MYA.

Distribution: *Kumanjayiwalkerus kumanjayi sp. nov.* is found from the Kimberley District of Western Australia and the top end of the Northern Territory, to the western side of the Gulf of Carpentaria. *K. rothii* of the type form occupies most parts of Queensland, except the driest areas and the south, as well as southern New Guinea.

Etymology: The species *Kumanjayiwalkerus kumanjayi sp. nov.* is named in honour Kumanjayi Walker, another indigenous Australian victim of an execution by a racist white Australian police officer in the Northern Territory (NT), being one of over 400 such victims in Australia since 1990.

The 19 year old was shot and killed by NT Police Officer Zachary Rolfe in November 2019.

The world is full of memorials and species named in honour mass murderers, thieves and despots and it is appropriate that victims of these people should also be honoured occasionally.

The spelling of the species name is deliberate and should NOT be changed. While it is convention for an “i” to be added to a male patronym name, in this case I have chosen to dispense with this so that the species name more accurately reflects the person it is named in honour of, especially noting that the taxon is common and widespread and it is hoped that people remember the exact person the frog is named after and not be otherwise confused into thinking the person’s name in fact ended with two “i’s” noting that in this case, this is done for the benefit of lay people and not those familiar with the minor details of scientific nomenclature of living animals.

Furthermore this nomenclature decision was made after discussions with people within the Yuendemu Aboriginal Community.

***PENGILLEYIA* WELLS AND WELLINGTON, 1985**

Type species: *Litoria tyleri* Martin, Watson, Gartside, Littlejohn and Loftus-Hills, 1979.

Diagnosis: *Pengilleyia* Wells and Wellington, 1985 as defined by them was literally a “dogs breakfast” of widely divergent species placed into a single putative genus. This creation by them, does stand out as one of their

more significant mess-ups and proves that even competant herpetologists with many years experience can get things really wrong.

Notwithstanding this, the name is available in terms of the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) and all preceding editions. To that extent, all that matters is the phylogenetic placement of the type species and where it relates to other putative genera.

The so-called "*Litoria peroni* " (Tschudi, 1838) species group, includes the species originally described as *Litoria tyleri* Martin, Watson, Gartside, Littlejohn and Loftus-Hills, 1979, and as this species group did not have an available genus name prior to 1985, the Wells and Wellington name *Pengilleyia*, is that which must be used and attached to the species group.

If one were to include the "*Hyla rothii* De Vis, 1884" species group into the genus *Pengilleyia* as done by Wells and Wellington (1985), also otherwise then not assignable to any nearer group, one finds a 23.2 MYA divergence from their nearest living (genus assigned) relatives according to Duellman *et al.* (2016). Those relevant species are within the genera *Audaxura gen. nov.* and *Colleeneremia* Wells and Wellington, 1985, which each diverged from one another 17 MYA according to Duellman *et al.* (2016).

Because the *Hyla rothii* De Vis, 1884 species group diverged from others within *Pengilleyia* as outlined above, being the so-called "*Litoria peroni* " (Tschudi, 1838) species group, approximately 16.7 MYA according to Duellman *et al.* (2016), that species group (treated as two species herein) is placed within a newly named genus *Kumanjayiwalkerus gen. nov.* which is defined and diagnosed previously in this paper.

The genera *Pengilleyia* Wells and Wellington, 1985 and *Kumanjayiwalkerus gen. nov.* are as a pair, both readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Vomerine teeth present; fingers with conspicuous webbing reaching at least as far as the base of the penultimate phalanx of the fourth finger; hind edge of forearm is smooth, or with at most a few low, discontinuous tubercles; hind edge of foot is smooth; hind side of thighs with contrasting black and yellow bars or marbling, at least dorsally.

The genus *Pengilleyia* Wells and Wellington, 1985 is readily separated from the genus *Kumanjayiwalkerus gen. nov.* by having a back that is either very warty or moderately warty, versus virtually smooth in *Kumanjayiwalkerus gen. nov.*.

The genus *Pengilleyia* Wells and Wellington, 1985 is readily separated from the genus *Kumanjayiwalkerus gen. nov.* by having a back that is either very warty or moderately warty, versus virtually smooth or with well scattered small pointed tubercles on an otherwise smooth body in *Kumanjayiwalkerus gen. nov.*. Furthermore species within *Pengilleyia* invariably have green spots, flecks or blotches on the back versus none in *Kumanjayiwalkerus gen. nov.*.

Kumanjayiwalkerus gen. nov. has a strongly contrasting reddish-brown upper iris, with grey below, versus either weakly contrasting reddish-brown upper iris or iris being grey all over in *Pengilleyia.*

Distribution: *Pengilleyia* Wells and Wellington, 1985 occurs in Eastern Australia, New Guinea, the Moluccas and lesser Sundas in Indonesia.

Content: *Pengilleyia tyleri* (Martin, Watson, Gartside, Littlejohn and Loftus-Hills, 1979) (type species); *P. amboinensis* (Horst, 1883); *P. darlingtoni* (Loveridge, 1945); *P. everetti* (Boulenger, 1897); *P. peronii* (Tschudi, 1838); *P. obtusirostris* (Meyer, 1875).

AUDAXURINA SUBTRIBE NOV.

AUDAXURA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:8864D28E-5477-46B5-842E-9D9F521D6AD0

Type species: *Hyla* (*Litoria*) *congenita* Peters and Doria, 1878.

Diagnosis: The genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone.

There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots.

Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov.* have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Within *Colleeneremia* the two subgenera are separated as follows:

1/ Fingers with only rudimentary webbing, being the subgenus *Colleeneremia*, or:

2/ With conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger being the subgenus *Balatusrana subgen. nov.*.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera. Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Duellman *et al.* (2016) found that the genera *Colleeneremia* and *Audaxura gen. nov*. diverged from one another 17 MYA, with a similar divergence indicated by Pyron and Weins (2011).

Distribution: *Audaxura gen. nov*. is found in New Guinea, immediately offshore Islands to the south and south-west and north-east as well as the nearby Moluccan Islands.

Etymology: Audax in Latin means bold, and by frog standards this is an invasive genus, with specimens commonly entering sites of human habitation in lowland areas. “ura” is an abbreviation of “anura” = frog and hence the name *Audaxura gen. nov.*.

Content: *Audaxura congenita* (Peters and Doria, 1878) (type species); *A. capitula* (Tyler, 1968); *A. pygmaea* (Meyer, 1875); *A. quadrilineata* (Tyler and Parker, 1974).

BREVICRUSYLA GEN. NOV.

LSIDurn:lsid:zoobank.org:act:D6264CA2-F412-46DC-A481-2FC0CE7962F8

Type species: *Hyla wisselensis* Tyler, 1968.

Diagnosis: *Brevicrusyla gen. nov.* includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.,* but readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera.

Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

The genera *Colleeneremia* Wells and Wellington, 1985, *Brevicrusyla gen. nov.* and *Audaxura gen. nov.* are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov*. have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Within *Colleeneremia* the two subgenera are separated as follows:

1/ Fingers with only rudimentary webbing, being the subgenus *Colleeneremia*, or:

2/ With conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger being the subgenus *Balatusrana subgen. nov.*.

Tyler and Davis (1978) originally placed their species “*Hyla wisselensis*” in a group with “*Hyla rubella*” now of the genus *Colleeneremia* . Tyler and Davis (1983) placed both “*Hyla wisselensis*” and “*Litoria umbonata*” in a new group of species including just these two.

Significant morphological divergence at both larval and adult stages of the life cycle support this contention and the creation of the genus *Brevicrusyla gen. nov.*

Distribution: Known only from the Wissel Lakes area for *B. wisselensis* (Tyler, 1968) and the Baliem River Valley of West Papua, Indonesia *B. umbonata* (Tyler and Davies 1983).

Etymology: The genus name is a slightly abbreviated form of Latin for short (brevis), leg (Crus) and tree frog as in “*Hyla*”, combined to form the word “*Brevicrusyla*”. This is a reflection of the relatively short hind limbs of the species.

Content: *Brevicrusyla wisselensis* (Tyler, 1968) (type species); *B. umbonata* (Tyler and Davies 1983).

GENUS *COLLEENEREMIA* WELLS AND WELLINGTON, 1985

Type species: *Hyla rubella* Gray, 1842.

Diagnosis: The genus *Colleeneremia* Wells and Wellington, 1985 as defined herein is different to the original diagnosis and definition of Wells and Wellington, 1985.

Wells and Wellington (1985) treated the genus as monotypic for the taxon *Hyla rubella*, Gray, 1842, which they correctly stated was “Believed to be a complex of several undescribed species.” To the extent that the taxon “*Litoria electrica”* Ingram and Corben, 1990 was defined by Ingram and Corben (1990) as a species previously treated as putative *C. rubella* (Gray, 1842), Wells and Wellington (1985) have been vindicated well

before the publication of this paper.

Confirming the position of Wells and Wellington (1985) was Anstis (2013) who at page 301 also stated she thought *C. rubella* was a species complex.

Eipper and Rowland (2018) at page 151 stated, "Probably a species complex".

Even the ultra-conservative Harold Cogger in Cogger (2014) stated of *C. rubella*,

"Almost certainly composite".

Mention of the three above authorities is so that I am not to be accused of merely accepting Wells and Wellington taxonomy and nomenclature on the basis of alleged friendship of the pair as repeatedly stated by the Wolfgang Wüster gang.

Instead the taxonomy herein and nomenclature that follows is solely as result of body of scientific evidence that has also passed peer review (notably unlike Kaiser *et al.* 2013).

In terms of the widespread and variable putative taxon known as *C. rubella* it is herein split into six well defined species all separated by well known biogeograpcial barriers of known antiquity. All populations are morphologically distinct and also appear to be allopatric.

Hence to this extent the original diagnosis of Wells and Wellington (1985) is confirmed.

In terms of divergence, Duellman *et al.* (2016) found that the genus *Colleeneremia* as defined by Wells and Wellington, had a 14 million year divergence from its nearest relative outside, being *Hyla dentata* Keferstein, 1868, which they placed in their newly erected genus *Rawlinsonia* Wells and Wellington, 1985, which had a type species of *Hyla ewingi* Duméril and Bibron, 1841, which in fact is a different phylogentic grouping. Transfer of *Hyla dentata* Keferstein, 1868 to *Colleeneremia* retains the monophyly of *Rawlinsonia* (which according to Duellman *et al.* (2016) has a divergence of 24.7 MYA from nearest living relatives, confirming the good sense in erecting that genus).

The preceding transfer gives the genus *Colleeneremia* a divergence of 17 MYA from its nearest living relative, according to Duellman *et al.* (2016).

That nearest living relative species, is *Hyla* (*Litoria*) *congenita* Peters and Doria, 1878 of southern New Guinea and the associated group of species.

Current taxonomy preceding this paper, has all species in the *L. congenita* group placed in the genus *Litoria* Tschudi, 1838.

This is clearly untenable, because according to Duellman *et al.* (2016) the type group for that genus and all relevant members of the species group have a 31.5 MYA divergence from *Colleeneremia.*

The only solution to the problem of placement of *L. congenita* group of species is therefore one or other of wholly subsuming them within *Colleeneremia*, erecting a subgenus for the *L. congenita* group, or alternatively erecting a new genus for the group.

Based on the divergence of 17 MYA between the species groups and a view that the species diversity of both species groups are in fact underestimated in terms of species diversity (even after the publication of formal descriptions of new species in this paper), I see erection of a new genus for the *L. congenita* group as the only logical situation for those species. That genus is called *Audaxura gen. nov.*. A similar genus-level division is done for the genus *Pengilleyia* Wells and Wellington, 1985 within this paper.

In accordance with the preceding, the genus *Colleeneremia* Wells and Wellington, 1985 are all readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs is brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

As well as one or other of the following characters:

1/ Fingers with only rudimentary webbing, being the subgenus *Colleeneremia*, or:

2/ With conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger being the subgenus *Balatusrana subgen. nov.*.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov.* have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera. Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Distribution: Most of continental Australia except for the far south, as well as southern New Guinea.

Content: *Colleeneremia rubella* (Gray, 1842) (type species); *C. bogfrog sp. nov.*; *C. chunda sp. nov.*; *C. dentata* (Keferstein, 1868); *C. dunnyseat sp. nov.*; *C. electrica* (Ingram and Corben, 1990); *C. watdat sp. nov.*; *C. wifi sp. nov.*;

BALATUSRANA SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:24C7D6E6-2F46-417E-8CD2-8CAE4B59463E

Type species: *Hyla dentata* Keferstein, 1868.

Diagnosis: The subgenus *Balatusrana subgen. nov.* is separated from the nominate subgenus *Colleeneremia* Wells and Wellington, 1985 by having conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger.

In the nominate subgenus *Colleeneremia* the fingers have only rudimentary webbing.

In addition to the character states just mentioned for each subgenus, both subgenera, comprising the totality of the genus *Colleeneremia* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters:

Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives (with a divergence of 17 MYA according to Duellman *et al.* 2016) as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov.* have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera. Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Distribution: East coast of New South Wales, including wetter parts of nearby south-east Queensland and also far north-east Victoria.

Content: *Colleeneremia* (*Balatusrana*) *dentata* (Keferstein, 1868) (treated herein as monotypic, but including at least one subspecies).

COLLEENEREMIA BOGFROG SP. NOV.

LSIDurn:lsid:zoobank.org:act:BE7164BB-D292-48A8-BBE6-5711983E6192

Holotype: A preserved specimen at the Northern Territory Art Gallery and Museum, Darwin, Northern Territory, Australia, specimen number R30936, collected at Jay Creek, central Australia, Northern Territory, Australia, Latitude -23.8 S., Longitude 133.05 E.

This government-owned facility allows access to its holdings.

Paratypes: Five preserved specimens at the Northern Territory Art Gallery and Museum, Darwin, Northern Territory, Australia, specimen numbers R30934, R30935, R30827, R30828 and R15422, all collected from the type locality (above).

Diagnosis: The five species, *Colleeneremia watdat sp. nov.* from the Pilbara, Gascoyne and Murchison regions of western Western Australia, *C. bogfrog sp. nov.* from the Macdonnell Ranges of Central Australia, *C. dunnyseat sp. nov.* from the Flinders Ranges of South Australia, *C. wifi* from western New South Wales and southern Queensland and *C. chunda* from the Cape York region in far north Queensland and probably southern New Guinea have until now all been treated as populations of putative *C. rubella* (Keferstein, 1868), herein confined to the dry tropics of the Northern Territory and the Kimberley district of Western Australia.

Another morphologically similar species *C. electrica* (Ingram and Corben, 1990), was prior to 1990 also treated as a regional population of *C. rubella.*

The seven species comprise the total of the subgenus *Colleeneremia* Wells and Wellington, 1985 as defined in this paper.

While these species within *Colleeneremia* have diverse habitat choices, their distribution does coincide with biogeographical barriers generally affecting saxicoline genera of Australian fauna.

This is including for example species of Varanid lizards (Hoser 2013, 2014, 2015g, 2018b-e), Ring-tailed Dragons in the genus *Ctenophorus* Fitzinger, 1843 (Hoser 2020c) other lizards within the genus *Egernia* Gray, 1838 *sensu lato* (Hoser 2018a) and also *Petrogale* Gray, 1837 wallabies (Hoser, 2020b).

The seven aforementioned species are separated from one another as follows:

The type form of *C. rubella* and *C. chunda sp. nov.* conforms to the genus description for *Colleeneremia.*

They can be further diagnosed as follows: Compared to all other species in the genus, these two species have relatively undeveloped lateral digital fringes and a relatively narrow head (medium in cross-section), versus

broad (broad in cross-section) and well-developed lateral digital fringes in all other species. *C. chunda sp. nov.* is readily separated from *C. rubella* by the obvious bright yellow feet, well demarcated from the grey of the digits, versus yellowish feet and digits without a well defined boundary in *C. rubella.*

C. chunda sp. nov. is characterised by significant speckling on the upper dorsum and a well-defined white upper labial area below the eye, versus little specking on the dorsum of *C. rubella* and ill-defined lighter areas on the upper labial region.

C. chunda sp. nov. has well defined areas of yellow in the groin, versus ill-defined and spreading up the lower flank in *C. rubella.*

Both *C. chunda sp. nov.* and *C. rubella* have either smooth, or very minutely granular skin on the upper surface.

C. chunda sp. nov. is further separated from all other species by having a poorly formed and semi-distinct mid-vertebral line.

C. chunda sp. nov. and *C. rubella* further differ from the other species by having a distinctively bitonal upper surface, with a distinct broad grey or red-brown band down the middle of the back on a beige or fawn background.

C. electrica (Ingram and Corben, 1990) is separated from the other six species by having three distinctive dark bars or blotches on the back, a dorsum that is obviously tubercular and the yellow patches in the groin and arm pits are bold and distinctive and made more so by being edged with dark brownish-grey bordering, not seen in any other species.

C. bogfrog sp. nov. is separated from the other six species by having a pinkish red colour on the dorsum and flanks with pinkish white and very light grey marbling. The dorsum has smooth or leathery skin, but without obvious raised tubercles.

Speckling is minimal and where present, usually on the snout and rear, it is still scattered, minimal and very faded as to be indistinct. There are also irregular purple-grey patches running down two longitudinal lines on the upper dorsum, not near the mid-line and these too are faded.

C. watdat sp. nov. is similar in dorsal patterning to *C. bogfrog sp. nov.* except that there is scattered flecking across all the body, as opposed to more being at front of snout and rear. *C. watdat sp. nov.* is also instead a mud-brownish coloured frog (not pinkish-red) and also has a strongly granulated dorsum and to a greater degree than any other species in the complex. Yellow in the groin and armpits is either non-existent or minimal.

C. watdat sp. nov. is further characterised by having a well defined dark brown stripe running from snout, through eye and ear over back leg to flank. The line is well defined, contrasting with the lighter brown surfaces adjacent and clearly runs across the entire tympanum.

C. dunnyseat sp. nov. is readily separated from all other six species by having a light greyish brown, almost tending to white coloured dorsum with distinctive dark brownish-black spots and mottling spread relatively evenly across the dorsum. Limbs are also creamish in colour with obvious darker flecks and mottling. This taxon comes across as a uniquely speckled frog, due to the high density of spotting and it being relatively evenly spaced on the contrasting lighter background, so the dorsum appears spotted, as opposed to one with blotches as may seen in some of the other species. Yellow in armpits and groin is often absent or when present not as brilliant, or prominent as in other species.

C. wifi sp. nov. is readily separated from the other six species by being chocolate brown on the dorsum and gun metal grey on the flanks. The dorsum is irregularly, but heavily peppered, with the same gun-metal grey the result being these patches of peppering forming semi-distinct areas of grey surrounded by otherwise mainly brown pigment. The upper surfaces of the limbs are the same chocolate brown colour as the body, but with even heavier grey peppering. The labial area is also generally grey and the top of the snout is brown, with either no peppering or minimal peppering that tends to be faded. Toes may be brown or grey (in a single specimen) depending on which are peppered heavily and which are not. The upper iris is a dull orange brown in this species, versus brilliant red or orange in all the other six.

C. rubella in life can be seen in Anstis (2013) on page 301 in the two right hand photos.

C. chunda sp. nov. in life can be seen in Anstis (2013) on page 302, on right (bottom image) and in Vanderduys (2012) on page 69 bottom.

C. electrica in life can be seen in Anstis (2013) on page 192, two right hand photos, and Cogger (2014) on page 162 (two photos).

C. bogfrog sp. nov. in life can be seen in Anstis (2013) on page 302 on left at top.

C. watdat sp. nov. in life can be seen online at: https://www.flickr.com/photos/27026445@N06/31419696523/

and:

https://www.flickr.com/photos/warpedtime/2245649035/

and:

https://www.flickr.com/photos/27026445@N06/32155803631/

C. dunnyseat sp. nov. in life can be seen in Anstis (2013) on page 302 at top right image.

C. wifi sp. nov. in life can be seen in Hoser (1989) on page 42 in the top photo and Cogger (2014) on page 188, top left photo.

The subgenus *Balatusrana subgen. nov.* is separated from the nominate subgenus *Colleeneremia* Wells and Wellington, 1985 (being all seven species separated by the descriptions herein) by having conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger.

In the nominate subgenus *Colleeneremia* the fingers have only rudimentary webbing.

In addition to the character states just mentioned for each subgenus, both subgenera, comprising the totality of the genus *Colleeneremia* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of

the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent.

Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives (with a divergence of 17 MYA according to Duellman *et al.* 2016) as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov.* have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera.

Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Distribution: *Colleeneremia bogfrog sp. nov.* occurs in the Macdonnell Ranges of Central Australia, Northern Territory, Australia.

Etymology: In 1978 I was staying with at a camp of Arrernte people near Alice Springs, Northern Territory, which is where these aboriginal people live.

I asked them what they called this taxon of frog and they told me they were the “bog frog”, because whenever they got to do a bog, they see these frogs.

To confirm the point, that evening, I was led to an outside toilet block and in the toilet cubicle were about six of these frogs on the floor and toilet seat.

Hence the somewhat unusual scientific name for this species.

The name will also serve to draw attention to an otherwise locally abundant and potentially ignored component of Australia’s native wildlife.

COLLEENEREMIA CHUNDA SP. NOV.

LSIDurn:lsid:zoobank.org:act:AF3507CE-3294-4777-AA7A-6B38ACDD474E

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J16011 collected at Tolga, Atherton Tablelands, Queensland, Australia, Latitude -17.2167S., Longitude 145.4833 E.

This government-owned facility allows access to its holdings.

Paratypes: Five preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J79439, J79472, J81038, J55732 and J55723 collected from near Tolga, Atherton Tablelands, Queensland, Australia, Latitude -17.2167 S., Longitude 145.4833 E.

Diagnosis: The five species, *Colleeneremia watdat sp. nov.* from the Pilbara, Gascoyne and Murchison regions of western Western Australia, *C. bogfrog sp. nov.* from the Macdonnell Ranges of Central Australia, *C. dunnyseat sp. nov.* from the Flinders Ranges of South Australia, *C. wifi* from western New South Wales and southern Queensland and *C. chunda* from the Cape York region in far north Queensland have until now all been treated as populations of putative *C. rubella* (Keferstein, 1868), herein confined to the dry tropics of the Northern Territory and the Kimberley district of Western Australia.

Another morphologically similar species *C. electrica* (Ingram and Corben, 1990), was prior to 1990 also treated as a regional population of *C. rubella.*
The seven species comprise the total of the subgenus *Colleeneremia* Wells and Wellington, 1985 as defined in this paper.

While these species within *Colleeneremia* have diverse habitat choices, their distribution does coincide with biogeographical barriers generally affecting saxicoline genera of Australian fauna.

This is including for example species of Varanid lizards (Hoser 2013, 2014, 2015g, 2018b-e), Ring-tailed Dragons in the genus *Ctenophorus* Fitzinger, 1843 (Hoser 2020c) other lizards within the genus *Egernia* Gray, 1838 *sensu lato* (Hoser 2018a) and also *Petrogale* Gray, 1837 wallabies (Hoser, 2020b).

The seven aforementioned species are separated from one another as follows:

The type form of *C. rubella* and *C. chunda sp. nov.* conforms to the genus description for *Colleeneremia.*

They can be further diagnosed as follows: Compared to all other species in the genus, these two species have relatively undeveloped lateral digital fringes and a relatively narrow head (medium in cross-section), versus broad (broad in cross-section) and well-developed lateral digital fringes in all other species. *C. chunda sp. nov.* is readily separated from *C. rubella* by the obvious bright yellow feet, well demarcated from the grey of the digits, versus yellowish feet and digits without a well defined boundary in *C. rubella.*

C. chunda sp. nov. is characterised by significant speckling on the upper dorsum and a well-defined white upper labial area below the eye, versus little specking on the dorsum of *C. rubella* and ill-defined lighter areas on the upper labial region.

C. chunda sp. nov. has well defined areas of yellow in the groin, versus ill-defined and spreading up the lower flank in *C. rubella.*

Both *C. chunda sp. nov*. and *C. rubella* have either smooth, or very minutely granular skin on the upper surface.

C. chunda sp. nov. is further separated from all other species by having a poorly formed and semi-distinct mid-vertebral line.

C. chunda sp. nov. and *C. rubella* further differ from the other species by having a distinctively bitonal upper surface, with a distinct broad grey or red-brown band down the middle of the back on a beige or fawn background.

C. electrica (Ingram and Corben, 1990) is separated from the other six species by having three distinctive dark bars or blotches on the back, a dorsum that is obviously tubercular and the yellow patches in the groin and arm pits are bold and distinctive and made more so by being edged with dark brownish-grey bordering, not seen in any other species.

C. bogfrog sp. nov. is separated from the other six species by having a pinkish red colour on the dorsum and flanks with pinkish white and very light grey marbling. The dorsum has smooth or leathery skin, but without obvious raised tubercles. Speckling is minimal and where present, usually on the snout and rear, it is still scattered, minimal and very faded as to be indistinct. There are also irregular purple-grey patches running down two longitudinal lines on the upper dorsum, not near the mid-line and these too are faded.

C. watdat sp. nov. is similar in dorsal patterning to *C. bogfrog sp. nov*. except that there is scattered flecking across all the body, as opposed to more being at front of snout and rear. *C. watdat sp. nov*. is also instead a mud-brownish coloured frog (not pinkish-red) and also has a strongly granulated dorsum and to a greater degree than any other species in the complex. Yellow in the groin and armpits is either non-existent or minimal.

C. watdat sp. nov. is further characterised by having a well defined dark brown stripe running from snout, through eye and ear over back leg to flank. The line is well defined, contrasting with the lighter brown surfaces adjacent and clearly runs across the entire tympanum.

C. dunnyseat sp. nov. is readily separated from all other six species by having a light greyish brown, almost tending to white coloured dorsum with distinctive dark brownish-black spots and mottling spread relatively evenly across the dorsum. Limbs are also creamish in colour with obvious darker flecks and mottling. This taxon comes across as a uniquely speckled frog, due to the high density of spotting and it being relatively evenly spaced on the contrasting lighter background, so the dorsum appears spotted, as opposed to one with blotches as may seen in some of the other species. Yellow in armpits and groin is often absent or when present not as brilliant, or prominent as in other species.

C. wifi sp. nov. is readily separated from the other six species by being chocolate brown on the dorsum and gun metal grey on the flanks. The dorsum is irregularly, but heavily peppered, with the same gun-metal grey the result being these patches of peppering forming semi-distinct areas of grey surrounded by otherwise mainly brown pigment. The upper surfaces of the limbs are the same chocolate brown colour as the body, but with even heavier grey peppering. The labial area is also generally grey and the top of the snout is brown, with either no peppering or minimal peppering that tends to be faded. Toes may be brown or grey (in a single specimen) depending on which are peppered heavily and which are not. The upper iris is a dull orange brown in this species, versus brilliant red or orange in all the other six.

C. rubella in life can be seen in Anstis (2013) on page 301 in the two right hand photos.

C. chunda sp. nov. in life can be seen in Anstis (2013) on page 302, on right (bottom image) and in Vanderduys (2012) on page 69 bottom.

C. electrica in life can be seen in Anstis (2013) on page 192, two right hand photos, and Cogger (2014) on page 162 (two photos).

C. bogfrog sp. nov. in life can be seen in Anstis (2013) on page 302 on left at top.

C. watdat sp. nov. in life can be seen online at:
https://www.flickr.com/photos/27026445@N06/31419696523/

and:

https://www.flickr.com/photos/warpedtime/2245649035/

and:
https://www.flickr.com/photos/27026445@N06/32155803631/

C. dunnyseat sp. nov. in life can be seen in Anstis (2013) on page 302 at top right image.

C. wifi sp. nov. in life can be seen in Hoser (1989) on page 42 in the top photo and Cogger (2014) on page 188, top left photo.

The subgenus *Balatusrana subgen. nov*. is separated from the nominate subgenus *Colleeneremia* Wells and Wellington, 1985 (being all seven species separated by the descriptions herein) by having conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger.

In the nominate subgenus *Colleeneremia* the fingers have only rudimentary webbing.

In addition to the character states just mentioned for each subgenus, both subgenera, comprising the totality of the genus *Colleeneremia* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small

and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives (with a divergence of 17 MYA according to Duellman *et al.* 2016) as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov.* have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera. Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Distribution: *C. chunda sp. nov.* is generally found on Cape York in far north Queensland including nearby areas to there, including the wet tropics of far north Queensland, being the coastal region north of Mount Spec (near Townsville, Queensland).

Etymology: Chunda is Australian slang for “Watch Under” and this is the word commonly used by residents in North Queensland when they encounter this species of frog on floors of toilet blocks at camping grounds, aboriginal missions, “illegal alien” detention centres and other Australian Federal Government concentration camps and prisons. The Chunda cry is heard by adults and kids as they scream to others not to tread on the small frogs as they walk into a toilet block and can be heard across North Queensland camping grounds on a nightly basis. Scared Australian females also often yell out “Chunda Fuck!”, but it was determined to remove the word “Fuck” from the etymology and name, as it may cause offence and would therefore be contrary to the voluntary recommendations of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Chunda is also a word used by British convicts who were forced onto boats sent to Australia to help in the extermination campaign against the local Aboriginal People (see etymology for *Kumanjayiwalkerus kumanjayi sp. nov.*). After getting sea sick, the convict would lean over the edge of the boat to vomit and would yell out “Watch under” … “Chunda” to anyone below. The word Chunda then became an established Australian term for vomit, although there is no connection whatsoever between this species of frog and humans vomiting, although drunk Australians often vomit in toilet blocks at camping grounds.

COLLEENEREMIA DUNNYSEAT SP. NOV.

LSIDurn:lsid:zoobank.org:act:CEFE393B-3B11-4669-AC4E-8BFB0EB58650

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R7364, collected at Leigh Creek, South Australia, Australia, Latitude -30.48 S., Longitude 138.42 E.

This government-owned facility allows access to its holdings.

Paratypes: 39 preserved specimens at the South Australian Museum, Adelaide, South Australia, Australia, specimen numbers R7365- R7394, R7396- R7398 and R7400- R7405, also all collected at Leigh Creek, South Australia, Australia, Latitude -30.48 S., Longitude 138.42 E.

Diagnosis: The five species, *Colleeneremia watdat sp. nov.* from the Pilbara, Gascoyne and Murchison regions of western Western Australia, *C. bogfrog sp. nov.* from the Macdonnell Ranges of Central Australia, *C. dunnyseat sp. nov.* from the Flinders Ranges of South Australia, *C. wifi* from western New South Wales and southern Queensland and *C. chunda* from the Cape York region in far north Queensland have until now all been treated as populations of putative *C. rubella* (Keferstein, 1868), herein confined to the dry tropics of the Northern Territory and the Kimberley district of Western Australia.

Another morphologically similar species *C. electrica* (Ingram and Corben, 1990), was prior to 1990 also treated as a regional population of *C. rubella.*

The seven species comprise the total of the subgenus *Colleeneremia* Wells and Wellington, 1985 as defined in this paper.

While these species within *Colleeneremia* have diverse habitat choices, their distribution does coincide with biogeographical barriers generally affecting saxicoline genera of Australian fauna.

This is including for example species of Varanid lizards (Hoser 2013, 2014, 2015g, 2018b-e), Ring-tailed Dragons in the genus *Ctenophorus* Fitzinger, 1843 (Hoser 2020c) other lizards within the genus *Egernia* Gray, 1838 *sensu lato* (Hoser 2018a) and also *Petrogale* Gray, 1837 wallabies (Hoser, 2020b).

The seven aforementioned species are separated from one another as follows:

The type form of *C. rubella* and *C. chunda sp. nov.* conforms to the genus description for *Colleeneremia.*

They can be further diagnosed as follows: Compared to all other species in the genus, these two species have relatively undeveloped lateral digital fringes and a relatively narrow head (medium in cross-section), versus broad (broad in cross-section) and well-developed lateral digital fringes in all other species. *C. chunda sp. nov.* is readily separated from *C. rubella* by the obvious bright yellow feet, well demarcated from the grey of the digits, versus yellowish feet and digits without a well defined boundary in *C. rubella.*

C. chunda sp. nov. is characterised by significant speckling on the upper dorsum and a well-defined white upper labial area below the eye, versus little specking on the dorsum of *C. rubella* and ill-defined lighter areas on the upper labial region.

C. chunda sp. nov. has well defined areas of yellow in the groin, versus ill-defined and spreading up the lower flank in *C. rubella.*

Both *C. chunda sp. nov*. and *C. rubella* have either smooth, or very minutely granular skin on the upper surface.

C. chunda sp. nov. is further separated from all other species by having a poorly formed and semi-distinct mid-vertebral line.

C. chunda sp. nov. and *C. rubella* further differ from the other species by having a distinctively bitonal upper surface, with a distinct broad grey or red-brown band down the middle of the back on a beige or fawn background.

C. electrica (Ingram and Corben, 1990) is separated from the other six species by having three distinctive dark bars or blotches on the back, a dorsum that is obviously tubercular and the yellow patches in the groin and arm pits are bold and distinctive and made more so by being edged with dark brownish-grey bordering, not seen in any other species.

C. bogfrog sp. nov. is separated from the other six species by having a pinkish red colour on the dorsum and flanks with pinkish white and very light grey marbling. The dorsum has smooth or leathery skin, but without obvious raised tubercles. Speckling is minimal and where present, usually on the snout and rear, it is still scattered, minimal and very faded as to be indistinct. There are also irregular purple-grey patches running down two longitudinal lines on the upper dorsum, not near the mid-line and these too are faded.

C. watdat sp. nov. is similar in dorsal patterning to *C. bogfrog sp. nov*. except that there is scattered flecking across all the body, as opposed to more being at front of snout and rear. *C. watdat sp. nov*. is also instead a mud-brownish coloured frog (not pinkish-red) and also has a strongly granulated dorsum and to a greater degree than any other species in the complex. Yellow in the groin and armpits is either non-existent or minimal.

C. watdat sp. nov. is further characterised by having a well defined dark brown stripe running from snout, through eye and ear over back leg to flank. The line is well defined, contrasting with the lighter brown surfaces adjacent and clearly runs across the entire tympanum.

C. dunnyseat sp. nov. is readily separated from all other six species by having a light greyish brown, almost tending to white coloured dorsum with distinctive dark brownish-black spots and mottling spread relatively evenly across the dorsum. Limbs are also creamish in colour with obvious darker flecks and mottling. This taxon comes across as a uniquely speckled frog, due to the high density of spotting and it being relatively evenly spaced on the contrasting lighter background, so the dorsum appears spotted, as opposed to one with blotches as may seen in some of the other species. Yellow in armpits and groin is often absent or when present not as brilliant, or prominent as in other species.

C. wifi sp. nov. is readily separated from the other six species by being chocolate brown on the dorsum and gun metal grey on the flanks. The dorsum is irregularly, but heavily peppered, with the same gun-metal grey the result being these patches of peppering forming semi-distinct areas of grey surrounded by otherwise mainly brown pigment. The upper surfaces of the limbs are the same chocolate brown colour as the body, but with even heavier grey peppering. The labial area is also generally grey and the top of the snout is brown, with either no peppering or minimal peppering that tends to be faded. Toes may be brown or grey (in a single specimen) depending on which are peppered heavily and which are not. The upper iris is a dull orange brown in this species, versus brilliant red or orange in all the other six.

C. rubella in life can be seen in Anstis (2013) on page 301 in the two right hand photos.

C. chunda sp. nov. in life can be seen in Anstis (2013) on page 302, on right (bottom image) and in Vanderduys (2012) on page 69 bottom.

C. electrica in life can be seen in Anstis (2013) on page 192, two right hand photos, and Cogger (2014) on page 162 (two photos).

C. bogfrog sp. nov. in life can be seen in Anstis (2013) on page 302 on left at top.

C. watdat sp. nov. in life can be seen online at: https://www.flickr.com/photos/27026445@N06/31419696523/

and:

https://www.flickr.com/photos/warpedtime/2245649035/

and:

https://www.flickr.com/photos/27026445@N06/32155803631/

C. dunnyseat sp. nov. in life can be seen in Anstis (2013) on page 302 at top right image.

C. wifi sp. nov. in life can be seen in Hoser (1989) on page 42 in the top photo and Cogger (2014) on page 188, top left photo.

The subgenus *Balatusrana subgen. nov*. is separated from the nominate subgenus *Colleeneremia* Wells and Wellington, 1985 (being all seven species separated by the descriptions herein) by having conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger.

In the nominate subgenus *Colleeneremia* the fingers have only rudimentary webbing.

In addition to the character states just mentioned for each subgenus, both subgenera, comprising the totality of the genus *Colleeneremia* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small

and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives (with a divergence of 17 MYA according to Duellman *et al.* 2016) as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov.* have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera. Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Distribution: *Colleeneremia dunnyseat sp. nov.* occurs at the Flinders Ranges of South Australia, Australia.

Etymology: In 2019 I spent a week at Leigh Creek in South Australia, to educate local miners about snake handling and snake safety where I managed to kill yet another motor vehicle, that one being a Toyota Rav4.

I also spent considerable time surveying the local fauna including *C. dunnyseat sp. nov.*.

While at Leigh Creek I tried to find one or more members of the local Adnyamathanha Aboriginal Tribe in order to find out the local tribal name for this species of frog. Unfortunately pretty much the entire tribe had been killed off a hundred years prior as part of the British Empire genocide of the Australian Aboriginals.

This was done so that the British King could steal the entire country and pillage it as they saw fit.

There were some Adnyamathanha still hiding in the hills behind the Leigh Creek reservoir, occasionally emerging to grab some Freshwater Tortoises in the dam lake.

But they ran when I approached them for fear of being shot. After all my skin was “white” and they knew white people carried and used guns against them (see etymology for *Kumanjayiwalkerus kumanjayi sp. nov.*).

The locals in the Leigh Creek mining camp called the relevant frogs “dunny seat frogs” as they regularly secreted themselves under the toilet seat.

Dunny is an Australian word for toilet. Men and women would find them by day when they lifted a toilet seat and saw then balled up as they slept.

Hence the scientific name “dunnyseat”.

COLLEENEREMIA WATDAT SP. NOV.

LSIDurn:lsid:zoobank.org:act:2AF9CC4A-09B4-4F28-A5AC-4C5132C47287

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R62379 collected at Mount Narryer Station, Western Australia, Australia, Latitude -26.3500 S., Longitude 115.5500 E.

This government-owned facilility allows access to its holdings.

Paratypes: Six preserved specimens at the Western Australian Museum, Perth, Western Australia, Australia, specimen numbers R62374, R62375, R62376, R62377, R62378 and R62380 all collected at Mount Narryer Station, Western Australia, Australia, Latitude -26.3500 S., Longitude 115.5500 E.

Diagnosis: The five species, *Colleeneremia watdat sp. nov.* from the Pilbara, Gascoyne and Murchison regions of western Western Australia, *C. bogfrog sp. nov.* from the Macdonnell Ranges of Central Australia, *C. dunnyseat sp. nov.* from the Flinders Ranges of South Australia, *C. wifi* from western New South Wales and southern Queensland and *C. chunda* from the Cape York region in far north Queensland have until now all been treated as populations of putative *C. rubella* (Keferstein, 1868), herein confined to the dry tropics of the Northern Territory and the Kimberley district of Western Australia.

Another morphologically similar species *C. electrica* (Ingram and Corben, 1990), was prior to 1990 also treated as a regional population of *C. rubella.*

The seven species comprise the total of the subgenus *Colleeneremia* Wells and Wellington, 1985 as defined in this paper.

While these species within *Colleeneremia* have diverse habitat choices, their distribution does coincide with biogeographical barriers generally affecting saxicoline genera of Australian fauna.

This is including for example species of Varanid lizards (Hoser 2013, 2014, 2015g, 2018b-e), Ring-tailed Dragons in the genus *Ctenophorus* Fitzinger, 1843 (Hoser 2020c) other lizards within the genus *Egernia* Gray, 1838 *sensu lato* (Hoser 2018a) and also *Petrogale* Gray, 1837 wallabies (Hoser, 2020d).

The seven aforementioned species are separated from one another as follows:

The type form of *C. rubella* and *C. chunda sp. nov.* conforms to the genus description for *Colleeneremia.*

They can be further diagnosed as follows: Compared to all other species in the genus, these two species have relatively undeveloped lateral digital fringes and a relatively narrow head (medium in cross-section), versus broad (broad in cross-section) and well-developed lateral digital fringes in all other species. *C. chunda sp. nov.* is readily separated from *C. rubella* by the obvious bright yellow feet, well demarcated from the grey of the digits, versus yellowish feet and digits without a well defined boundary in *C. rubella.*

C. chunda sp. nov. is characterised by significant speckling on the upper dorsum and a well-defined white upper labial area below the eye, versus little specking on the dorsum of *C. rubella* and ill-defined lighter areas on the upper labial region.

C. chunda sp. nov. has well defined areas of yellow in the groin, versus ill-defined and spreading up the lower flank in *C. rubella.*

Both *C. chunda sp. nov*. and *C. rubella* have either smooth, or very minutely granular skin on the upper surface.

C. chunda sp. nov. is further separated from all other species by having a poorly formed and semi-distinct mid-vertebral line.

C. chunda sp. nov. and *C. rubella* further differ from the other species by having a distinctively bitonal upper surface, with a distinct broad grey or red-brown band down the middle of the back on a beige or fawn background.

C. electrica (Ingram and Corben, 1990) is separated from the other six species by having three distinctive dark bars or blotches on the back, a dorsum that is obviously tubercular and the yellow patches in the groin and arm pits are bold and distinctive and made more so by being edged with dark brownish-grey bordering, not seen in any other species.

C. bogfrog sp. nov. is separated from the other six species by having a pinkish red colour on the dorsum and flanks with pinkish white and very light grey marbling. The dorsum has smooth or leathery skin, but without obvious raised tubercles. Speckling is minimal and where present, usually on the snout and rear, it is still scattered, minimal and very faded as to be indistinct. There are also irregular purple-grey patches running down two longitudinal lines on the upper dorsum, not near the mid-line and these too are faded.

C. watdat sp. nov. is similar in dorsal patterning to *C. bogfrog sp. nov*. except that there is scattered flecking across all the body, as opposed to more being at front of snout and rear. *C. watdat sp. nov*. is also instead a mud-brownish coloured frog (not pinkish-red) and also has a strongly granulated dorsum and to a greater degree than any other species in the complex. Yellow in the groin and armpits is either non-existent or minimal.

C. watdat sp. nov. is further characterised by having a well defined dark brown stripe running from snout, through eye and ear over back leg to flank. The line is well defined, contrasting with the lighter brown surfaces adjacent and clearly runs across the entire tympanum.

C. dunnyseat sp. nov. is readily separated from all other six species by having a light greyish brown, almost tending to white coloured dorsum with distinctive dark brownish-black spots and mottling spread relatively evenly across the dorsum. Limbs are also creamish in colour with obvious darker flecks and mottling. This taxon comes across as a uniquely speckled frog, due to the high density of spotting and it being relatively evenly spaced on the contrasting lighter background, so the dorsum appears spotted, as opposed to one with blotches as may seen in some of the other species. Yellow in armpits and groin is often absent or when present not as brilliant, or prominent as in other species.

C. wifi sp. nov. is readily separated from the other six species by being chocolate brown on the dorsum and gun metal grey on the flanks. The dorsum is irregularly, but heavily peppered, with the same gun-metal grey the result being these patches of peppering forming semi-distinct areas of grey surrounded by otherwise mainly brown pigment. The upper surfaces of the limbs are the same chocolate brown colour as the body, but with even heavier grey peppering. The labial area is also generally grey and the top of the snout is brown, with either no peppering or minimal peppering that tends to be faded. Toes may be brown or grey (in a single specimen) depending on which are peppered heavily and which are not. The upper iris is a dull orange brown in this species, versus brilliant red or orange in all the other six.

C. rubella in life can be seen in Anstis (2013) on page 301 in the two right hand photos.

C. chunda sp. nov. in life can be seen in Anstis (2013) on page 302, on right (bottom image) and in Vanderduys (2012) on page 69 bottom.

C. electrica in life can be seen in Anstis (2013) on page 192, two right hand photos, and Cogger (2014) on page 162 (two photos).

C. bogfrog sp. nov. in life can be seen in Anstis (2013) on page 302 on left at top.

C. watdat sp. nov. in life can be seen online at: https://www.flickr.com/photos/27026445@N06/31419696523/

and:

https://www.flickr.com/photos/warpedtime/2245649035/

and:

https://www.flickr.com/photos/27026445@N06/32155803631/

C. dunnyseat sp. nov. in life can be seen in Anstis (2013) on page 302 at top right image.

C. wifi sp. nov. in life can be seen in Hoser (1989) on page 42 in the top photo and Cogger (2014) on page 188, top left photo.

The subgenus *Balatusrana subgen. nov*. is separated from the nominate subgenus *Colleeneremia* Wells and Wellington, 1985 (being all seven species separated by the descriptions herein) by having conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger.

In the nominate subgenus *Colleeneremia* the fingers have only rudimentary webbing.

In addition to the character states just mentioned for each subgenus, both subgenera, comprising the totality of the genus *Colleeneremia* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small

and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives (with a divergence of 17 MYA according to Duellman *et al.* 2016) as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov.* have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera. Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Distribution: *Colleeneremia watdat sp. nov.* occurs in the Pilbara, Gascoyne and Murchison regions of western Western Australia, Australia.

Etymology: In 1981, I was in the wilderness of Western Australia with some Yamatji Aboriginal elders sharing a few drinks. When I pulled a specimen of this species out of a bag he exclaimed “watdat”, so I took that as the local word for this taxon.

COLLEENEREMIA WIFI SP. NOV.

LSIDurn:lsid:zoobank.org:act:7734BCBF-314E-4954-BEBB-D01E4405958D

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.43573 collected at Walgett, New South Wales, Australia, Latitude -29.416 S., Longitude 147.566 E.

This government-owned facility allows access to its holdings.

Paratypes: Five preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.43574, R.43575, R.43576, R.45511 and R.45512 all collected at Walgett, New South Wales, Australia, Latitude -29.416 S., Longitude 147.566 E.

Diagnosis: The five species, *Colleeneremia watdat sp. nov.* from the Pilbara, Gascoyne and Murchison regions of western Western Australia, *C. bogfrog sp. nov.* from the Macdonnell Ranges of Central Australia, *C. dunnyseat sp. nov.* from the Flinders Ranges of South Australia, *C. wifi* from western New South Wales and southern Queensland and *C. chunda* from the Cape York region in far north Queensland have until now all been treated as populations of putative *C. rubella* (Keferstein, 1868), herein confined to the dry tropics of the Northern Territory and the Kimberley district of Western Australia.

Another morphologically similar species *C. electrica* (Ingram and Corben, 1990), was prior to 1990 also treated as a regional population of *C. rubella.*

The seven species comprise the total of the subgenus *Colleeneremia* Wells and Wellington, 1985 as defined in this paper.

While these species within *Colleeneremia* have diverse habitat choices, their distribution does coincide with biogeographical barriers generally affecting saxicoline genera of Australian fauna.

This is including for example species of Varanid lizards (Hoser 2013, 2014, 2015g, 2018b-e), Ring-tailed Dragons in the genus *Ctenophorus* Fitzinger, 1843 (Hoser 2020c) other lizards within the genus *Egernia* Gray, 1838 *sensu lato* (Hoser 2018a) and also *Petrogale* Gray, 1837 wallabies (Hoser, 2020b).

The seven aforementioned species are separated from one another as follows:

The type form of *C. rubella* and *C. chunda sp. nov.* conforms to the genus description for *Colleeneremia.*

They can be further diagnosed as follows: Compared to all other species in the genus, these two species have relatively undeveloped lateral digital fringes and a relatively narrow head (medium in cross-section), versus broad (broad in cross-section) and well-developed lateral digital fringes in all other species. *C. chunda sp. nov.* is readily separated from *C. rubella* by the obvious bright yellow feet, well demarcated from the grey of the digits, versus yellowish feet and digits without a well defined boundary in *C. rubella.*

C. chunda sp. nov. is characterised by significant speckling on the upper dorsum and a well-defined white upper labial area below the eye, versus little specking on the dorsum of *C. rubella* and ill-defined lighter areas on the upper labial region.

C. chunda sp. nov. has well defined areas of yellow in the groin, versus ill-defined and spreading up the lower flank in *C. rubella.*

Both *C. chunda sp. nov.* and *C. rubella* have either smooth, or very minutely granular skin on the upper surface.

C. chunda sp. nov. is further separated from all other species by having a poorly formed and semi-distinct mid-vertebral line.

C. chunda sp. nov. and *C. rubella* further differ from the other species by having a distinctively bitonal upper surface, with a distinct broad grey or red-brown band down the middle of the back on a beige or fawn background.

C. electrica (Ingram and Corben, 1990) is separated from the other six species by having three distinctive dark bars or blotches on the back, a dorsum that is obviously tubercular and the yellow patches in the groin and arm pits are bold and distinctive and made more so by being edged with dark brownish-grey bordering, not seen in any other species.

C. bogfrog sp. nov. is separated from the other six species by having a pinkish red colour on the dorsum and flanks with pinkish white and very light grey marbling. The dorsum has smooth or leathery skin, but without

obvious raised tubercles. Speckling is minimal and where present, usually on the snout and rear, it is still scattered, minimal and very faded as to be indistinct. There are also irregular purple-grey patches running down two longitudinal lines on the upper dorsum, not near the mid-line and these too are faded.

C. watdat sp. nov. is similar in dorsal patterning to *C. bogfrog sp. nov*. except that there is scattered flecking across all the body, as opposed to more being at front of snout and rear. *C. watdat sp. nov*. is also instead a mud-brownish coloured frog (not pinkish-red) and also has a strongly granulated dorsum and to a greater degree than any other species in the complex. Yellow in the groin and armpits is either non-existent or minimal.

C. watdat sp. nov. is further characterised by having a well defined dark brown stripe running from snout, through eye and ear over back leg to flank. The line is well defined, contrasting with the lighter brown surfaces adjacent and clearly runs across the entire tympanum.

C. dunnyseat sp. nov. is readily separated from all other six species by having a light greyish brown, almost tending to white coloured dorsum with distinctive dark brownish-black spots and mottling spread relatively evenly across the dorsum. Limbs are also creamish in colour with obvious darker flecks and mottling. This taxon comes across as a uniquely speckled frog, due to the high density of spotting and it being relatively evenly spaced on the contrasting lighter background, so the dorsum appears spotted, as opposed to one with blotches as may seen in some of the other species. Yellow in armpits and groin is often absent or when present not as brilliant, or prominent as in other species.

C. wifi sp. nov. is readily separated from the other six species by being chocolate brown on the dorsum and gun metal grey on the flanks. The dorsum is irregularly, but heavily peppered, with the same gun-metal grey the result being these patches of peppering forming semi-distinct areas of grey surrounded by otherwise mainly brown pigment. The upper surfaces of the limbs are the same chocolate brown colour as the body, but with even heavier grey peppering. The labial area is also generally grey and the top of the snout is brown, with either no peppering or minimal peppering that tends to be faded. Toes may be brown or grey (in a single specimen) depending on which are peppered heavily and which are not. The upper iris is a dull orange brown in this species, versus brilliant red or orange in all the other six.

C. rubella in life can be seen in Anstis (2013) on page 301 in the two right hand photos.

C. chunda sp. nov. in life can be seen in Anstis (2013) on page 302, on right (bottom image) and in Vanderduys (2012) on page 69 bottom.

C. electrica in life can be seen in Anstis (2013) on page 192, two right hand photos, and Cogger (2014) on page 162 (two photos).

C. bogfrog sp. nov. in life can be seen in Anstis (2013) on page 302 on left at top.

C. watdat sp. nov. in life can be seen online at: https://www.flickr.com/photos/27026445@N06/31419696523/

and:

https://www.flickr.com/photos/warpedtime/2245649035/

and:

https://www.flickr.com/photos/27026445@N06/32155803631/

C. dunnyseat sp. nov. in life can be seen in Anstis (2013) on page 302 at top right image.

C. wifi sp. nov. in life can be seen in Hoser (1989) on page 42 in the top photo and Cogger (2014) on page 188, top left photo.

The subgenus *Balatusrana subgen. nov*. is separated from the nominate subgenus *Colleeneremia* Wells and Wellington, 1985 (being all seven species separated by the descriptions herein) by having conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger.

In the nominate subgenus *Colleeneremia* the fingers have only rudimentary webbing.

In addition to the character states just mentioned for each subgenus, both subgenera, comprising the totality of the genus *Colleeneremia* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives (with a divergence of 17 MYA according to Duellman *et al.* 2016) as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov.* have pale regular or

irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera. Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Distribution: *C. wifi sp. nov.* is generally found in the region of the Darling River basin in western New South Wales and inland southern Queensland, with a distribution towards the coast north of the south-east Queensland subtropical wet zone, but not including Cape York or nearby areas to there, including the wet tropics of far north Queensland.

Etymology: In 1992, I was speaking with a well-known Aboriginal Elder and ex underworld figure, Steve Gordon, also a commissioner with the Australian Federal Government's Aboriginal and Torres Strait Islander Commission (ATSIC). He liked the job as ATSIC Commissioner as in his own words "I get paid heaps to do bugger all!" He was from Brewarrina in New South Wales, which is where *C. wifi sp. nov.* occurs and I asked him about these and other frogs in the area. I did this by showing him the relevant pictures in the book Hoser (1989). He called the relevant species the "wife ee" frog and when I asked why, he said it was because of the bleating call of the species, which sounded like a wife yelling at you. Hence the species name "wifi". It does not have a connection with the well known "wifi" of more recent wireless internet fame. For more about other relevant to herpetology conversations with Steve Gordon, refer to Hoser (1993) and Hoser (1996).

COLLEENEREMIA* (*BALATUSRANA*) *DENTATA TOOWOOMBAENSIS SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:9E5884CC-18ED-40E3-B022-5AEB01982952

Holotype: A preserved male specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J93230 collected from the Esk-Hampton Road, between Perseverance Hall Road and Clive Road, Perseverance, Queensland, Australia, Latitude -27.3733 S., Longitude 152.1081 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J93231 collected from the Esk-Hampton Road, between Perseverance Hall Road and Clive Road, Perseverance, Queensland, Australia, Latitude -27.3733 S., Longitude 152.1081 E.

Diagnosis: The south-east Queensland subspecies *Colleeneremia dentata toowoombaensis subsp. nov.* is similar in most respects to nominate *C. dentata* (Keferstein, 1868) from New South Wales.

Both would key out as "*Litoria dentata*" in Anstis (2013) and Cogger (2014).

C. dentata toowoombaensis subsp. nov. is readily separated from *C. dentata dentata* as follows:

Both have a similar dorsal pattern incorporating an irregularly shaped broad mid vertebral stripe that is dark in colour, with lighter surfaces on the sides of the dorsum and upper flank.all also have yellow in the armpits, groin and yellowish toes.

However *C. dentata toowoombaensis subsp. nov.* has a significantly greater contrast between dark and light on the dorsum (resting by day) than seen in *C. dentata dentata* and the stripe from snout, through eye and tympanum to upper anterior flank is dark-grey to black and distinct, versus light grey or brown and ranging from distinct to semi-distinct. Perhaps the most obvious diference between the two subspecies is the that the toes of *C. dentata toowoombaensis subsp. nov.* are a brilliant yellow colour, strongly contrasting with the grey or brown feet, versus at most slightly yellowish and with minimal contrast between the non-yellow feet in *C. dentata dentata*.

The subgenus *Balatusrana subgen. nov*. herein treated as monotypic for *C. dentata* is separated from the nominate subgenus *Colleeneremia* Wells and Wellington, 1985 (herein treated as seven species as outlined in this paper) by having conspicuous webbing on the fingers, reaching at least as far as the base of the penultimate phalanx of the fourth finger.

In the nominate subgenus *Colleeneremia* the fingers have only rudimentary webbing.

In addition to the character states just mentioned for each subgenus, both subgenera, comprising the totality of the genus *Colleeneremia* are separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: Grey, brown or fawn above, usually with a broad, darker vertebral band, bounded on either side by a lighter brown zone. There is a blackish stripe along the side of the head, continuing behind the eye, over the base of the forelimb and along the side of the body almost to the groin. Dorsal surface of the body and limbs is flecked with dark brown or black and sometimes small to medium sized patches of darker pigment. Hind side of thighs brown with fine white spots. Groin is usually lemon-yellow. Ventral surface white, cream or yellowish. Dorsal surface usually smooth or with numerous tiny granules above and coarsely granular below. Vomerine teeth almost entirely behind the choanae. Pectoral fold prominent. Finger and toe discs large. Toes about two thirds webbed. Inner metatarsal tubercle moderate and elongated, outer tubercle is small and rounded. Tympanum is large, rounded and distinct. Second finger longer than first. Average adult size 35 mm in length.

Species within the genus *Colleeneremia* are separated from the morphologically similar species within the genus *Audaxura gen. nov.*, their closest living relatives (with a divergence of 17 MYA according to Duellman *et al.* 2016)

as follows: *Colleeneremia* species always exhibits a very broad, dark stripe on the side of the head and body. This is not found in species within *Audaxura gen. nov.*. Furthermore *Audaxura gen. nov*. have pale regular or irregular stripes or patches on the dorsal surface of the body not exhibited in the same configuration or form in any *Colleeneremia* species. *Colleeneremia* have shorter limbs than *Audaxura gen. nov.*. The TL/S-V ratios provides a means of distinguishing the genera, this being 0.335-0.432 for *Colleeneremia* and 0.477-0.520 for *Audaxura gen. nov.*.

The nominate form of *C. dentata dentata* in life is depicted in Cogger (2014) on page 161.

C. dentata toowoombaensis subsp. nov. in life is depicted in Vanderduys (2012) on page 37.

Brevicrusyla gen. nov. includes two species from the Indonesian side of New Guinea that are morphologically similar to species within the genera *Colleeneremia* Wells and Wellington, 1985 and *Audaxura gen. nov.* as detailed above, but are readily separated from them in that adults of *Brevicrusyla gen. nov.* while having a smooth dorsum on the body like the other two genera, instead has tubercles on the head, that is not seen in the other two genera. Tadpoles of *Brevicrusyla gen. nov.* have a long muscular tail, with narrow dorsal and ventral fins, versus a relatively short tail, with broad fins in species within *Audaxura gen. nov.* and *Colleeneremia.*

Distribution: *C. dentata toowoombaensis subsp. nov.* is believed to be restricted to South-east Queensland, generally north of the border ranges area on the New South Wales and Queensland border. Nominate *C. dentata* is believed to occupy the rest of the range for this species and subgenus, being the coast and nearby ranges of New South Wales, along its entire length and into far north-east Victoria.

Etymology: The subspecies *C. dentata toowoombaensis subsp. nov.* is named in reflection of the type locality for the taxon.

RAWLINSONINA SUBTRIBE NOV.

***RAWLINSONIA* WELLS AND WELLINGTON, 1985**

Type species: *Hyla ewingi* Duméril and Bibron, 1841.

Diagnosis: The nine known living species within the genus *Rawlinsonia* Wells and Wellington, 1985 (one formally described within this paper) are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: smallish frogs usually about 35 mm in body length. Fingers are free or only webbed at the base. First finger is much shorter and smaller than the second, when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger. Hind edge of vomerine teeth are between the choanae. Usually one or a pair of semidistinct mid dorsal patches, darker than the ground colour, extending from a line joining the centre of the eyes; white stripe below eye, if present does not extend beyond the anterior edge of the base of the forelimb.

Duellman *et al.* (2016) found that the living species in this genus diverged from their nearest living relatives 23.2 MYA, giving support to the erection of this genus by Wells and Wellington, 1985 and this is before one considers the significant morphological divergence of the species group.

Distribution: Wetter parts of south-east Australia, ranging from South Australia, through Victoria and Tasmania, along the New South Wales coast to south-east Queensland, with outlier populations at Eungella, west of Mackay and the Atherton Tableland and adjacent mountains in the southern wet tropics of North Queensland.

Content: *Rawlinsonia ewingi* (Duméril and Bibron, 1841) (type species); *R. alpina* (Fry, 1915); *R. corbeni* Wells and Wellington, 1985; *R. ventrileuco sp. nov.*; *R. jervisensis* (Duméril and Bibron, 1851); *R. littlejohni* (White, Whitford and Mahoney, 1994); *R. paraewingi* (Wilson, Loftus-Hills and Littlejohn, 1971); *R. revelata* (Ingram, Corben and Hosmer, 1982); *R. verreauxii* (Duméril, 1853).

RAWLINSONIA VENTRILEUCO SP. NOV.

LSIDurn:lsid:zoobank.org:act:B00A719B-60AD-4BAB-B092-0CE78100283F

Holotype: A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number J35087 collected at Mount William Road, 18 km from Dalrymple Heights, near Eungella, near Mackay, Queensland, Australia, Latitude -21.03 S., Longitude 148.6 E.

This government-owned facility allows access to its holdings.

Paratypes: Four preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J35105-6 and J35115-6 all collected at Mount William Road, 18 km from Dalrymple Heights, near Eungella, near Mackay, Queensland, Australia, Latitude -21.03 S., Longitude 148.6 E.

Diagnosis: *R. ventrileuco sp. nov*. has until now been treated as an isolated population of *R. revelata* (Ingram, Corben and Hosmer, 1982), with a type locality of "O'Reillys (28.14' S, 153.08' E), Lamington Plateau, SE. Queensland", Australia, as has the species *R. corbeni* Wells and Wellington, 1985.

All three would be identified as *R. revelata*, called "*Litoria revelata*" in either Anstis (2013) or Cogger (2014).

All three have similar morphology and call, although all are widely disjunct in terms of distribution and clearly evolving as separate species. They are also morphologically divergent.

While divergence between the three populations is relatively recent in geological terms, it still appropriate that each be recognized as separate species, as opposed to subspecies.

I also note that while Anstis (2013) treats all populations as a single species, she also makes comments indicating in her view the likelihood that there is more than one species being called "*Litoria revelata*" and to that extent details obvious differences between forms.

The three species are readily separated from one another as follows:

By distribution, *Rawlinsonia revelata* from coastal New South Wales, immediately adjacent ranges and nearby wetter parts of south-east Queensland is separated from *R. corbeni* from the southern wet tropics of far north Queensland and *R. ventrileuco sp. nov*. from the Eungella uplands region near Mackay in north eastern Queensland.

The three species are turn also separated from one another as follows: *R. revelata* and *R. ventrileuco sp. nov*. have a few small black spots in the groin, versus prominent black blotches in the groin and red-orange on the back of the thighs as seen in *R. corbeni.*

R. ventrileuco sp. nov. and *R. corbeni* are in turn both separated from *R. revelata* by having small pointed tubercles running in a distinct line down the upper surface of the forearm, versus mainly scattered tubercles on the upper surface of the forearm in *R. corbeni.* Scattered, raised tubercles on the upper surface of the hind limb are prominent in both *R. revelata* and *R. corbeni* but not in *R. ventrileuco sp. nov*..

The upper iris of both *R. corbeni* and *R. ventrileuco sp. nov.* is noticeably lighter than the lower, versus not so in *R. revelata.*

The upper forearms of both *R. corbeni* and *R. ventrileuco sp. nov*. is dark brown, versus light brown or yellow in *R. revelata.*

The transverse row of usually about four tubercles between the eyes is found in all three species.

The three species *R. corbeni*, *R. ventrileuco sp. nov*. and *R. revelata* are in turn separated from all other species within the genus *Rawlinsonia* Wells and Wellington, 1985 by having finger and toe discs that are conspicuously broader than the digits; conspicuous black spots or blotches on the groin and a mid-dorsal patch divided along at least part of its length, including between the eyes.

All species within the genus *Rawlinsonia* Wells and Wellington, 1985 are readily separated from all other Australasian Tree Frogs (Pelodryadidae) by the following unique suite of characters: smallish frogs usually about 35 mm in body length. Fingers are free or only webbed at the base. First finger is much shorter and smaller than the second, when pressed together the tip of the first finger reaches no further than the base of the disc of the second finger. Hind edge of vomerine teeth are between the choanae. Usually one or a pair of semidistinct mid dorsal patches, darker than the ground colour, extending from a line joining the centre of the eyes; white stripe below eye, if present does not extend beyond the anterior edge of the base of the forelimb.

Distribution: *R. ventrileuco sp. nov*. is known only from the vicinity of Eungella, near Mackay in north-east Queensland and is believed to be isolated to this relatively wet uplands region.

Etymology: The name "*ventrileuco*" refers to the whitish venter of this species of frog in the adult form.

MAXINEHOSERRANINI TRIBE NOV.

MAXINEHOSERRANAE GEN. NOV.

LSIDurn:lsid:zoobank.org:act:B603EFB7-4D33-4BDF-86C7-9552414B2127

Type species: *Eucnemis bicolor* Gray, 1842.

Diagnosis: Known in many books as the "*Litoria bicolor* complex" (e.g. Menzies 2006), this distinctive group of frogs has long been recognized as distinct within the genus *Litoria* Tschudi, 1838 as defined by Menzies (2006), Cogger (2014), Anstis (2013) Eipper and Rowland (2018), Vanderduys (2012) and most other contemporary authors. With a divergence of 21.5 MYA from nearest living relatives according to Duellman *et al*. (2016), genus-level recognition of this group of species is an obvious taxonomic judgement.

The only surprising thing is that this judgement has not been sooner, and hence the erection of a new genus herein.

I note that the nearest living relatives (from within the New Guinea area) are also in what have until now been ungrouped species and they too are placed in new genera, all of which (as a group) are most closely related to *Maxinehoserranae gen. nov.* and not any other species.

Species within *Maxinehoserranae gen. nov.* are separated from all other Australasian (Australian and New Guinea) Tree Frogs (Pelodryadidae) by the following suite of characters: No vomerine teeth (Australian species) or in two small patches between the choanae (New Guinea species); dorsal colour is usually green, or occasionally fawn or a mixture of green and bronze; dorsal surface has a broad vertebral band of bronze bordered on either side by green; in terms of flecks or blotches, there are at most a few dark flecks on the dorsal surface; dorsal surface is smooth; at least one strong pectoral fold; no tubercles above the eye; brown head streak present; tympanum brown; internarial distance/eye-naris distance ratio is less than 1.0.

Frogs within the subgenus *Vegrandihyla subgen. nov.* are separated from the nominate subgenus *Maxinehoserranae subgen. nov.* by having concealed surfaces of the legs being bright red in colour (in life), versus blue-black, brown, yellow to orange in colour in all other species.

Vegrandihyla subgen. nov. are further separated from New Guinea species within *Maxinehoserranae subgen. nov.* by their non-overlapping HL/HW ratios, 1.027-1.189 versus 1.243-1.254.

In terms of the Australian species in *Maxinehoserranae subgen. nov.* the magnitude of the difference is less, being a mean HL/HW for *Vegrandihyla subgen. nov.* 1.04, versus 1.10 in the the Australian species in *Maxinehoserranae subgen. nov.*.

Distribution: Found in New Guinea, including islands north, south and east, as well as tropical northern Australia.

Etymology: The new genus is named in honour of Maxine Hoser of Margate a loyal subject (minion) the United Kingdom of England, Scotland, Wales, Northern Island, Gibralta, the Falkland Islands and formerly including Hong Kong and other colonies, in recognition of her services to the author in herpetology.

Content: *Maxinehoserranae bicolor* (Gray, 1842) (type species); *M. albolabris* (Wandolleck, 1911); *M. bibonius* (Kraus and Allison, 2014); *M. brettbarnetti sp. nov.*; *M. chloristona* (Menzies, Richards and Tyler, 2008); *M. contrastens* (Tyler, 1968); *M. eurynastes* (Menzies, Richards and Tyler, 2008); *M. lodesdema* (Menzies, Richards and Tyler, 2008); *M. maxinehoserae sp. nov.*; *M. mystax* (Van Kampen, 1906); *M. piersoni sp. nov.*; *M. viranula* (Menzies, Richards and Tyler, 2008).

VEGRANDIHYLA SUBGEN. NOV.

LSIDurn:lsid:zoobank.org:act:5E1A91FF-2426-4DCA-B8DA-EDEB534437E3

Type species: *Hyla contrastens* Tyler, 1968.

Diagnosis: Frogs within the subgenus *Vegrandihyla subgen. nov.* are separated from the nominate subgenus *Maxinehoserranae subgen. nov.* by having concealed surfaces of the legs being bright red in colour (in life), versus blue-black, brown, yellow to orange in colour in all other species.

Vegrandihyla subgen. nov. are further separated from New Guinea species within *Maxinehoserranae subgen. nov.* by their non-overlapping HL/HW ratios, 1.027-1.189 versus 1.243-1.254. In terms of the Australian species in *Maxinehoserranae subgen. nov.* the magnitude of the difference is less, being a mean HL/HW for *Vegrandihyla subgen. nov.* 1.04, versus 1.10 in the the Australian species in *Maxinehoserranae subgen. nov..*

Species within *Maxinehoserranae gen. nov.* are separated from all other Australasian (Australian and New Guinea) Tree Frogs (Pelodryadidae) by the following suite of characters: No vomerine teeth (Australian species) or in two small patches between the choanae (New Guinea species); dorsal colour is usually green, or occasionally fawn or a mixture of green and bronze; dorsal surface has a broad vertebral band of bronze bordered on either side by green; in terms of flecks or blotches, there are at most a few dark flecks on the dorsal surface; dorsal surface is smooth; at least one strong pectoral fold; no tubercles above the eye; brown head streak present; tympanum brown; internarial distance/eye-naris distance ratio is less than 1.0.

Distribution: Found in highlands of Papua New Guinea, being mountains between Kundiawa and Wau-Bulolo at around 1200-1500 m elevation.

Etymology: The subgenus name *Vegrandihyla* in Latin means “small” and “Hyla”, with *Hyla* known as a tree frog and hence “small tree frog”, which accurately describes the species in the subgenus.

Content: *Maxinehoserranae* (*Vegrandihyla*) *contrastens* (Tyler, 1968) (monotypic).

MAXINEHOSERRANAE* (*MAXINEHOSERRANAE*) *BRETTBARNETTI SP. NOV.

LSIDurn:lsid:zoobank.org:act:96665B4E-56F6-45AA-9CE3-7D8B889F0BEA

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R12264, collected from 5 miles west of Cooktown, North Queensland, Australia, Latitude -15.45 S., Longitude 145.17 E.

This government-owned facility allows access to its holdings.

Paratypes: Five preserved specimens at the Queensland Museum, specimen numbers: J23245, J23246, J23247, J23248 and J23249 collected from Marina Plains, North Queensland, Australia, Latitude -14.55 S., Longitude 143.8667 S.

Diagnosis: Until now, the putative species originally described as *Hyla bicolor* Oken, 1816, with a type locality of Port Essington, Northern Territory, has been treated as occurring across the northern wet tropics of Australia, including the Kimberley Division of Western Australia, the top end of the Northern Territory and Cape york in Queensland, as well as most parts of New Guinea and islands to the north, east and west of New Guinea.

Various species have been “split off” with Menzies, Richards and Tyler (2008) formally restricting *Maxinehoserranae bicolor* (Oken, 1816) (as *Litoria bicolor*) to Northern Australia, with a view that the Cape York population was closest to their New Guinea species, but not conspecific with them.

They did not put a name to that taxon and as of 2019, this taxon remained unnamed.

While restricting *M. bicolor* to the top end of the Northern Territory and Western Australia, Menzies, Richards and Tyler (2008) and no one since appears to have ever countenanced the possibility that there may be more than one species in north-west Australia, save for material to this effect in a thesis by James (1998).

However over more than 3 decades of active fieldwork in the relevant region, it was always apparent that those specimens from the West Kimberley were radically different to those from near Darwin and were therefore a separate species.

As that one was also unnamed as of 2019, it too is described herein.

All three species, namely *L. bicolor* from the Northern Territory, *M. maxinehoserae sp. nov*. from the Kimberley District of Western Australia and *M. brettbarnetti sp. nov*. from Cape York in Queensland would key out as *M. bicolor* in either Cogger (2014) or Anstis (2013).

The three Australian species are readily separated from those in the genus outside Australia (New Guinea and nearby offshore islands) by their call, which in the Australian species is a very distinctive short rolling sound, or rasp, which accelerates slightly at the end of the sequence.

The three Australian species are separated from one another as follows:

Adult male *M. brettbarnetti sp. nov*. and *M. bicolor* both have a well-defined broad band running from the back of the eye along the side of the back towards the groin. This is either green, or yellow with a stong greenish tinge in *M. brettbarnetti sp. nov*., versus yellow in *M. bicolor.* Below this line, the border is brown in *M. brettbarnetti sp. nov*. versus brown, purple or grey in *M. bicolor.*

The forelimbs of both sexes of adult *M. brettbarnetti sp. nov*. are always heavily peppered with dark brown pigment, versus not so in *M. bicolor* which have light forelimbs.

The flanks of both sexes of adult *M. brettbarnetti sp. nov*. has a moderate amount of scattered black peppering, versus none or very little in *M. bicolour.*

In terms of further separation of the two species Menzies, Richards and Tyler (2008) stated *M. bicolor* are larger than Queensland *M. brettbarnetti sp. nov*., with mean snout-vent 25.0 mm +/-0.98 versus 23.1 mm +/-1.58 mm in *M. brettbarnetti sp. nov*., Queensland *M. brettbarnetti sp. nov*., have larger heads, mean HL/HB 0.34 +/- 0.017 versus 0.33 +/- 0.014 in *M. bicolor*, but there are no differences in head proportions.

... CONTINUES IN *AJH* ISSUE 45

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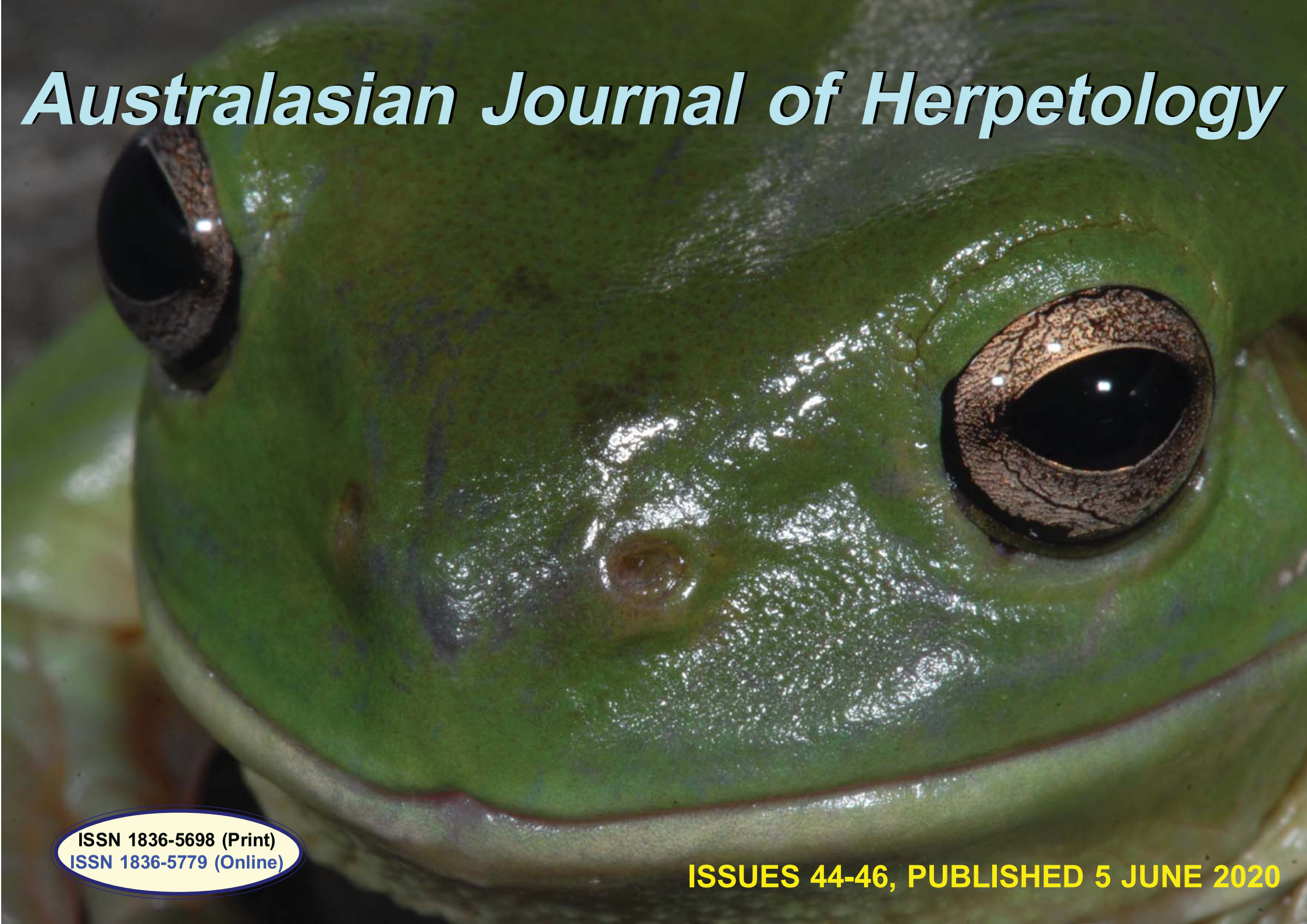
Australasian Journal of Herpetology



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