

**A divided *Gehyra* makes sense! Assigning available and new names to recognize all major species groups within *Gehyra* Gray, 1834 *sensu lato* (Squamata: Gekkonidae) and the formal description of nine new species.**

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**ABSTRACT**

The lizard genus *Gehyra* Gray, 1834 as currently recognized consists of roughly 50 recognized species found naturally occurring from mainland south-east Asia to Australia and nearby islands to the north and east including the mid Pacific.

This number of currently unrecognized species probably exceeds already described species-level taxa, even though this paper formally names 9 new species and 2 new subspecies, all but one of which have been confirmed by published molecular data.

In spite of the ancient heritage of the assemblage, which is unusual in that numerous species occur on both the Asian and Australian continental plates, divergent lineages with antiquity measured potentially in excess of 25 MYA continue to be treated as being within a single genus.

To correct the anomaly, this paper recognizes major divergent species groups as self-contained genera using available and newly created genus names in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

The assemblage of *Gehyra* as recognized by most authors to date is herein divided into 14 genera, ten of which are formally named for the first time. The species remaining within *Gehyra* are further divided into two subgenera, one of which is formally named for the first time. The species within *Dactyloperus* Fitzinger, 1843 are divided into five subgenera, four of which are formally named for the first time.

Another of the newly named genera *Edaxcolotes* *gen. nov.* is also divided into two subgenera.

All newly named genera and subgenera have divergences of more than 10 MYA from all other species based on numerous published phylogenetic studies.

**Keywords:** Taxonomy; Nomenclature; Lizard; Gekkota; Gekkonidae; Gecko; Dtella; *Gehyra*; *Perodactylus*; *Peropus*; *Phryia*; *Phreodora*; *Dactyloperus*; Asia; Australia; New Guinea; Cambodia; Thailand; new genus; *Propemaculosacolotes*; *Crocodylivotuscolotes*; *Edaxcolotes*; *Extensudigituscolotes*; *Brevicaudacolotes*; *Parvomentumparmacolotes*; *Papuacolotes*; *Quattuorunguiscolotes*; *Colotesmaculosadorsum*; *Thaigehyra*; New subgenus; *Halmaherasaurus*; *Purpuracolotes*; *Maculocolotes*; *Wedgedigitcolotes*; *Saxacolinecolotes*; *Macrocephalacolotes*; species; *lacerata*, *membranacruralis*; *xenopus*; *serraticauda*; *brevipalmata*; *fehlmanni*; *oceanica*; *australis*; *occidentalis*; *pilbara*; new species; *hangayi*; *paulhorneri*; *bradmaryani*; *sadlieri*; *glennsheai*; *shireenhoserae*; *marleneswileae*; *federicorossignolii*; *grismeri*; new subspecies; *bulliardii*; *graemecampbelli*.

**INTRODUCTION**

The lizard genus *Gehyra* Gray, 1834 as currently recognized consists of about 50 recognized species found naturally occurring from mainland south-east Asia to Australia and nearby islands to the north and east including the mid Pacific.

Numerous other forms await formal scientific description.

This number of currently unrecognized species probably exceeds already described species-level taxa even allowing for the nine new species named within this paper.

In spite of the ancient heritage of the assemblage, which is unusual in that numerous species occur on both the Asian and Australian continental plates, divergent lineages with antiquity measured potentially in excess of 25 MYA continue to be treated as being within a single genus.

When this is compared to other reptile groups, one finds that putative genera have been split in order to better reflect the correct phylogeny.

While the definition of a genus and necessary divergence between forms varies between herpetologists, most are effectively unanimous in recognizing species groups with a divergence in excess of 10 million years either as a genus or subgenus.

While most herpetologists utilize the taxonomic level of genus or sub-genus, a minority will for various reasons identify genus-level groupings as simply a "species group".

The latter position is not compatible with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) in that it allows for more than one potential name to be assigned to the same taxon

group.

The rule of homonymy is essential to the proper functioning of nomenclature and all the science that follows from this and hence it is appropriate that all divergent species groups be accorded genus-level recognition using names available, or when this is not possible newly assigned ones.

To correct the anomaly in terms of *Gehyra sensu lato*, this paper recognizes major and divergent species groups as self-contained genera.

When available names can be used, they are and in this case three are resurrected from synonymy.

Divergent species groups are herein named using genus-level descriptions compliant with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

The assemblage of *Gehyra* as recognized by most authors to date (*sensu* Cogger 2014) is herein divided into 14 genera, ten of which are formally named for the first time. The species remaining within *Gehyra* are further divided into two subgenera, one of which is formally named for the first time. The species within *Dactyloperus* Fitzinger, 1843 are divided into five subgenera, four of which are formally named for the first time.

Another of the newly named genera *Edaxcolotes gen. nov.* is also divided into two subgenera.

All newly named groups have divergences of more than 10 MYA from all other species.

While I have named the more divergent groups as full genera and the less divergent ones as subgenera, noting the latter still have divergences of more than 10 MYA, I accept that there may be short-term inertia by some herpetologists to recognize all of the genus-level splits as proposed within this paper.

However there should be no such hesitation at all for people to adopt and use the names made available herein to define said species groups to clarify further the taxonomy of the relevant species.

It is also significant and noteworthy that at the species level, numerous new species of *Gehyra sensu lato* have been discovered and formally named in the 20 years preceding the publication of this paper.

However for more than 100 years the genus-level classification of the group has remained largely untouched.

To their credit Wells and Wellington (1984, 1985) made some eminently sensible splits of *Gehyra sensu lato*, but instead of being commended for their actions, there were severely lampooned by others for their actions as outlined in Hoser (2007).

No doubt there will be vocal opposition to the taxonomy and nomenclature proposed within this paper from a well-known gang of thieves and non-scientists known as the Wüster gang (as detailed in Hoser 2015a-f and sources cited therein).

Using fake id's on social media and elsewhere, this small gang of thieves will attempt to give their position the veneer as being the consensus view among numerous herpetologists and other scientists, when in fact the reverse is in fact the reality.

Even when they "buy" so-called "likes" for their social media pages over some years, they can only get a reported following of a few hundred in their cohort, as indicated by their Facebook group "Herpetological Taxonomy", which as of 16 June 2018, reported a total of just 357, even though it had been founded five years earlier (Twombly *et al.* 2018).

The Facebook page run by other herpetologists called "Herpetological taxonomy, phylogeny and systematic", had 6,192 "likes" as of the same date, even though it too had been created about five years prior (Bagaturov *et al.* 2018).

#### **MATERIALS, METHODS AND RESULTS**

The taxonomy presented herein is in effect a statement of the obvious.

As part of a global audit of the world's reptiles, all relevant species within *Gehyra* as defined by Cogger (2014) and similarly as generally defined by most authors as of the post year 2000 period were assessed to see if their placement within the genus *Gehyra* Gray, 1834 was in fact justified. If not, then the relevant taxon was assessed to see where it should in fact be placed.

In terms of the latter, available names were assessed to see if any were appropriate and if not, then the relevant taxon and/or others were placed in a newly named group.

Because all relevant species are morphologically conservative and physically look much the same, this being the original basis for placement within *Gehyra* or morphologically similar genera from the Asia/Australasia regions, I utilized all other available information including recently published molecular studies, biogeographical studies, geological studies and the like to assess factors such as likely divergences between species and species groups.

The main relevant studies leading to the taxonomic conclusions herein are cited below and confirm that there is in fact a strong scientific basis for the decisions made herein.

Scientific decisions should only be made when there is a strong body of evidence supporting it that has been confirmed by peer review (and not the PRINO (peer reviewed in name only) stuff used by the likes of Wolfgang Wüster and his gang of thieves as detailed by Hoser 2015a-f).

It is a matter of trite to state that in the 40 years prior to 2018, I have inspected numerous specimens of most, but not all putative species-level taxa identified within this paper, either live or in museums. When this has not been possible, all relevant and available published material, including papers, photos and the like have been inspected.

The results have already been summarized in the abstract and introduction and are as follows: 10 newly named genera, as well as three others resurrected from synonymy, meaning a total of 14 genera of species all formerly included within *Gehyra*.

Within this group, another 6 subgenera are recognized and all are also formally named for the first time according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999). No named group has a divergence from its nearest relatives of less than 10 MYA based on relevant molecular studies and associated statements by the relevant authors as cited herein.

It was for this reason, I had absolutely no hesitation in recognizing and where needed, naming the relevant species groups.

Furthermore nine obviously unnamed species and 2 allopatric subspecies (for which there are no available synonyms that can be used) are also formally named for the first time in this paper.

All but one of these taxa have had their species-level status validated already by way of published molecular data as cited within this paper.

The single species-level taxon named in this paper that is not supported by DNA evidence, this being a taxon from Cambodia, is morphologically divergent from its nearest relative and separated by many hundreds of kilometres of clearly unsuitable habitat across central Thailand, giving me full confidence in the specific status of that taxon.

I should also note that a number of synonyms have been created in terms of currently recognized taxa, in particular for putative species within Australia and to the immediate north.

There is little doubt that a number of these putative species do represent valid, albeit presently unrecognized species, including for example some of those putative taxa formally named by Wells and Wellington (1985) or referred to by them.

In terms of data or diagnoses presented within this paper, much can be regarded as being of a bare minimum to make the relevant names "available" in the sense of the *International Code of Zoological Nomenclature*.

I make no apologies for this.

In 2011, members of the Wüster gang induced officers of the Victorian State Government wildlife department, then known as "DSE" to unlawfully raid myself and shut down our globally successful wildlife education business at gunpoint.

The illegal armed raid on 17 August 2011 included a number of trucks and other vehicles being filled with research files from more than 40 filing cabinets. This was then taken away. Most were not returned and this effectively scuttled or severely disabled dozens of critically important research and conservation projects due to the unlawful theft of irreplaceable research materials and results.

The irreplaceable nature of the material was underscored by the decades it took to gather and my current age of 56, meaning I will not physically be able to duplicate what had been done previously. I therefore have made the decision to publish as indicated in the paper already, rather than to leave important species groups and the like unnamed and at greater potential risk of extinction.

This being true even for species currently not known to be under any identified threat.

The illegal armed raids and the dire results of them were detailed by Court of Appeal, Victoria (2014), Victorian Civil and Administrative Tribunal (VCAT) (2015) and other publications.

The publications of Court of Appeal, Victoria (2014), Victorian Civil and Administrative Tribunal (VCAT) (2015), Hoser (1989, 1991, 1993, 1995, 1996, 1999a and 1999b, 2000a, 2000b) included details of other illegal armed raids and unlawful thefts of research files, which have caused irreparable harm to numerous research projects by the theft of records, photos and data here in Australia and elsewhere, usually by corrupt government officers, who over many decades have hampered wildlife conservation and research projects of significant importance.

As already stated, while it would be preferable to either retrieve the stolen material or to replicate earlier research and accumulation of data, neither are likely to happen in my lifetime.

In terms of the former, corrupt wildlife officers and police who illegally took materials have refused to return them in spite of numerous court orders to do so. In terms of the latter, I am now aged 56 years of age, and am not likely to live another 40 years in good health to be able to go around the same parts of northern Australia collecting and recording species, as done in the previous 40 years.

Because it is critically important that unnamed species be formally identified and named as the vital first step in their long-term conservation, I have absolutely no hesitation in describing the new to science taxa identified herein, even though my available material and data is nowhere near as extensive as I would like it to be.

I again note that for any classification system and nomenclature to be usable by others, the scientific and evidentiary basis for the decisions made, needs to be readily available to those who care to check it out.

As it happens the trail of published literature alone supports the taxonomy and nomenclature herein and so I cite it all here.

The important published material relevant to the taxonomy and nomenclature of *Gehyra sensu lato* as defined herein and the decisions made herein are as follows: Andersson (1913), Barbour (1912), Bauer (1994), Bauer and Günther (1991), Beckon (1992), Bobrov and Semenov (2008), Boettger (1895), Bonetti (2002), Börner and Schüttler (1982, 1983), Boulenger (1883, 1885a, 1885b, 1887), Brongersma (1930, 1948), Brown (2014), Brown (1955), Brown *et al.* (2015), Bourke *et al.* (2017), Buden and Taboroši (2016), Chan-ard *et al.* (1999, 2015), Chrapliwy *et al.* (1961), Cogger (2014), Cogger *et al.* (1983), Crombie and Pregill (1999), Daan and Hillenius (1966), Davies (2012), de Rooij (1915), de Vis (1890), Doody *et al.* (2015), Doughty *et al.* (2012), Duméril and Bibron (1836), Duméril and Duméril (1851), Ezaz *et al.* (2009), Fallend (2007), Fisher (1997), Fitzinger (1843), Flecks *et al.* (2012), Fry (1914), Garman (1901), Gibbons and Clunie (1984), Girard (1858), Glauert (1955), Goldberg (2014), Gray (1834, 1842a, 1842b, 1845), Grismer *et al.* (2007), Günther (1877), Hagey *et al.* (2017), Hall (2002), Hediger (1933), Heinicke *et al.* (2011), Horner (2005), Hoser (1989), Hutchinson *et al.* (2014), King (1979, 1982a, 1982b, 1984a, 1984b), King and Horner (1989), Kinghorn (1924), Kluge (1982, 1993), Kopstein (1926), Laube and Langner (2007), Lesson (1830), Loveridge (1934, 1948), Low (1979), Lucky and Sarnat (2010), Macleay (1877), Manthey and Grossmann (2007), Maryan (2009), McCoy (2015), Mertens (1974), Meyer (1874), Moritz *et al.* (2017), Oliver *et al.* (2010, 2012, 2014, 2016a, 2016b, 2017), Mitchell (1965), Oudemans (1894), Peters (1874, 1875), Peters and Doria (1878), Pianka (1969), Pianka and Pianka (1976), Ride *et al.* (1999), Rocha *et al.* (2009), Rösler (2000, 2017), Rösler *et al.* (2005), Sang *et al.* (2009), Shea and Sadlier (1999), Sjöström *et al.* (2009, 2012, 2013), Skipwith and Oliver (2014), Strauch (1887), Steindachner (1867), Sternfeld (1925),

Storr (1978, 1982), Taylor (1962, 1963), Tiedemann *et al.* (1994), Tonione *et al.* (2016), Underwood (1954), Wiegmann (1834), Wells and Wellington (1984, 1985), Werner (1901), Wilson and Knowles (1988), Wilson and Swan (2017), Yamashiro and Ota (2005), Zug (1991, 2013), Zug and Kaiser (2014), Zug *et al.* (2011, 2012) and sources cited therein.

In terms of the nomenclature herein, no names should be altered in any way unless absolutely mandatory under the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

In the event that a so-called second reviser seeks to use one name for two groups defined herein, where there is a conflict of names first proposed herein, the name to be used should be the first formally described as per the order listed in the abstract of this paper (page priority).

#### **GEHYRA GRAY, 1834**

**Type species:** *Gehyra pacifica* Gray, 1832, a synonym of *Gecko oceanicus* Lesson, 1830.

**Diagnosis:** *Gehyra sensu lato* as understood to date (and herein divided into 14 genera), is separated from all other geckos from all places by the following suite of characters: Digits are dilated, the distal phalanges are compressed. The distal joint is long, free and rising from within the extremity of the digital expansion. Infradigital plates are in a simple or double series; the inner digit is clawless, while the other four have claws, or rarely there is a tiny claw on the fifth.

The genus *Gehyra*, type species *Gecko oceanicus* Lesson, 1830, as defined herein is separated from all other genera formerly included as part of *Gehyra* by the following suite of characters: Digital lamellae are undivided, 11 to 13 upper labials; toes are webbed at the base; 25 to 40 femoral pores.

Within *Gehyra* the subgenus *Halmaherasaurus gen. nov.*, type species *Gehyra marginata* Boulenger, 1887 is readily separated from *Gehyra* by the laterally compressed tail and body shape, (versus rounded and slightly depressed base of tail in the subgenus *Gehyra*) as well as dorsal colours that are in the spectrum of grays and browns, with a very distinctive light greenish iris, versus a red, brown, yellow or orange iris in *Gehyra*.

*Dactyloperus* Fitzinger, 1843, type species *Hemidactylus variegata* Duméril and Bibron, 1836 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; hind limb is without a cutaneous fold; digits are free or with a very slight rudiment of a web and the male has 10-16 femoral pores.

Within *Dactyloperus*, the subgenus *Purpuracolotes subgen. nov.*, type species *Gehyra purpurascens* Storr, 1982, is readily separated from the nominate subgenus and other three subgenera by one or other of the following two suites of characters:

1/ No cutaneous fold along the hind edge of the hindlimb; the original tail is relatively long, tapering and slightly depressed at the base, but without a sharply delineated, denticular lateral edge on each side; less than nine divided subdigital lamellae under the dilated portion of the fourth toe, with each half either in contact or separated by no more than a small granule; colour is a purplish grey or brown with darker mottling, without spotting, or at most a few isolated spots anteriorly; 11 or less pre-anal pores in males; oblong rostral scale, which is almost twice as wide as high with a straight or at most slightly angular upper edge, adult size to 60 mm snout-vent (*D. purpurascens*) or:

2/ Small adult body size (rarely more than 40 mm adult snout-vent), few subdigital lamellae and a mid tan to golden dorsal coloration with a distinctive pattern of scattered pale ocelli and irregular dark-brown blotches on a stippled background (*D. einasleighensis*).

Within *Dactyloperus*, the subgenus *Maculocolotes subgen. nov.*, type species *Gehyra nana* Storr, 1978 is readily separated from the nominate subgenus and the other three subgenera by one or other of the following three suites of characters:

1/ No cutaneous fold along the hind edge of the hindlimb; the original tail is slightly depressed at the base, without a sharply delineated denticular lateral edge on each side; basal subdigital

lamellae divided, but each half is usually in contact or separated by no more than a single granule; less than nine divided subdigital lamellae under the dilated portion of the fourth toe; oblong-shaped rostral scale, almost twice as wide as high, with at most a slightly angular upper edge and usually bordered above, between the nostrils, by only two large (and occasionally small third) internasal scales; pinkish grey dorsal colour, with a pattern of dark spots and pale pinkish white spots on the back being irregular but tending towards transverse rows, (*D. nana*, *D. girloorloo*, *D. kimberleyi*), or:

2/ No cutaneous fold along the hind edge of the hindlimb; the original tail is slightly depressed at the base, and relatively long and tapering and without a sharply delineated denticular lateral edge on each side; the colour pattern of the tail is a more diffuse version than that seen on the lower back; 6-7 divided subdigital lamellae under the fourth toe; third and fourth toes are free and without webbing; dorsal colouration is reddish-brown above with scattered dark brown and pale cream spots tending to form about nine irregular rows of dark brown spots anteriorly or bars posteriorly on the back, mixed with irregular paler markings or spots; 11 or less pre-anal pores in males; an oblong rostral scale that is almost twice as wide as high and with a straight or at most a slightly angular upper edge; anterior chin shields are not in contact with the second infralabials, (*D. multiporosa*), or:

3/ No cutaneous fold along the hind edge of the hindlimb; the original tail is slightly depressed at the base, without a sharply delineated denticular lateral edge on each side; 9 or more basal subdigital lamellae divided under the dilated portion of the fourth toe, but each half is usually in contact or separated by no more than a single granule; 19 or more pre-anal pores in males; rostral scale is at most about 1.5 times wider than high angular above and bordered above, between the nostrils, by three or more (rarely two) internasal scales (*D. occidentalis*, *D. federicrossignolii* sp. nov.).

Within *Dactyloperus*, the subgenus *Wedgedigitcolotes* subgen. nov., type species *Gehyra spheniscus* Doughty, Palmer, Siström, Bauer and Donnellan, 2012, is readily separated from the nominate subgenus and the other three subgenera by the following suite of characters: No cutaneous fold along the hind edge of the hindlimb, the original tail is rounded at the base or slightly depressed, and lacks a sharply delineated denticular lateral edge on each side; digits are broadly expanded basally and subdigital scansors present on all digits of manus and pes. Digit I of manus and pes clawless or bearing a minute claw, penultimate phalanx of digits II–V free from scansorial pad. Body atuberculate. Basal subdigital lamellae are divided and separated by a wedge shaped series of tiny granules. Differs from other Australian species in the genus by small (approximately 45 mm SVL) body size and a wedge of granules at the base of the expanded terminal pads on the digits; 6 lamellae on fourth finger and toe, 7 or 8 upper and lower labials, single internarial, about 30 interorbital scales, about 25 preloacal and femoral pores in males in an unbroken chevron and a dorsal pattern with transverse rows of alternating light and dark spots or bars, (*D. spheniscus*).

Within *Dactyloperus*, the subgenus *Saxacolinecolotes* subgen. nov., type species *Dactyloperus lazelli* Wells and Wellington, 1985, is readily separated from the nominate subgenus and the other three subgenera by the following suite of characters: No cutaneous fold along the hind edge of the hindlimb; original tail is round or slightly depressed at the base and long and slender and lacks a sharply delineated lateral denticular edge on each side; less than nine divided subdigital lamellae under the dilated portion of the fourth toe, each being divided but either in contact or separated by no more than a tiny granule; rostral scale is oblong, being almost twice as wide as high and with at most a slightly angular edge, usually bordered above, between the nostrils, by only two large (and an occasional small third) internasal; anterior chin shields in contact with only the first supralabials; a dorsal colouration of being generally dull to grey brown, with thick darker brown peppering around light grey-brown spots, giving an overall appearance of being spotted or reticulated in general pattern, but not in the way of any banded formation and an adult snout-vent length rarely exceeding 40 mm, (*D. lazelli*).

The remaining species within the nominate type subgenus

*Dactyloperus* Fitzinger, 1843 are *D. variegata*, *D. minuta*, *D. montium*, *D. moritzi*, *D. pulingka*, *D. punctata*, *D. pilbara*, *D. versicolour* and *D. bradmaryani* sp. nov..

The genus *Phryia* Gray, 1842, type species *Phryia punctulata* Gray, 1842 (a synonym of *Phryia australis* (Gray, 1845)), are readily separated from all other species formerly included within *Gehyra sensu lato* by one or other of the following two suites of characters: 1/ 9-11 subdigital lamellae that are either undivided or sometimes with a medial depression or notch under the dilated portion of the fourth toe; rostral scale is oblong, being almost twice as wide as high, with at most a slightly angular upper edge and bordered above, between the nostrils, by only two large internasal scales (*P. australis*, *P. borrooloola*, *P. ipsa*, *P. koira*, *P. paulhorneri* sp. nov. (this paper), *P. robusta*), or:

2/ No cutaneous fold along the hind edge of the hindlimb; original tail is rounded or moderately depressed at the base and lacks a sharply delineated, denticular lateral edge on each side; 9-11 deeply notched or grooved, but seldom divided subdigital lamellae under the expanded portion of the fourth toe; toes usually free of webbing; 19 or more pre-anal pores in males; rostral scale is oblong, being almost twice as wide as high, with at most a slightly angular upper edge and bordered above, between the nostrils, by only two large internasal scales (*P. pamela*).

Geckos within the genus *Peropus* Wiegmann, 1835, type species *Hemidactylus (Peropus) mutilata* Wiegmann, 1834, are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; there is a fold of skin bordering the hind limb posteriorly; the inner pair of chin-shields are very large; rostral is quadrangular; 8 or 9 upper labials and 7 lower labials; tail normally has a sharpish lateral edge on each side.

Geckos within the genus *Propemaculosacolotes* gen. nov., type species *Peripia dubia* Macleay, 1877, are readily separated from all other species formerly included within *Gehyra sensu lato* by one or other of the following two suites of characters:

1/ The 9-11 subapical lamellae under the expanded part of the fourth toe may be divided or undivided; rostral scale is at most about 1.5 times wider than high, angular above, between the nostrils, separated by three internasal scales, two large outer and a small medial; slender tail that is distinctly depressed at the base; dorsal colouration is grey brown to grey to almost pale cream with or without darker blotches, variegations or marbling or scattered paler spots (*P. dubia*), or:

2/ The 7-8 subapical lamellae under the expanded part of the fourth toe are undivided or occasionally grooved; dorsal colouration is pale to dark grey above with a noticeable pattern consisting of a pair of dark brown zig-zag paravertebral stripes from the eye to the base of the tail, sometimes joined by a series of dark transverse bars resulting in a vertebral series of pale rhomboidal blotches. Head, flanks and limbs are speckled and streaked with dark brown; stocky in build (*P. catenata*).

Geckos within the genus *Crocodylilivoltuscolotes* gen. nov., type species *Gehyra xenopus* Storr, 1978 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: There is no cutaneous fold along the hind edge of the hindlimb; the original tail is round or moderately depressed at the base and lacks a sharply delineated denticular lateral edge on each side; basal subdigital lamellae are divided and each half is separated by a wedge-shaped series of small granules; nine or more supralabials, nine or more lamellae under the fourth toe; third and fourth toes lack webbing; body is robustly built with a long and pointed somewhat turned up snout and large prominent eyes; maximum adult snout-vent length of more than 70 mm (*C. xenopus*, *C. shireenhoserae* sp. nov. (this paper), *C. marleneswileae* sp. nov. (this paper)).

Geckos within the genus *Edaxcolotes* gen. nov., type species *Gehyra vorax* Girard, 1858, are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Undivided digital lamellae; 13 or 14 upper labials; digits webbed at the base; a strong fold of the skin bordering the fore limb anteriorly; 40 to 60 femoral pores; tail is

round in structure at the base; dorsal colors are composed of black, shades of yellow, and any color in between, versus dull greys and shades of brown only (*E. vorax*, *E. georgpotthasti*, *E. rohan*).

*Edaxcolotes* gen. nov. is also subdivided into two subgenera. The nominate subgenus includes both *E. vorax* and *E. georgpotthasti*, while the subgenus *Macrocephalacolotes* subgen. nov. includes the species *E. rohan*.

*Macrocephalacolotes* subgen. nov. is separated from all other *Edaxcolotes* gen. nov. and all other *Gehyra sensu lato* by the following unique suite of characters: very large adult size (adult SVL 130-150 mm), large head (HW/SVL 0.18-0.22, HD/SVL 0.11-0.14), prominent skinfolds on the anterior forelimbs and posterior hind limbs, weak lateral fold, heterogeneous dorsal scalation consisting of large rounded scales bordered by numerous much smaller rounded or triangular scales, massive digital discs with high number of wide undivided subdigital lamellae (finger four 23-25, toe four 22-26) that are not deeply notched or divided, rostral with near horizontal dorsal edge and not deeply notched, preloacal and femoral pores in a moderately long single continuous chevron of up to at least 40 pores, original tail without lateral

serrations, rounded at the base, but slightly compressed and with a prominent medial row of enlarged subcaudals, and a prominent ring of orange scales around the eye in life (Oliver *et al.* 2016).

Geckos within the genus *Extensudigituscolotes* gen. nov., type species *Gehyra membranacruralis* King and Horner, 1989, are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: A combination of undivided subdigital lamellae; adult snout-vent length of under 101 mm; no rudimentary webbing directly behind the knees and between the toes; no anterior and posterior skin folds on the forelimbs; a tail base that is round to ovoid in cross-section; no "U"-shaped rostral scale (*E. membranacruralis*, *E. sadlieri* sp. nov. (this paper), *E. glennsheai* sp. nov.).

Geckos within the genus *Brevicaudacolotes* gen. nov., type species *Hemidactylus baliolus* Duméril, 1851 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; a fold of the skin borders the hind limb posteriorly; chin-shields are shorter; conical snout; cheeks not swollen; dorsal scales are larger, while those on the vertebral line are reduced in size; the rostral is horseshoe shaped; dorsally the colour is brown with lighter or reddish spots (*B. baliola*, *B. barea*).

Geckos within the genus *Parvomentumparmacolotes* gen. nov., type species *Hemidactylus (Peropus) brevipalmatus* Peters, 1874 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: 14-15 digital lamellae under the fourth toes divided by a median groove; webbing between the digits; a fold of the skin bordering the hind limb posteriorly; chin-shields smaller; 10 upper and 9 lower labials; tail without a lateral keel; noticeable very small ventral scales (*P. brevipalmata*, *P. papuana*, *P. interstitialis*).

Geckos within the genus *Papuacolotes* gen. nov., type species *Gehyra serraticauda* Skipworth and Oliver, 2014 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: a unique continuous fringe of prominent acuminate lateral scales running the length of the tail, a feature shared with no other species in *Gehyra sensu lato*. The genus is also characterised as having a robust body of intermediate size, numerous internasals, partially divided digital scancers and the presence of well-developed popliteal folds all of which further distinguishes this taxon from similar species in the Papuan region (*P. serraticauda*).

Geckos within the genus *Quattuorunguiscolotes* gen. nov., type species *Peropus fehlmanni* Taylor, 1962 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae divided by a median groove; hind limb is without a cutaneous fold; digits free or with a very slight rudiment of web; scales a good deal smaller on the median line of the back than on the sides; male usually has about

20-40 femoral pores; rostral pentagonal; four chin-shields, the median pair are large and elongated, being narrowest posteriorly; the tail is rounded at the base and slightly depressed and with a median row of large scutellae inferiorly. Dorsally the colour is greyish brown, minutely speckled with black or white; the belly is whitish, (*Q. fehlmanni*, *Q. grismeri* sp. nov. (this paper), *Q. insulensis*).

Geckos within the genus *Colotesmaculosadorsum* gen. nov., type species *Peropus laceratus* Taylor, 1962 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: The subcaudal region has several series of small scales not transversely widened; 10 preanal pores on each side forming a continuous series, angular mesially, extending slightly on to the femora; dorsal surface and sides are grey. There are about 20 darker-grey spots on the head and scattered, larger grey spots on the back; belly is cream to whitish-yellow. The original tail is noticeably shorter than the body (*C. lacerata*).

Geckos within the genus *Thaigehyra* gen. nov., type species *Peropus angusticaudatus* Taylor, 1963 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: The tail is not significantly widened beyond the base behind the vent and is only slightly longer than the head and body, unflattened below and terminating in a very fine point; the scales on the dorsal surface are small, flat, cycloid and imbricating, with a slight lateral caudal fringe, not or scarcely denticulate, males have 15-18 femoral and preanal pores that are continuous and angular mesially; the dorsal colouration is almost uniformly grey with a slightly lighter head; the tail is a darker lavender colour; chin, throat and venter are yellowish-white (*T. angusticaudata*).

**Distribution:** *Gehyra* as defined herein are found in islands of the South west Pacific and north of Australia (subgenus *Gehyra*). Subgenus *Halmaherasaurus* subgen. nov. occurs only in the vicinity of Halmahera Island in the Moluccas, Indonesia.

**Content:** *Gehyra oceanica* (Lesson, 1830) (type species); *G. hangayi* sp. nov. (this paper); *G. marginata* Boulenger, 1887.

#### SUBGENUS HALMAHERASAURUS GEN. NOV.

**Type species:** *Gehyra marginata* Boulenger, 1887.

**Diagnosis:** *Gehyra sensu lato* as understood to date (and herein divided into 14 genera), is separated from all other geckos from all places by the following suite of characters: Digits are dilated, the distal phalanges are compressed. The distal joint is long, free and rising from within the extremity of the digital expansion. Infradigital plates are in a simple or double series; the inner digit is clawless, while the other four have claws.

The genus *Gehyra*, type species *Gecko oceanicus* Lesson, 1830, as defined herein is separated from all other genera formerly included as part of *Gehyra* by the following suite of characters: Digital lamellae are undivided, 11 to 13 upper labials; toes are webbed at the base; 25 to 40 femoral pores.

Within *Gehyra* the subgenus *Halmaherasaurus* gen. nov., type species *Gehyra marginata* Boulenger, 1887 is readily separated from *Gehyra* by the laterally compressed tail and body shape, (versus rounded and slightly depressed base of tail in the subgenus *Gehyra*) as well as dorsal colours that are in the spectrum of greys and browns, with a very distinctive light greenish iris, versus red, brown, yellow or orange iris in *Gehyra*.

**Distribution:** Subgenus *Halmaherasaurus* subgen. nov. occurs only in the vicinity of Halmahera Island in the Moluccas, Indonesia.

**Content:** *Gehyra (Halmaherasaurus) marginata* Boulenger, 1887 (monotypic).

#### DACTYLOPERUS FITZINGER, 1843.

**Type species:** *Hemidactylus variegata* Duméril and Bibron, 1836.

**Diagnosis:** *Dactyloperus* Fitzinger, 1843, type species *Hemidactylus variegata* Duméril and Bibron, 1836 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; hind limb is without a cutaneous fold; digits are free or with a very slight rudiment of a web and the male

has 10-16 femoral pores.

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

**Content:** *Dactyloperus variegata* (Duméril and Bibron, 1836) (type species); *D. bradmaryani* sp. nov. (this paper), *D. einasleighensis* (Bourke, Pratt, Vanderduys and Moritz, 2017); *D. federicorossignolii* sp. nov. (this paper); *D. girloorloo* (Oliver, Bourke, Pratt, Doughty and Moritz, 2016); *D. kimberleyi* (Börner and Schüttler, 1982); *D. lazelli* Wells and Wellington, 1985; *D. minuta* (King, 1982); *D. montium* (Storr, 1982); *D. moritzi* (Hutchinson, Siström, Donnellan and Hutchinson, 2014); *D. multiporosa* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012); *D. nana* (Storr, 1978); *D. occidentalis* (King, 1984); *D. pilbara* (Mitchell, 1965); *D. pulingka* (Hutchinson, Siström, Donnellan and Hutchinson, 2014); *D. punctata* (Fry, 1914); *D. purpurascens* (Storr, 1982); *D. spheniscus* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012); *D. versicolor* (Hutchinson, Siström, Donnellan and Hutchinson, 2014).

#### SUBGENUS PURPURACOLOTES SUBGEN. NOV.

**Type species:** *Gehyra purpurascens* Storr, 1982.

**Diagnosis:** *Dactyloperus* Fitzinger, 1843, type species *Hemidactylus variegata* Duméril and Bibron, 1836 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; hind limb is without a cutaneous fold; digits are free or with a very slight rudiment of a web and the male has 10-16 femoral pores.

Within *Dactyloperus*, the subgenus *Purpuracolotes* subgen. nov., type species *Gehyra purpurascens* Storr, 1982, is readily separated from the nominate subgenus and other three subgenera by one or other of the following two suites of characters:

1/ No cutaneous fold along the hind edge of the hindlimb; the original tail is relatively long, tapering and slightly depressed at the base, but without a sharply delineated, denticular lateral edge on each side; less than nine divided subdigital lamellae under the dilated portion of the fourth toe, with each half either in contact or separated by no more than a small granule; colour is a purplish grey or brown with darker mottling, without spotting, or at most a few isolated spots anteriorly; 11 or less pre-anal pores in males, oblong rostral scale, which is almost twice as wide as high with a straight or at most slightly angular upper edge, adult size to 60 mm snout-vent (*D. purpurascens*) or:

2/ Small adult body size (rarely more than 40 mm adult snout-vent), few subdigital lamellae and a mid tan to golden dorsal coloration with a distinctive pattern of scattered pale ocelli and irregular dark-brown blotches on a stippled background (*D. einasleighensis*).

**Distribution:** Known from most of the interior of Western Australia, South Australia and the southern Northern Territory as well as an apparently isolated population in drier north-east Queensland.

**Etymology:** The name *Purpuracolotes* in Latin means purple gecko, in reference to the purplish colour of many specimens.

**Content:** *Dactyloperus (Purpuracolotes) purpurascens* (Storr, 1982) (type species); *D. (Purpuracolotes) einasleighensis* (Bourke, Pratt, Vanderduys and Moritz, 2017).

#### SUBGENUS MACULOCOLOTES SUBGEN. NOV.

**Type species:** *Gehyra nana* Storr, 1978.

**Diagnosis:** *Dactyloperus* Fitzinger, 1843, type species *Hemidactylus variegata* Duméril and Bibron, 1836 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; hind limb is without a cutaneous fold; digits are free or with a very slight rudiment of a web and the male has 10-16 femoral pores.

Within *Dactyloperus*, the subgenus *Maculocolotes* subgen. nov., type species *Gehyra nana* Storr, 1978 is readily separated from the nominate subgenus and the other three subgenera by one or other of the following three suites of characters:

1/ No cutaneous fold along the hind edge of the hindlimb; the original tail is slightly depressed at the base, without a sharply

delineated denticular lateral edge on each side; basal subdigital lamellae divided, but each half is usually in contact or separated by no more than a single granule; less than nine divided subdigital lamellae under the dilated portion of the fourth toe; oblong-shaped rostral scale, almost twice as wide as high, with at most a slightly angular upper edge and usually bordered above, between the nostrils, by only two large (and occasionally small third) internasal scales; pinkish grey dorsal colour, with a pattern of dark spots and pale pinkish white spots on the back being irregular but tending towards transverse rows, (*D. nana*, *D. girloorloo*, *D. kimberleyi*), or:

2/ No cutaneous fold along the hind edge of the hindlimb; the original tail is slightly depressed at the base, and relatively long and tapering and without a sharply delineated denticular lateral edge on each side; the colour pattern of the tail is a more diffuse version than that seen on the lower back; 6-7 divided subdigital lamellae under the fourth toe; third and fourth toes are free and without webbing; dorsal colouration is reddish-brown above with scattered dark brown and pale cream spots tending to form about nine irregular rows of dark brown spots anteriorly or bars posteriorly on the back, mixed with irregular paler markings or spots; 11 or less pre-anal pores in males; an oblong rostral scale that is almost twice as wide as high and with a straight or at most a slightly angular upper edge; anterior chin shields are not in contact with the second infralabials, (*D. multiporosa*), or:

3/ No cutaneous fold along the hind edge of the hindlimb; the original tail is slightly depressed at the base, without a sharply delineated denticular lateral edge on each side; 9 or more basal subdigital lamellae divided under the dilated portion of the fourth toe, but each half is usually in contact or separated by no more than a single granule; 19 or more pre-anal pores in males; rostral scale is at most about 1.5 times wider than high angular above and bordered above, between the nostrils, by three or more (rarely two) internasal scales (*D. occidentalis*, *D. federicorossignolii* sp. nov. (this paper)).

**Distribution:** Generally the Kimberley region in north-west Australia, with a single species extending across the dry tropical north of Australia.

**Etymology:** *Maculocolotes* in Latin means spotted gecko.

**Content:** *Dactyloperus (Maculocolotes) nana* (Storr, 1978) (type species); *D. federicorossignolii* sp. nov. (this paper); *D. girloorloo* (Oliver, Bourke, Pratt, Doughty and Moritz, 2016); *D. kimberleyi* (Börner and Schüttler, 1982); *D. multiporosa* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012); *D. occidentalis* (King, 1984).

#### SUBGENUS WEDGEDIGITCOLOTES SUBGEN. NOV.

**Type species:** *Gehyra spheniscus* Doughty, Palmer, Siström, Bauer and Donnellan, 2012.

**Diagnosis:** *Dactyloperus* Fitzinger, 1843, type species *Hemidactylus variegata* Duméril and Bibron, 1836 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; hind limb is without a cutaneous fold; digits are free or with a very slight rudiment of a web and the male has 10-16 femoral pores.

Within *Dactyloperus*, the subgenus *Wedgedigitcolotes* subgen. nov., type species *Gehyra spheniscus* Doughty, Palmer, Siström, Bauer and Donnellan, 2012, is readily separated from the nominate subgenus and the other three subgenera by the following suite of characters: No cutaneous fold along the hind edge of the hindlimb, the original tail is rounded at the base or slightly depressed, and lacks a sharply delineated denticular lateral edge on each side; digits are broadly expanded basally and subdigital scensors present on all digits of manus and pes. Digit I of manus and pes clawless or bearing a minute claw, penultimate phalanx of digits II-V free from scansorial pad. Body tuberculate. Basal subdigital lamellae are divided and separated by a wedge shaped series of tiny granules. Differs from other Australian species in the genus by small (approximately 45 mm SVL) body size and a wedge of granules at the base of the expanded terminal pads on the digits; 6 lamellae on fourth finger and toe, 7 or 8 upper and lower labials, single internasal, about 30 interorbital scales, about 25 preloacal and femoral pores in males in an unbroken chevron and a dorsal

pattern with transverse rows of alternating light and dark spots or bars, (*D. spheniscus*).

**Distribution:** North-west Kimberley of Western Australia, including some offshore islands.

**Etymology:** *Wedgedigitcolotes* in Latin means wedge-toed Gecko.

**Content:** *Dactyloperus (Wedgedigitcolotes) spheniscus* (Doughty, Palmer, Sistrom, Bauer and Donnellan, 2012).

#### SUBGENUS SAXACOLINECOLOTES SUBGEN. NOV.

**Type species:** *Dactyloperus lazelli* Wells and Wellington, 1985.

**Diagnosis:** *Dactyloperus* Fitzinger, 1843, type species *Hemidactylus variegata* Duméril and Bibron, 1836 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; hind limb is without a cutaneous fold; digits are free or with a very slight rudiment of a web and the male has 10-16 femoral pores.

Within *Dactyloperus*, the subgenus *Saxacolinecolotes subgen. nov.*, type species *Dactyloperus lazelli* Wells and Wellington, 1985, is readily separated from the nominate subgenus and the other three subgenera by the following suite of characters: No cutaneous fold along the hind edge of the hindlimb; original tail is round or slightly depressed at the base and long and slender and lacks a sharply delineated lateral denticular edge on each side; less than nine divided subdigital lamellae under the dilated portion of the fourth toe, each being divided but either in contact or separated by no more than a tiny granule; rostral scale is oblong, being almost twice as wide as high and with at most a slightly angular edge, usually bordered above, between the nostrils, by only two large (and an occasional small third) internasal; anterior chin shields in contact with only the first supralabials; a dorsal colouration of being generally dull to grey brown, with thick darker brown peppering around light grey-brown spots, giving an overall appearance of being spotted or reticulated in general pattern, but not in the way of any banded formation and an adult snout-vent length rarely exceeding 40 mm, (*D. lazelli*).

**Distribution:** South-eastern South Australia and nearby parts of Western New South Wales, potentially including far south-west Queensland and north-west Victoria.

**Etymology:** *Saxacolinecolotes* in Latin means rock dwelling gecko.

**Content:** *Dactyloperus (Saxacolinecolotes) lazelli* Wells and Wellington, 1985.

#### GENUS PHRYIA GRAY, 1842

**Type species:** *Gehyra australis* Gray, 1845.

**Diagnosis:** The genus *Phryia* Gray, 1842, type species *Phryia punctulata* Gray, 1842 (a synonym of *Phryia australis* (Gray, 1845), are readily separated from all other species formerly included within *Gehyra sensu lato* by one or other of the following two suites of characters:

1/ 9-11 subdigital lamellae that are either undivided or sometimes with a medial depression or notch under the dilated portion of the fourth toe; rostral scale is oblong, being almost twice as wide as high, with at most a slightly angular upper edge and bordered above, between the nostrils, by only two large internasal scales (*P. australis*, *P. borroloola*, *P. ipsa*, *P. koira*, *P. paulhorneri* sp. nov. (this paper), *P. robusta*), or:

2/ No cutaneous fold along the hind edge of the hindlimb; original tail is rounded or moderately depressed at the base and lacks a sharply delineated, denticular lateral edge on each side; 9-11 deeply notched or grooved, but seldom divided subdigital lamellae under the expanded portion of the fourth toe; toes usually free of webbing; 19 or more pre-anal pores in males; rostral scale is oblong, being almost twice as wide as high, with at most a slightly angular upper edge and bordered above, between the nostrils, by only two large internasal scales (*P. pamela*).

**Distribution:** Rocky areas in the tropical top end of the Northern Territory and immediately adjacent parts of Queensland and Western Australia.

**Content:** *Phryia australis* (Gray, 1845) (type species); *P. borroloola* (King, 1984); *P. ipsa* (Horner, 2005), *P. koira* (Horner, 2005); *P.*

*pamela* (King, 1982); *P. paulhorneri* sp. nov. (this paper); *P. robusta* (King, 1984).

#### GENUS PEROPUS WIEGMANN, 1835.

**Type species:** *Hemidactylus (Peropus) mutilata* Wiegmann, 1834.

**Diagnosis:** Geckos within the genus *Peropus* Wiegmann, 1835, type species *Hemidactylus (Peropus) mutilata* Wiegmann, 1834, are readily separated from all other species formerly included within *Gehyra sensu lato* as defined in this paper, by the following suite of characters: Digital lamellae are divided by a median groove; there is a fold of skin bordering the hind limb posteriorly; the inner pair of chin-shields are very large; rostral is quadrangular; 8 or 9 upper labials and 7 lower labials; tail normally has a sharpish lateral edge on each side.

**Distribution:** Christmas and Cocos (Keeling) Islands, (Indian Ocean) (*P. mutilata*), and Manoi and Vogelkop peninsula, West New Guinea (*P. leopardi*).

**Content:** *Peropus mutilata* (Wiegmann, 1834) (type species); *P. leopardi* (Brongersma, 1930).

#### GENUS PROPEMACULOSACOLOTES GEN. NOV.

**Type species:** *Peripia dubia* Macleay, 1877.

**Diagnosis:** Geckos within the genus *Propemaculosacolotes* gen. nov., type species *Peripia dubia* Macleay, 1877, are readily separated from all other species formerly included within *Gehyra sensu lato* by one or other of the following two suites of characters:

1/ The 9-11 subapical lamellae under the expanded part of the fourth toe may be divided or undivided; rostral scale is at most about 1.5 times wider than high, angular above, between the nostrils, by three internasal scales, two large outer and a small medial; slender tail that is distinctly depressed at the base; dorsal colouration is grey brown to grey to almost pale cream with or without darker blotches, variegations or marbling or scattered paler spots (*P. dubia*), or:

2/ The 7-8 subapical lamellae under the expanded part of the fourth toe are undivided or occasionally grooved; dorsal colouration is pale to dark grey above with a noticeable pattern consisting of a pair of dark brown zig-zag paravertebral stripes from the eye to the base of the tail, sometimes joined by a series of dark transverse bars resulting in a vertebral series of pale rhomboidal blotches. Head, flanks and limbs are speckled and streaked with dark brown; stocky in build (*P. catenata*).

**Distribution:** Most parts of Queensland, Australia, except the very far west, extending into North-west NSW near the Darling River.

**Etymology:** In Latin, *Propemaculosacolotes* means not quite blotched gecko.

**Content:** *Propemaculosacolotes dubia* (Macleay, 1877) (type species); *P. catenata* (Low, 1979).

#### GENUS CROCODILIVOLTUSCOLOTES GEN. NOV.

**Type species:** *Gehyra xenopus* Storr, 1978.

**Diagnosis:** Geckos within the genus *Crocodylivoltuscolotes* gen. nov., type species *Gehyra xenopus* Storr, 1978 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: There is no cutaneous fold along the hind edge of the hindlimb; the original tail is round or moderately depressed at the base and lacks a sharply delineated denticular lateral edge on each side; basal subdigital lamellae are divided and each half is separated by a wedge-shaped series of small granules; nine or more supralabials, nine or more lamellae under the fourth toe; third and fourth toes lack webbing; body is robustly built with a long and pointed somewhat turned up snout and with large prominent eyes; maximum adult snout-vent length of more than 70 mm (*C. xenopus*, *C. shireenhoserae* sp. nov. (this paper), *C. marleneswileae* sp. nov. (this paper)).

**Distribution:** Known only from the northern Kimberley in north-west Western Australia.

**Etymology:** In Latin *Crocodylivoltuscolotes* means crocodile faced gecko.

**Content:** *Crocodylivoltuscolotes xenopus* (Storr, 1978); *C. shireenhoserae* sp. nov. (this paper); *C. marleneswileae* sp. nov. (this paper).

**GENUS EDAXCOLOTES GEN. NOV.**

**Type species:** *Gehyra vorax* Girard, 1858.

**Diagnosis:** Geckos within the genus *Edaxcolotes* gen. nov., type species *Gehyra vorax* Girard, 1858, are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Undivided digital lamellae; 13 or 14 upper labials; digits webbed at the base; a strong fold of the skin bordering the fore limb anteriorly; 40 to 60 femoral pores; tail is round in structure at the base; dorsal colors are composed of black, shades of yellow, and any color in between, versus dull greys and shades of brown only (*E. vorax*, *E. georgpottthasti*, *E. rohan*).

*Edaxcolotes* gen. nov. is also subdivided into two subgenera. The nominate subgenus includes both *E. vorax* and *E. georgpottthasti*, while the subgenus *Macrocephalacolotes* subgen. nov. includes the species *E. rohan*.

*Macrocephalacolotes* subgen. nov. is separated from all other *Edaxcolotes* gen. nov. (being in the subgenus *Edaxcolotes* subgen. nov.) and all other *Gehyra sensu lato* by the following unique suite of characters: very large adult size (adult SVL 130-150 mm), large head (HW/SVL 0.18-0.22, HD/SVL 0.11-0.14), prominent skinfolds on the anterior forelimbs and posterior hind limbs, weak lateral fold, heterogeneous dorsal scalation consisting of large rounded scales bordered by numerous much smaller rounded or triangular scales, massive digital discs with high number of wide undivided subdigital lamellae (finger four 23-25, toe four 22-26) that are not deeply notched or divided, rostral with near horizontal dorsal edge and not deeply notched, precloacal and femoral pores in a moderately long single continuous chevron of up to at least 40 pores, original tail without lateral serrations, rounded at the base, but slightly compressed and with a prominent medial row of enlarged subcaudals and a prominent ring of orange scales around the eye in life (Oliver *et al.* 2016).

**Distribution:** Fiji and adjacent islands, New Caledonia (Loyalty Islands: Dudun Island), Vanuatu (Malakula), French Polynesia (Tuamotu, Fakarava), Territory of Papua New Guinea (Manus Island, Los Negros Island, Mussau Island).

**Etymology:** In Latin *Edaxcolotes* means gluttonous or voracious gecko.

**Content:** *Edaxcolotes vorax* (Girard, 1858) (type species); *E. georgpottthasti* (Flecks, Schmitz, Böhme, Henkel and Ineich, 2012); *E. rohan* (Oliver, Clegg, Fisher, Richards, Taylor and Jocque, 2016).

**SUBGENUS EDAXCOLOTES SUBGEN. NOV.**

**Type species:** *Gehyra vorax* Girard, 1858.

**Diagnosis:** See as for the nominate genus above.

**Distribution:** Fiji and adjacent islands, New Caledonia (Loyalty Islands: Dudun Island), Vanuatu (Malakula), French Polynesia (Tuamotu, Fakarava).

**Content:** *Edaxcolotes (Edaxcolotes) vorax* (Girard, 1858) (type species); *E. (Edaxcolotes) georgpottthasti* (Flecks, Schmitz, Böhme, Henkel and Ineich, 2012).

**SUBGENUS MACROCEPHALACOLOTES SUBGEN. NOV.**

**Type species:** *Gehyra rohan* Oliver *et al.* 2016.

**Diagnosis:** *Edaxcolotes* gen. nov. is subdivided into two subgenera. The nominate subgenus includes both *E. vorax* and *E. georgpottthasti*, while the subgenus *Macrocephalacolotes* subgen. nov. includes the species *E. rohan*.

*Macrocephalacolotes* subgen. nov. is separated from all other *Edaxcolotes* gen. nov. (being in the subgenus *Edaxcolotes* subgen. nov.) and all other *Gehyra sensu lato* by the following unique suite of characters: very large adult size (adult SVL 130-150 mm), large head (HW/SVL 0.18-0.22, HD/SVL 0.11-0.14), prominent skinfolds on the anterior forelimbs and posterior hind limbs, weak lateral fold, heterogeneous dorsal scalation consisting of large rounded scales bordered by numerous much smaller rounded or triangular scales, massive digital discs with high number of wide undivided subdigital lamellae (finger four 23-25, toe four 22-26) that are not deeply notched or divided, rostral with near horizontal dorsal edge and not deeply notched, precloacal and femoral pores in a moderately long

single continuous chevron of up to at least 40 pores, original tail without lateral serrations, rounded at the base, but slightly compressed and with a prominent medial row of enlarged subcaudals and a prominent ring of orange scales around the eye in life (Oliver *et al.* 2016).

Geckos within the genus *Edaxcolotes* gen. nov., type species *Gehyra vorax* Girard, 1858, are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Undivided digital lamellae; 13 or 14 upper labials; digits webbed at the base; a strong fold of the skin bordering the fore limb anteriorly; 40 to 60 femoral pores; tail is round in structure at the base; dorsal colors are composed of black, shades of yellow, and any color in between, versus dull greys and shades of brown only (*E. vorax*, *E. georgpottthasti*, *E. rohan*).

**Distribution:** Territory of Papua New Guinea, specifically meaning Manus Island, Los Negros Island, Mussau Island.

**Etymology:** In Latin *Macrocephalacolotes* means large-headed gecko.

**Content:** *E. rohan* (Oliver, Clegg, Fisher, Richards, Taylor and Jocque, 2016).

**GENUS EXTENSUSDIGITUSCOLOTES GEN. NOV.**

**Type species:** *Gehyra membranacuralis* King and Horner, 1989.

**Diagnosis:** Geckos within the genus *Extensusedigituscolotes* gen. nov., type species *Gehyra membranacuralis* King and Horner, 1989, are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: A combination of undivided subdigital lamellae; adult snout-vent length of under 101 mm; no rudimentary webbing directly behind the knees and between the toes; no anterior and posterior skin folds on the forelimbs; a tail base that is round to ovoid in cross-section; no "U"-shaped rostral scale (*E. membranacuralis*, *E. sadlieri* sp. nov. (this paper), *E. glennsheai* sp. nov. (this paper)).

**Distribution:** Known only from the territory of Papua New Guinea, including on both sides of the main central cordillera and also one or more islands to the south-east, but within the legal territory of Papua New Guinea.

**Etymology:** In Latin *Extensusedigituscolotes* means enlarged toed gecko with reference to the enlarged section of the fourth digit of the toe.

**Content:** *Extensusedigituscolotes membranacuralis* (King and Horner, 1989); *E. sadlieri* sp. nov. (this paper); *E. glennsheai* sp. nov. (this paper).

**GENUS BREVICAUDACOLOTES GEN. NOV.**

**Type species:** *Hemidactylus baliolus* Duméril, 1851.

**Diagnosis:** Geckos within the genus *Brevicaudacolotes* gen. nov., type species *Hemidactylus baliolus* Duméril, 1851 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae are divided by a median groove; a fold of the skin borders the hind limb posteriorly; chin-shields are shorter; conical snout; cheeks not swollen; dorsal scales are larger, while those on the vertebral line are reduced in size; the rostral is horseshoe shaped; dorsally the colour is brown with lighter or reddish spots (*B. baliola*, *B. barea*).

**Distribution:** Southern New Guinea and Torres Strait Islands (*B. baliola* (Duméril, 1851)) and Banda Islands, Raja Ampat Archipelago, Salawati Island, Batanta Island (*B. barea* (Kopstein, 1926)).

**Etymology:** In Latin *Brevicaudacolotes* means short tailed gecko.

**Content:** *Brevicaudacolotes baliola* (Duméril, 1851) (type species); *B. barea* (Kopstein, 1926).

**GENUS PARVOMENTUMPARMACOLOTES GEN. NOV.**

**Type species:** *Hemidactylus (Peropus) brevipalmatus* Peters, 1874.

**Diagnosis:** Geckos within the genus *Parvomentumparmacolotes* gen. nov., type species *Hemidactylus (Peropus) brevipalmatus* Peters, 1874 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: 14-15 digital lamellae under the fourth toes divided by

a median groove; webbing between the digits; a fold of the skin bordering the hind limb posteriorly; chin-shields smaller; 10 upper and 9 lower labials; tail without a lateral keel; noticeable very small ventral scales (*P. brevipalmata*, *P. papuana*, *P. interstitialis*).

**Distribution:** Palau Island and Irian Jaya.

**Etymology:** In Latin *Parvomentumarmacolotes* means small chin shielded gecko.

**Content:** *Parvomentumarmacolotes brevipalmata* (Peters, 1874) (type species); *P. papuana* (Meyer, 1874); *P. interstitialis* (Oudemans, 1894).

#### GENUS PAPUACOLOTES GEN. NOV.

**Type species:** *Gehyra serraticauda* Skipworth and Oliver, 2014.

**Diagnosis:** Geckos within the genus *Papuacolotes gen. nov.*, type species *Gehyra serraticauda* Skipworth and Oliver, 2014 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: a unique continuous fringe of prominent acuminate lateral scales running the length of the tail, a feature shared with no other species in *Gehyra sensu lato*. The genus is also characterised as having a robust body of intermediate size, numerous internasals, partially divided digital scansors and the presence of well-developed popliteal folds further distinguish this taxon from similar species in the Papuan region (*P. serraticauda*).

**Distribution:** Known only from Indonesian West Papua (Irian Jaya).

**Etymology:** In Latin *Papuacolotes* means gecko from Papua, in reflection of the type locality and entire known distribution of the taxon.

**Content:** *Papuacolotes serraticauda* (Skipworth and Oliver, 2014).

#### GENUS QUATTUORUNGUISCOLOTES GEN. NOV.

**Type species:** *Peropus fehlmanni* Taylor, 1962.

**Diagnosis:** Geckos within the genus *Quattuorunguiscolotes gen. nov.*, type species *Peropus fehlmanni* Taylor, 1962 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: Digital lamellae divided by a median groove; hind limb is without a cutaneous fold; digits free or with a very slight rudiment of web; scales a good deal smaller on the median line of the back than on the sides; male has about 20-40 femoral pores; rostral pentagonal; four chin-shields, the median pair are large and elongated, being narrowest posteriorly; the tail is rounded at the base and slightly depressed and with a median row of large scutellae inferiorly. Dorsally the colour is greyish brown, minutely speckled with black or white, especially on the flanks; the belly is whitish, (*Q. fehlmanni*, *Q. griseri sp. nov.* (this paper), *Q. insulensis*).

**Distribution:** Thailand, Cambodia, Vietnam, Cook Islands, Tonga, Micronesia.

**Etymology:** In Latin *Quattuorunguiscolotes* means four-clawed gecko.

**Content:** *Quattuorunguiscolotes fehlmanni* (Taylor, 1962) (type species); *Q. griseri sp. nov.* (this paper); *Q. insulensis* (Girard, 1858).

#### GENUS COLOTESMACULOSADORSUM GEN. NOV.

**Type species:** *Peropus laceratus* Taylor, 1962.

**Diagnosis:** Geckos within the genus *Colotesmaculosadorsum gen. nov.*, type species *Peropus laceratus* Taylor, 1962 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: The subcaudal region has several series of small scales not transversely widened; 10 preanal pores on each side forming a continuous series, angular mesially, extending slightly on to the femora; dorsal surface and sides are grey. There are about 20 darker-grey spots on the head and scattered, larger grey spots on the back; belly is cream to whitish-yellow. The original tail is noticeably shorter than the body (*C. lacerata*).

**Distribution:** Thailand.

**Etymology:** In Latin *Colotesmaculosadorsum* means gecko with a spotted head, with reference to the spots usually seen on the head of the lizard.

**Content:** *Colotesmaculosadorsum lacerata* (Taylor, 1962) (monotypic).

#### GENUS THAIGEHYRA GEN. NOV.

**Type species:** *Peropus angusticaudatus* Taylor, 1963.

**Diagnosis:** Geckos within the genus *Thaigehyra gen. nov.*, type species *Peropus angusticaudatus* Taylor, 1963 are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: The tail is not significantly widened beyond the base behind the vent and is only slightly longer than the head and body, unflattened below and terminating in a very fine point; the scales on the dorsal surface are small, flat, cycloid and imbricating, with a slight lateral caudal fringe, not or scarcely denticulate, males have 15-18 femoral and preanal pores that are continuous and angular mesially; the dorsal colouration is almost uniformly grey with a slightly lighter head; the tail is a darker lavender colour; chin, throat and venter are yellowish-white (*T. angusticaudata*).

**Distribution:** South-east Thailand.

**Etymology:** The name in simple English means *Gehyra* from Thailand.

**Content:** *Thaigehyra angusticaudata* (Taylor, 1963) (monotypic).

#### GEHYRA HANGAYI SP. NOV.

**Holotype:** A preserved specimen at the Australian Museum in Sydney, NSW, Australia, specimen number: R.132307 collected from Sideia Mission, Sideia Island, Milne Bay District, Papua New Guinea,

Latitude 10.32 S., Longitude 150.4° E.

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

**Diagnosis:** *Gehyra hangayi sp. nov.* is similar in most respects to *G. oceanica* (Lesson, 1830), which it would otherwise key out as, from which it is most readily differentiated by colouration, in that the tiny white spots on the nominate form of *G. oceanica* are not as prominent in *Gehyra hangayi sp. nov.* in that they are either faded or absent.

Furthermore the iris in *G. oceanica* is brownish at the front and orangeish at the back, versus generally orangeish yellow (all over) in *G. hangayi sp. nov.*

**Distribution:** Known only from the small islands immediately adjacent to the mainland of the south-east tip of Papua New Guinea as well as the immediately adjacent mainland at the south-east tip of Papua New Guinea.

**Conservation status:** No immediate threats are known to this taxon, but the relevant statements in Hoser (1991) apply.

**Etymology:** Named in honour of George (György) Hangay, of Frenchs Forest, NSW, Australia, formerly of the Australian Museum in Sydney in recognition of his monumental contribution towards the scientific research of beetles and other wildlife.

#### PHRYIA PAULHORNRI SP. NOV.

**Holotype:** A preserved specimen at the Northern Territory Museum, Darwin, Northern Territory, Australia, specimen number: R07378, collected from Castle Rock, Yingarrakarjijamurumanja, Groote Eylandt, Northern Territory, Australia, Latitude -14.12 S., Longitude 136.47 E.

The the Northern Territory Museum, Darwin, Northern Territory, Australia is a government-owned facility that allows access to its holdings.

**Paratypes:** 1/ A preserved specimen at the Northern Territory Museum, Darwin, Northern Territory, Australia, specimen number: R07484, collected from Ngurrwadarrinumanja, Groote Eylandt, Northern Territory, Australia, Latitude -13.98 S., Longitude 136.63 E.

2/ A preserved specimen at the Northern Territory Museum, Darwin, Northern Territory, Australia, specimen number: R07540, collected from Ayakamindadina, Groote Eylandt, Northern Territory, Australia, Latitude -13.97 S., Longitude 136.68 E.

**Diagnosis:** Until now this taxon had been treated as either "*Gehyra australis*" or more recently "*Gehyra pamela*" or "*Gehyra borrooloola*" by most herpetologists who sought to identify the species when caught. It is in fact most closely related to "*Gehyra*

*australis*", herein placed in the genus *Phryia* Gray, 1842 and would otherwise key out to that species if using the relevant key on pages 354-355 of Cogger (2014).

*Phryia paulhorneri* sp. nov. is separated from *P. australis* (Gray, 1845), by a yellowish-brown iris as opposed to orangeish yellow in *P. australis*. *Phryia paulhorneri* sp. nov. has faint thin dark cross-bands on the upper surface of the (original) tail, versus thin white ones in *P. australis*.

**Distribution:** Known only from Groote Eylandt, in the Northern Territory, Australia, where it is common throughout, especially in rocky situations.

**Conservation status:** No immediate threats are known to this taxon, but the relevant statements in Hoser (1991) apply.

**Etymology:** Named in honour of Paul Horner, of Darwin in the Northern Territory who has spent many years working on Australian reptiles including in particular skinks of the genus *Cryptoblepharus* Wiegmann, 1834.

#### **DACTYLOPERUS BRADMARYANI SP. NOV.**

**Holotype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R125082, collected 15 km east of Newman in Western Australia, Australia, Latitude -23.37 S., Longitude 119.90 E.

The Western Australian Museum, Perth, Western Australia, Australia is a government-owned facility that allows access to its holdings.

**Paratype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R165733, collected in the Mount Newman area of Western Australia, Australia, Latitude -23.31 S., Longitude 119.83 E.

**Diagnosis:** *Dactyloperus bradmaryani* sp. nov. would key out as "*Gehyra pilbara*" using the relevant key in Cogger (2014) on pages 354 and 355. However *D. bradmaryani* sp. nov. is readily separated from *D. pilbara* (Mitchell, 1965), by colouration and markings.

*D. pilbara* has a reasonably well defined dorsal pattern including dark spots and semi-broken cross-bands, formed by dense peppered (darker) pigment across the dorsum of the body. By contrast in *Dactyloperus bradmaryani* sp. nov. the spotting is either so reduced as to not indicate any cross-bands or if they are present, they are faded, indistinct and do not extend down the flanks.

The darker spots or blotches on the dorsum are however readily discernible.

Specimens from south of the Fortescue River, in the Pilbara region, Western Australia, previously referred to as "*Gehyra pilbara*", should now be referred to *Dactyloperus bradmaryani* sp. nov..

*D. pilbara*, is herein confined to the region generally north of the Fortescue River in the Pilbara of Western Australia.

The subspecies *Dactyloperus bradmaryani bulliardi* subsp. nov. from the Cape Range and immediately south of there on the West Australian coast, is readily separated from both *D. pilbara* and nominate *D. bradmaryani* sp. nov. by colouration and pattern.

In *D. bradmaryani bulliardi* subsp. nov. black spots or crossbands of any sort are effectively absent from the dorsum of the lizard.

The colour is a dark brick red and the only black colouration on the dorsum is limited amounts of peppering, but no obvious spots, blotches or stripes of any form.

Further separating *D. bradmaryani bulliardi* subsp. nov. from *D. pilbara* and the nominate *D. bradmaryani* sp. nov. subspecies are the distinctive labial bars not seen on the other two taxa. For both *D. pilbara* and the nominate *D. bradmaryani* sp. nov. subspecies labial markings are indistinct.

*D. bradmaryani bulliardi* subsp. nov. has a dark brown iris as opposed to bright orange to red in both *D. pilbara* and the nominate *D. bradmaryani* sp. nov. subspecies.

**Comments:** "*Gehyra cognata* Borner and Schuttler, 1982", is not an available name for the newly named taxon as it either refers to another taxon or alternatively and more likely is a synonym of *D. pilbara* or *D. punctata*.

"*Gehyra fenestra* Mitchell, 1965" is also an apparent synonym of *D. punctata* (Fry, 1914).

In any event, both *D. cognata* and *D. fenestra* holotypes as well as that for *D. pilbara* (Mitchell, 1965) and *D. punctata* all come from outside the known distribution range of *D. bradmaryani* sp. nov., in that all four come from north of Fortescue River drainage, which is the relevant biogeographical barrier for these species and the newly named one and where their ranges intersect and terminate.

**Distribution:** *D. bradmaryani* sp. nov. is found in the Pilbara region, south or east of the Fortescue River system. *D. pilbara* (Mitchell, 1965) occurs generally north of this dividing line in suitable rocky habitats and ranges.

*D. bradmaryani bulliardi* subsp. nov. is confined to the Cape Range area of Western Australia, including areas immediately south near the coast.

**Conservation status:** No immediate threats are known to this taxon, but the relevant statements in Hoser (1991) apply.

**Etymology:** Named in honour of Brad Maryan of the Western Australian Museum in Perth, Western Australia in recognition of services to herpetology (even though he sometimes keeps bad company).

#### **DACTYLOPERUS BRADMARYANI BULLIARDI SUBSP. NOV.**

**Holotype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R130445, collected at Cape Range, National Park in Western Australia, Australia, Latitude -22.10 S., Longitude 114.00 E.

The Western Australian Museum, Perth, Western Australia, Australia is a government-owned facility that allows access to its holdings.

**Paratype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R123947, collected at Cape Range, National Park, 10 km south of Exmouth in Western Australia, Australia, Latitude -22.00 S., Longitude 114.01 E.

**Diagnosis:** *Dactyloperus bradmaryani* sp. nov. would key out as "*Gehyra pilbara*" using the relevant key in Cogger (2014) on pages 354 and 355. However *D. bradmaryani* sp. nov. is readily separated from *D. pilbara* (Mitchell, 1965), by colouration and markings.

*D. pilbara* has a reasonably well defined dorsal pattern including dark spots and semi-broken cross-bands, formed by dense peppered (darker) pigment across the dorsum of the body. By contrast in *Dactyloperus bradmaryani* sp. nov. the spotting is either so reduced as to not indicate any cross-bands or if they are present, they are faded, indistinct and do not extend down the flanks.

The darker spots or blotches on the dorsum are however readily discernible.

Specimens from south of the Fortescue River, in the Pilbara region, Western Australia, previously referred to as "*Gehyra pilbara*", should now be referred to *Dactyloperus bradmaryani* sp. nov..

*D. pilbara*, is herein confined to the region generally north of the Fortescue River in the Pilbara of Western Australia.

The subspecies *Dactyloperus bradmaryani bulliardi* subsp. nov. from the Cape Range and immediately south of there on the West Australian coast, is readily separated from both *D. pilbara* and nominate *D. bradmaryani* sp. nov. by colouration and pattern.

In *D. bradmaryani bulliardi* subsp. nov. black spots or crossbands of any sort are effectively absent from the dorsum of the lizard. The colour is a dark brick red and the only black colouration on the dorsum is limited amounts of peppering, but no obvious spots, blotches or stripes of any form. The appearance of the lizard is simply a red colour.

Further separating *D. bradmaryani bulliardi* subsp. nov. from *D. pilbara* and the nominate *D. bradmaryani* sp. nov. subspecies are the distinctive labial bars not seen on the other two taxa. For both *D. pilbara* and the nominate *D. bradmaryani* sp. nov. subspecies labial markings are indistinct.

*D. bradmaryani bulliardii* subsp. nov. has a dark brown iris as opposed to bright orange to red in both *D. pilbara* and the nominate *D. bradmaryani* sp. nov. subspecies.

**Distribution:** *D. bradmaryani bulliardii* subsp. nov. is confined to the Cape Range area of Western Australia, including areas immediately south near the coast.

*D. bradmaryani* sp. nov. is found in the Pilbara region, south or east of the Fortescue River system. *D. pilbara* (Mitchell, 1965) occurs generally north of this dividing line in suitable rocky habitats and ranges.

**Conservation status:** No immediate threats are known to this taxon, but the relevant statements in Hoser (1991) apply.

**Etymology:** Named in honour of Kaj-erik Bulliard of Perth, Western Australia in recognition of services to herpetology (even though like Brad Maryan (see above), he sometimes keeps bad company).

#### **EXTENSUSDIGITUSCOLOTES SADLIERI SP. NOV.**

**Holotype:** A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number: R.135529, collected from between Sibilanga Mission and Asier Village, in Papua New Guinea, Latitude -3.45 S., Longitude 142.50 E.. The Australian Museum in Sydney, New South Wales, Australia allows access to its holdings.

**Diagnosis:** *Extensusedigituscolotes sadlieri* sp. nov. is similar in most respects to *E. membranacuralis* King and Horner, 1989, but is readily separated from *E. membranacuralis* by its darker greyish brown colouration as opposed to reddish or yellowish brown dorsal colouration in adults in *E. membranacuralis*.

*E. glennsheai* sp. nov. formally described below is separated from both preceding species by having a greenish-grey base colouration and a yellowish-green eye in life.

*Extensusedigituscolotes sadlieri* sp. nov. is also defined by a lack of an obvious contour around the eye.

All three species within the genus *Extensusedigituscolotes* gen. nov., namely the type species *Gehyra membranacuralis* King and Horner, 1989, *E. sadlieri* sp. nov. and *E. glennsheai* sp. nov., are readily separated from all other species formerly included within *Gehyra sensu lato* by the following suite of characters: A combination of undivided subdigital lamellae; adult snout-vent length of under 101 mm; no rudimentary webbing directly behind the knees and between the toes; no anterior and posterior skin folds on the forelimbs; a tail base that is round to ovoid in cross-section and no "U"-shaped rostral scale.

**Distribution:** *Extensusedigituscolotes sadlieri* sp. nov. is found north of the main Cordillera in Papua New Guinea, west of the Huon Peninsula. *E. membranacuralis* is found generally south of the main Cordillera and potentially as far west in the north at the Huon Peninsula.

*E. glennsheai* sp. nov. is so far as is known, restricted to Sudest Island, PNG.

**Conservation status:** In common with most reptile species in south-east Asian and Pacific realm, the various effects of human overpopulation in the region may pose a real existential threat to this taxon, including so-called invisible threats such as pathogens, potential competing species introduced to the area this species inhabits and so on.

**Etymology:** Named in honour of Ross Sadlier, formerly collections manager at the Australian Museum in Sydney, NSW, Australia, in recognition of his services to herpetology spanning some decades.

#### **EXTENSUSDIGITUSCOLOTES GLENNSHEAI SP. NOV.**

**Holotype:** A preserved specimen at the Bernice P. Bishop Museum, Honolulu, Hawaii, USA, specimen number: BPBM 19756, collected from Sofuwo Mission, Sudest Island, Papua New Guinea, Latitude -11.32 S., Longitude 153.23 E. The Bernice P. Bishop Museum, Honolulu, Hawaii, USA, allows access to its holdings.

**Paratype:** A preserved specimen at the Bernice P. Bishop Museum, Honolulu, Hawaii, USA, specimen number: BPBM 19772, collected from near Araeda, Sudest Island, Papua New Guinea, Latitude -11.43 S., Longitude 153.42 E.

**Diagnosis:** *Extensusedigituscolotes glennsheai* sp. nov. has until

now been erroneously referred to "*Gehyra vorax*" or "*Gehyra mutilata*", by collectors of specimens.

However this newly described taxon is neither and in fact should be referred to the genus *Extensusedigituscolotes* as described within this paper.

*Extensusedigituscolotes glennsheai* sp. nov. is most readily separated from both *E. membranacuralis* and *E. sadlieri* sp. nov. by its adult dorsal colouration, this being essentially a greenish-grey base colouration including a yellowish-green eye in life, versus reddish or yellowish brown dorsal colouration in adults of *E. membranacuralis* or greyish brown in adults of *Extensusedigituscolotes sadlieri* sp. nov..

**Distribution:** *E. glennsheai* sp. nov. is so far as is known, restricted to Sudest Island, PNG.

*Extensusedigituscolotes sadlieri* sp. nov. is found north of the main Cordillera in Papua New Guinea, west of the Huon Peninsula. *E. membranacuralis* is found generally south of the main Cordillera and potentially as far west in the north at the Huon Peninsula.

**Conservation status:** In common with most reptile species in south-east Asian and Pacific realm, the various effects of human overpopulation in the region may pose a real existential threat to this taxon, including so-called invisible threats such as pathogens, potential competing species introduced to the area this species lives and the like.

**Etymology:** Named in honour of Glenn Shea of Sydney, NSW, Australia in recognition of his significant contributions to herpetology spanning some decades.

#### **CROCODILIVOLTUSCOLOTES SHIREENHOSERAE SP. NOV.**

**Holotype:** A preserved female specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R167808, collected at Surveyor's Pool, (Mitchell Plateau), Western Australia, Australia, Latitude -14.67 S., Longitude 125.73 E.

The Western Australian Museum, Perth, Western Australia, Australia is a government-owned facility that allows access to its holdings.

**Paratype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R167807, collected at Surveyor's Pool, (Mitchell Plateau), Western Australia, Australia, Latitude -14.67 S., Longitude 125.73 E.

**Diagnosis:** *Crocodylivotuscolotes shireenhoserae* sp. nov. is readily separated from the other two species in the genus, *C. xenopus* (Storr, 1978) and *C. marleneswileae* sp. nov. by colouration.

*C. shireenhoserae* sp. nov. has a distinctive purplish yellow to purplish white colouration on the dorsal surface, versus brownish in *C. xenopus* and purplish yellow-brown in *C. marleneswileae* sp. nov..

Original tails of *C. xenopus* lack peppering on the yellow cross-bands on the anterior half, whereas the anterior yellow bands on the tails in *C. shireenhoserae* sp. nov. are faded and indistinct, while the same bands in *C. marleneswileae* sp. nov. while being fairly distinct and obvious differ in that they are irregular in shape and also have significant peppering.

White spotting at the back of each eye is indistinct in *C. xenopus* and *C. shireenhoserae* sp. nov. but are large, bright and prominent in *C. marleneswileae* sp. nov.. The shape of the somewhat faded large light grey to yellow-brown spots on the top of the back are distinct and well defined in both *C. xenopus* and *C. shireenhoserae* sp. nov., whereas the edges are faded and indistinct in *C. marleneswileae* sp. nov..

There are well-defined but faded large pale spots running along the sides of the mid flanks in *C. xenopus*. These are faded in *C. shireenhoserae* sp. nov. and absent in *C. marleneswileae* sp. nov.. *C. xenopus* has a dark orangeish red iris, versus light orangeish yellow in *C. shireenhoserae* sp. nov. and light orange in *C. marleneswileae* sp. nov..

*C. xenopus* has distinctive tiny white spots on the back of the head. In *C. shireenhoserae* sp. nov. any such spots, if present are very

scattered, faded and generally indistinct, or otherwise absent. In *C. marleneswileae* sp. nov. the back of the head is characterised by large areas of white on the darker background, but not forming any particular shape or spots.

*C. xenopus* has indistinct black spots or marks between the eye and the ear on each side. These are absent in both *C. shireenhoserae* sp. nov. and *C. marleneswileae* sp. nov..

The morphologically similar species *Dactyloperus* (*Wedgedigitcolotes*) *spheniscus* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012) is readily separated from all three *Crocodylioltuscolotes* gen. nov. species by having a distinctive dorsal pattern comprising transverse rows of dark and light spots or lines on a dull reddish-brown background.

**Distribution:** *Crocodylioltuscolotes shireenhoserae* sp. nov. is known only from the Mitchell Plateau area in the Kimberley division of Western Australia, Australia. *C. xenopus* (Storr, 1978) is found to the north-east of here near the King Edward River in the north Kimberley. *C. marleneswileae* sp. nov. is found further south in the area of the Prince Regent River Nature Reserve in the south-west Kimberley.

**Conservation status:** No immediate threats are known to this taxon, but the relevant statements in Hoser (1991) apply.

**Etymology:** Named in honour of my magnificent wife Shireen Hoser in recognition of her many contributions to wildlife conservation spanning some decades.

**CROCODYLIOLTUSCOLOTES MARLENESWILEAE SP. NOV.**

**Holotype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R168051, collected at the Prince Regent River Nature Reserve, Western Australia, Australia, Latitude -15.75 S., Longitude 125.37 E.

The Western Australian Museum, Perth, Western Australia, Australia is a government-owned facility that allows access to its holdings.

**Holotype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R168052, collected at the Prince Regent River Nature Reserve, Western Australia, Australia, Latitude -15.75 S., Longitude 125.37 E.

**Diagnosis:** *Crocodylioltuscolotes marleneswileae* sp. nov. is readily separated from the other two species in the genus, *C. xenopus* (Storr, 1978) and *C. marleneswileae* sp. nov. by colouration.

*C. shireenhoserae* sp. nov. has a distinctive purplish yellow to purplish white colouration on the dorsal surface, versus brownish in *C. xenopus* and purplish yellow-brown in *C. marleneswileae* sp. nov..

Original tails of *C. xenopus* lack peppering on the yellow cross-bands on the anterior half, whereas the anterior yellow bands on the tails in *C. shireenhoserae* sp. nov. are faded and indistinct, while the same bands in *C. marleneswileae* sp. nov. while being fairly distinct and obvious differ in that they are irregular in shape and also have significant peppering.

White spotting at the back of each eye is indistinct in *C. xenopus* and *C. shireenhoserae* sp. nov. but are large bright and prominent in *C. marleneswileae* sp. nov.. The shape of the somewhat faded large light grey to yellow-brown spots on the upper surface of the back is distinct and well defined in both *C. xenopus* and *C. shireenhoserae* sp. nov., whereas the edges are faded and indistinct in *C. marleneswileae* sp. nov..

There are well-defined but faded large pale spots running along the sides of the mid flanks in *C. xenopus*. These are faded in *C. shireenhoserae* sp. nov. and absent in *C. marleneswileae* sp. nov..

*C. xenopus* has a dark orangeish red iris, versus light orangeish yellow in *C. shireenhoserae* sp. nov. and light orange in *C. marleneswileae* sp. nov..

*C. xenopus* has distinctive tiny white spots on the back of the head. In *C. shireenhoserae* sp. nov. any such spots, if present are very scattered, faded and generally indistinct, or otherwise absent. In *C. marleneswileae* sp. nov. the back of the head is characterised by

large areas of white on the darker background, but not forming any particular shape or spots.

*C. xenopus* has indistinct black spots or marks between the eye and the ear on each side. These are absent in both *C. shireenhoserae* sp. nov. and *C. marleneswileae* sp. nov..

The morphologically similar species *Dactyloperus* (*Wedgedigitcolotes*) *spheniscus* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012) is readily separated from all three *Crocodylioltuscolotes* gen. nov. species by having a distinctive dorsal pattern comprising transverse rows of dark and light spots or lines on a dull reddish-brown background.

**Distribution:** *Crocodylioltuscolotes marleneswileae* sp. nov. is found in the area of the Prince Regent River Nature Reserve in the south-west Kimberley. *C. shireenhoserae* sp. nov. is known only from the Mitchell Plateau area in the west Kimberley division of Western Australia, Australia. *C. xenopus* (Storr, 1978) is found to the north-east of here near the King Edward River in the north Kimberley.

**Conservation status:** No immediate threats are known to this taxon, but the relevant statements in Hoser (1991) apply.

**Etymology:** Named in honour of the mother of my magnificent wife Shireen Hoser, Marlene Swile, in recognition of her contributions to wildlife conservation and scientific research in untamed parts of southern Africa.

**DACTYLOPERUS (WEDGEDIGITCOLOTES) SPHENISCUS GRAEMECAMPBELLI SUBSP. NOV.**

**Holotype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R167810, collected at Surveyor's Pool, Mitchell Plateau, West Kimberley, Western Australia, Australia, Latitude -14.67 S., Longitude 125.73 E.

The Western Australian Museum, Perth, Western Australia, Australia is a government-owned facility that allows access to its holdings.

**Paratypes:** 1/ A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R138898, collected 4.1 km south of Donkins Hill, West Kimberley, Western Australia, Australia, Latitude -14.99 S., Longitude 125.51 E.

2/ A preserved juvenile specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R168715, collected at Katers Island, West Kimberley, Western Australia, Australia, Latitude -14.47 S., Longitude 125.53 E.

**Diagnosis:** *Dactyloperus* (*Wedgedigitcolotes*) *spheniscus graemecampbelli* subsp. nov. is readily separated from *D. spheniscus spheniscus* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012) by having a light orange iris versus yellow to yellowish orange in *D. spheniscus spheniscus*.

While both taxa have numerous white specks on the upper surfaces of the body, these are significantly more numerous and prominent in *D. spheniscus spheniscus*.

*D. spheniscus graemecampbelli* subsp. nov. and *D. spheniscus spheniscus* are both characterised by semi-distinct darker spots and markings tending towards indistinct crossbands on the body. In *D. spheniscus graemecampbelli* subsp. nov. this usually numbers six, versus 7-8 in *D. spheniscus spheniscus*.

*D. spheniscus graemecampbelli* subsp. nov. is characterised by the presence of well-defined dark brown spots on the side and back of the head, including immediately behind the eye, these tending to coalesce to form larger spots or broken bar-like markings. These same markings are either indistinct, significantly reduced or absent in *D. spheniscus spheniscus*.

**Distribution:** *Dactyloperus* (*Wedgedigitcolotes*) *spheniscus graemecampbelli* subsp. nov. is restricted to the Mitchell Plateau and immediately surrounding parts of the Kimberley Ranges in Western Australia, Australia. In the region of the Prince Regent National Park, the nominate form of *D. spheniscus spheniscus* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012) occurs.

**Conservation status:** No immediate threats are known to this

taxon, but the relevant statements in Hoser (1991) apply.

**Etmology:** Named in honour of former Australian politician Graeme Campbell, of Western Australia, and member of the House of Representatives from 1980-1998 in recognition of his services to Australia in numerous fields including wildlife conservation, human rights, combating corruption at various levels of government and his skills with economic management.

**DACTYLOPERUS (MACULOCOLOTES)  
FEDERICOROSSIGNOLII SP. NOV.**

**Holotype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R146018, collected at the Kimbolton Homestead, Western Australia, Australia, Latitude -16.68 S., Longitude 123.83 E. The Western Australian Museum, Perth, Western Australia, Australia is a government-owned facility that allows access to its holdings.

**Paratype:** A preserved specimen in the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R172076, collected on the north-west of Molema Island, Western Australia, Australia, Latitude -16.25 S., Longitude 123.82 E.

**Diagnosis:** *Dactyloperus federicorossignolii* sp. nov. has until now been treated as a population of *D. occidentalis* (King, 1984), as described in Doughty *et al.* (2012) and would key out as this species using the relevant key in Cogger (2014) at pages 354 to 355. However it is readily separated from that allopatric taxon by dorsal colour that is without a reddish hue and has limited indistinct white spots, which are effectively absent in *D. occidentalis*. The iris of *D. federicorossignolii* sp. nov. is yellowish, versus orangeish yellow in *D. occidentalis*.

*D. federicorossignolii* sp. nov. has less than 40 preloacal and femoral pores in adult males, which readily separates it from the morphologically similar species *D. multiprosa* (Doughty *et al.* 2012).

**Distribution:** *Dactyloperus federicorossignolii* sp. nov. is known only from the Yampi Peninsula area of Western Australia.

**Conservation status:** No immediate threats are known to this taxon, but the relevant statements in Hoser (1991) apply.

**Etmology:** Named in honour of Federico Rossignoli (better known as "Fred Rossignoli") of Hurstbridge, Victoria, Australia, formerly of North Ringwood, Victoria, in recognition of his services to herpetology and wildlife conservation spanning some decades.

**QUATTUORUNGUISCOLOTES GRISMERI SP. NOV.**

**Holotype:** A preserved sub-adult female specimen at the Department of Biology, La Sierra University, (USA) Herpetology Collection, specimen number: 7376, collected in the North-eastern Cardamoms in Cambodia. This specimen is also shown in life in Grismer *et al.* (2007) at page 736 at Fig. 25.

**Paratypes:** Two other preserved specimens collected from the same general location as the holotype also held at the Department of Biology, La Sierra University, Herpetology Collection, specimen numbers: 7379 and 7392.

**Diagnosis:** *Quattuorunguiscolotes grismeri* sp. nov. is clearly related to *Q. fehlmanni* (Taylor, 1962), which it would ordinarily key out to and was by Grismer *et al.* (2007) as outlined by those authors in their paper.

However *Q. grismeri* sp. nov. is readily separated from *Q. fehlmanni* by the following suite of characters: the scales on the snout are granular as opposed to being subimbricate in *Q. fehlmanni*; the subcaudal scales at the base of the tail are not enlarged; the femoropreanal pore series extends nearly the entire length of the femurs, as opposed to just one-half their lengths and is composed of 37, rather than 22 pores; the seventh, eighth, or ninth supralabial is below the pupil, as opposed to only the seventh; and the fifth, sixth, or seventh infralabial is below the pupil as opposed to only the seventh; and the presence of smaller but distinctive yellowish-white spots on the flanks behind and around the larger darker brown spots, the light spots being more numerous than the larger dark ones (adapted from Grismer *et al.* 2007).

**Distribution:** *Q. grismeri* sp. nov. is known only from the type series collected at the north-east Cardamom Mountains in Cambodia and is presumed to be restricted to this region.

*Q. fehlmanni* is believed to be confined to the hilly area near the type locality on the west side of Bangkok, Thailand.

**Conservation status:** In common with most reptile species in south-east Asia, the various effects of human overpopulation in the region may pose a real existential threat to this taxon, including so-called invisible threats such as pathogens, potential competing species introduced to the area and the like.

**Etmology:** Named in honour of Larry Lee Grismer of La Sierra University, USA in recognition of his significant contributions to herpetology over many decades.

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**CONFLICT OF INTEREST**

There are no conflicts of interest in terms of this paper.

## GENUS AND SPECIES LIST (*GEHYRA SENSU LATO*)

### Genus *Gehyra* Gray, 1834

#### Subgenus *Gehyra* Gray, 1834

*Gehyra* (*Gehyra*) *oceanica* (Lesson, 1830) (Type species)

*Gehyra* (*Gehyra*) *hangayi* sp. nov.

#### Subgenus *Halmaherasaurus* gen. nov.

*Gehyra* (*Halmaherasaurus*) *marginata* Boulenger, 1887

#### *Dactyloperus* Fitzinger, 1843

##### Subgenus *Dactyloperus* Fitzinger, 1843

*Dactyloperus* (*Dactyloperus*) *variegata* (Duméril and Bibron, 1836) (Type species)

*Dactyloperus* (*Dactyloperus*) *bradmaryani* sp. nov.

*Dactyloperus* (*Dactyloperus*) *minuta* (King, 1982)

*Dactyloperus* (*Dactyloperus*) *montium* (Storr, 1982)

*Dactyloperus* (*Dactyloperus*) *moritzi* (Hutchinson, Siström, Donnellan and Hutchinson, 2014)

*Dactyloperus* (*Dactyloperus*) *pilbara* (Mitchell, 1965)

*Dactyloperus* (*Dactyloperus*) *pulingka* (Hutchinson, Siström, Donnellan and Hutchinson, 2014)

*Dactyloperus* (*Dactyloperus*) *punctata* (Fry, 1914)

*Dactyloperus* (*Dactyloperus*) *versicolor* (Hutchinson, Siström, Donnellan and Hutchinson, 2014)

##### Subgenus *Purpuracolotes* subgen. nov.

*Dactyloperus* (*Purpuracolotes*) *purpurascens* (Storr, 1982)

*Dactyloperus* (*Purpuracolotes*) *einisleighensis* (Bourke, Pratt, Vanderduys and Moritz, 2017)

##### Subgenus *Maculocolotes* subgen. nov.

*Dactyloperus* (*Maculocolotes*) *nana* (Storr, 1978)

*Dactyloperus* (*Maculocolotes*) *girloorloo* (Oliver, Bourke, Pratt, Doughty and Moritz, 2016)

*Dactyloperus* (*Maculocolotes*) *kimberleyi* (Börner and Schüttler, 1982)

*Dactyloperus* (*Maculocolotes*) *multiporosa* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012)

*Dactyloperus* (*Maculocolotes*) *occidentalis* (King, 1984)

*Dactyloperus* (*Maculocolotes*) *federicrossignolii* sp. nov.

##### Subgenus *Wedgedigitcolotes* subgen. nov.

*Dactyloperus* (*Wedgedigitcolotes*) *spheniscus* (Doughty, Palmer, Siström, Bauer and Donnellan, 2012)

##### Subgenus *Saxacolinecolotes* subgen. nov.

*Dactyloperus* (*Saxacolinecolotes*) *lazelli* Wells and Wellington, 1985

### Genus *Phryia* Gray, 1842

*Phryia australis* (Gray, 1845) (type species)

*Phryia borroloola* (King, 1984)

*Phryia koira* (Horner, 2005)

*Phryia pamela* (King, 1982)

*Phryia paulhorneri* sp. nov.

*Phryia robusta* (King, 1984)

### Genus *Peropus* Wiegmann, 1835

*Peropus mutilata* (Wiegmann, 1834) (type species)

*Peropus leopoldi* (Brongersma, 1930)

### Genus *Propemaculosacolotes* gen. nov.

*Propemaculosacolotes dubia* (Macleay, 1877)

*Propemaculosacolotes catenata* (Low, 1979)

### Genus *Crocodylivotuscolotes* gen. nov.

*Crocodylivotuscolotes xenopus* (Storr, 1978)

*Crocodylivotuscolotes shireenhoserae* sp. nov.

*Crocodylivotuscolotes marleneswileae* sp. nov.

### Genus *Edaxcolotes* gen. nov.

#### Subgenus *Edaxcolotes* subgen. nov.

*Edaxcolotes* (*Edaxcolotes*) *vorax* (Girard, 1858)

*Edaxcolotes* (*Edaxcolotes*) *georgpottthasti* (Flecks, Schmitz, Böhme, Henkel and Ineich, 2012)

#### Subgenus *Macrocephalacolotes* subgen. nov.

*Edaxcolotes* (*Macrocephalacolotes*) *rohan* (Oliver, Clegg, Fisher, Richards, Taylor and Jocque, 2016)

### Genus *Extensudigituscolotes* gen. nov.

*Extensudigituscolotes membranacruralis* (King and Horner, 1989)

*Extensudigituscolotes sadlieri* sp. nov.

*Extensudigituscolotes glennsheai* sp. nov.

### Genus *Brevicaudacolotes* gen. nov.

*Brevicaudacolotes baliola* (Duméril, 1851)

*Brevicaudacolotes barea* (Kopstein, 1926)

### Genus *Parvomentumparmacolotes* gen. nov.

*Parvomentumparmacolotes brevipalmata* (Peters, 1874)

*Parvomentumparmacolotes papuana* (Meyer, 1874)

*Parvomentumparmacolotes interstitialis* (Oudemans, 1894)

### Genus *Papuacolotes* gen. nov.

*Papuacolotes serraticauda* (Skipworth and Oliver, 2014) (New Guinea)

### Genus *Quattuorunguiscolotes* gen. nov.

*Quattuorunguiscolotes fehlmanni* (Taylor, 1962)

*Quattuorunguiscolotes grimeri* sp. nov.

*Quattuorunguiscolotes insulensis* (Girard, 1858)

### Genus *Colotesmaculosadorsum* gen. nov.

*Colotesmaculosadorsum lacerata* (Taylor, 1962)

### Genus *Thaigehyra* gen. nov.

*Thaigehyra angusticaudata* (Taylor, 1963)