

Asiatic Waterside Skinks, *Tropidophorus* Duméril and Bibron, 1839. A long overdue break up of the archaic genus *sensu-lato*, resulting in a total of eight genera, three resurrected from synonymy, four named for the first time and the additional descriptions of three new species.

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ABSTRACT

Asiatic Waterside Skinks, *Tropidophorus* Duméril and Bibron, 1839 as recognized by herpetologists in year 2019 are a broadly monophyletic group, but including several divergent lineages of deep antiquity. As numerous molecular studies have confirmed these relevant groups all diverged at least 10-15 MYA or similar (e.g. Honda *et al.* 2006, Pui *et al.* 2017, Pyron *et al.* 2013), it is appropriate that all be recognized as separate genera.

To that effect, this paper does just that. In assigning formal names to each divergent group of species, three names are resurrected from synonymy and four new genera are created in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Another divergent lineage is also formally named as a subgenus.

Three divergent species within the assemblage are also formally named for the first time.

Keywords: Taxonomy; reptilia; squamata; nomenclature; Lizards; Asia; Skink; *Tropidophorus*; *Norbea*; *Aspris*; *Enoplosaurus*; *Amphixestus*; new genus: *Greersaurus*; *Barnettsaurus*; *Kerryleewennigea*; *Coggersaurus*; new subgenus; *Paragreerscincus*; new species; *joeymontebelloi*; *peterkraussi*; *russellgranti*.

INTRODUCTION

Asiatic Waterside Skinks, *Tropidophorus* Duméril and Bibron, 1839 are a well-known group of lizards found mainly in south-east Asia.

As recognized by herpetologists in year 2019 they are a broadly monophyletic group.

However, within this assemblage are several divergent lineages of deep antiquity.

As numerous molecular studies have confirmed these relevant groups all diverged at least 10-15 MYA or similar (e.g. Honda *et al.* 2006, Pui *et al.* 2017, Pyron *et al.* 2013), it is appropriate that all be recognized as separate genera.

To that effect, this paper does just that. In assigning formal names to each divergent group of species, three names are resurrected from synonymy and four new genera are created in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Another divergent lineage is also formally named as a subgenus.

Three divergent species within the assemblage are also formally named for the first time.

MATERIALS, METHODS AND RESULTS

These are inferred in both the abstract and introduction, but as a matter of trite I spell them out in a little more explicit detail.

The available literature was examined relevant to the genus *Tropidophorus* Duméril and Bibron, 1839 and other phylogenetically close taxa.

Additional to this has been inspection of specimens as required and possible in order to ascertain the classification of the genera or species within the genera, both as defined or including unnamed taxa when they are evident.

Available information in the form of photos of specimens with good available locality data and other information was also utilized in this study.

I also note that, notwithstanding the theft of relevant materials from this author in an illegal armed raid on 17 August 2011, which were not returned in breach of undertakings to the court (Court of Appeal Victoria 2014 and VCAT 2015), I have made a decision to publish this paper, even though it would be clearly improved if I took some further years to get further data,

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

This comment is made noting the extensive increase in human population in the relevant region and the general environmental destruction across the planet as documented by Hoser (1991), including low density areas without a large permanent human population.

I also note the abysmal environmental record of various National, State and Local governments in the relevant region over the past 200 years as detailed by Hoser (1989, 1991, 1993, 1996 and 2010) in the face of ongoing threats as diverse as introduced species, habitat destruction and modification,

introduced pathogens and other factors and combinations thereof.

It is also noteworthy that I cannot guarantee another illegal armed raid on our facility, involving theft of materials and data again at some unspecified date in the future. Therefore it is important that the taxonomy of this group be largely resolved herein, rather than be potentially delayed indefinitely and with the negative conservation outcomes this is likely to entail.

Published literature relevant to the taxonomy and nomenclature adopted within this paper includes the following: Annandale (1912), Auliya (2006), Barbour (1912, 1921), Beukema (2011), Binaday *et al.* (2017), Blyth (1854), Bobrov and Semenov (2008), Boettger (1886), Boulenger (1887, 1890, 1895), Bourret (1939), Brown and Alcalá (1980), Brygoo (1985), Chan-ard *et al.* (2015), Chuaynkern *et al.* (2005, 2014a, 2014b), Cox *et al.* (1998), Dan and Hillenius (1966), Das *et al.* (2009), Das (2004, 2010), de Rooij (1915), Duméril and Bibron (1839), Ebenhard and Sjögren (1984), Fei *et al.* (2010), Ferner *et al.* (2000), Fischer (1884), Gaulke (2011, 2012), Gawor *et al.* (2016), Gojo-Cruz and Afuang (2018), Goldberg (2017), Gray (1845), Greer and Biswas (2004), Guo and Deng (2010), Günther (1861a, 1861b, 1864, 1873), Harbig (2000), Hartmann (2012), Hartmann *et al.* (2009), Hecht *et al.* (2013), Heidrich (2007), Hikida and Ota (1994), Hikida *et al.* (2002, 2003), Iskandar and Erdelen (2006), Jestrzanski *et al.* (2013), Klemmer and Gaulke (1993), Koch (2011, 2012), Lalremsanga *et al.* (2010), Lenz (2012), Lidth De Juede (1905), Loveridge (1945), Malkmus (1991), Malkmus *et al.* (2002), Manthey (1983), Manthey and Grossmann (1997), Mathew (2006), Mittleman (1952), Nabhitabhata *et al.* (2000), Ngilangil (2016), Ngo *et al.* (2000), Nguyen *et al.* (2009, 2010a, 2010b, 2010c, 2018), Ota *et al.* (1991), Pauwels *et al.* (2000), Peters (1871), Pianka and Vitt (2003), Pui and Das (2017), Pui *et al.* (2017), Pyron *et al.* (2013), Rao *et al.* (2011), Ride *et al.* (1999), Sanguila *et al.* (2016), Sauvage (1879), Smith (1919, 1923, 1935), Stejneger (1910), Stuart *et al.* (2006, 2010), Stuebing *et al.* (1999), Supsup *et al.* (2016), Sy and Parcon (2014), Tan (1993), Taylor (1915, 1922a, 1922b, 1963), Theobald (1868), Venugopal (2010), Waiprom *et al.* (2013), Wanger (2011), Welch *et al.* (1990), Wen (1992), Werning (2006), Wu (2015), Zhang *et al.* (2012), Zhao and Adler (1993), Ziegler *et al.* (2005, 2006a, 2006b, 2007, 2015) and sources cited therein.

In terms of the species descriptions, all three newly named taxa have until now been regarded as populations of previously described species.

As far as I am aware, no one has until now speculated that any may be distinct at the species level.

However each are significantly divergent from the type forms, each are allopatric in distribution and the relevant taxa are also long separated by wide zones of unsuitable habitat where they clearly do not occur. The age of these biogeographical barriers in their present form is measured in the millions of years meaning that in each case the relevant taxa have diverged sufficiently to be regarded as full species.

In the case of the putative species *Tropidophorus cocincinensis* Duméril and Bibron, 1839, it appears that there may be two separate species.

Based on the original description of Duméril and Bibron, 1839, giving a collection locality of "Cochinchine" at page 558, it appears that the population from Ban Cup, Huong Hoa District, Quang Tri Province, Vietnam is of an undescribed form, worthy of formal recognition at least at the subspecies level.

The morphologically similar species *Tropidophorus microlepis* Günther, 1861 occurs in two distinct separate populations and these are geographically separated and morphologically divergent, so the unnamed Eastern form is herein formally named as a new species.

The species *Aspris berdmorei* Blyth, 1853, of the resurrected genus *Aspris* Blyth, 1853, is in effect split four ways. *A. berdmorei* Blyth, 1853 and the three other species treated as

conspecific with it until now are defined by having an entire fronto-nasal, versus divided in the closely related *A. laotus* (Smith, 1923).

The four species treated as being conspecific with *A. berdmorei* until now are separated from each other in the descriptions of the two hitherto unnamed forms below and a third available name is resurrected from synonymy.

All are morphologically distinct and geographically separated by wide areas of apparently unsuitable habitat of some antiquity and so I mention again that I had no hesitation at all in formally naming them as new species.

SOME KEY POINTS ON THE TAXONOMIC DECISIONS MADE HEREIN

While the genus or species descriptions below, effectively summarize the results of the audit of *Tropidophorus* Duméril and Bibron, 1839 *sensu lato*, it is important that relevant considerations in terms of most of the decisions is spelt out first. Divergent, newly named and resurrected from synonymy genera can be seen appropriately placed in the published molecular phylogenies of Honda *et al.* 2006, Pui *et al.* 2017 and Pyron *et al.* 2013, where the relevant species groups are listed as "*Tropidophorus*".

The divergent species or groups simply match the new genus level entities.

Within *Tropidophorus sensu lato*, the various species groups are divided in line with the formal descriptions below and the result is self evident.

In terms of the following descriptions the following points should be noted:

- 1/ All descriptions of specimens in terms of form and colour relate to normal adult specimens of typical form for each taxon unless otherwise stated and with original tails.
- 2/ Spellings of names assigned to genera or species should not be altered in any way unless mandated by the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) or superseding nomenclatural rules.
- 3/ In the unlikely event a first reviser seeks to merge any genera or species formally named herein, the name to be used is that of the first name used in terms of page priority, also as listed in the abstract keywords.
- 4/ There is no conflict of interest in terms of this paper or the conclusions arrived at herein.

GENUS *TROPIDOPHORUS* DUMÉRIL AND BIBRON, 1839

Type species: *Tropidophorus cocincinensis* Duméril and Bibron, 1839.

Diagnosis: Morphologically the genus *Tropidophorus* Duméril and Bibron, 1839 *sensu lato*, is diagnosed by several characteristics, such as exposure of the superficial tympanum and presence of a single scale at the corner of the eyelid (Greer 1970, Hikida *et al.* 2002, Greer and Biswas 2004).

The relevant species are further diagnosed and separated from other genera by the following: Palatine and pterygoid bones in contact on the middle line of the palate, which is toothless. Teeth conical. Eyelids well developed and scaly. Nostril pierced in a single nasal; no supranasals; prefrontals well developed; frontoparietal present, single or double interparietal distinct. Limbs well developed, pentadactyle; digits cylindrical, with transverse lamellae interiorly.

The genus *Tropidophorus* as herein defined (*sensu stricto*), type species *Tropidophorus cocincinensis* Duméril and Bibron, 1839., is further separated from the other seven genera (formerly treated as being within *Tropidophorus* by the following suite of characters: Some or all of the lateral scale-rows directed obliquely. Two frontoparietals. Two or three large preanals (not one only). Upper head-shields rugose or striated. Dorsal scales strongly keeled, ending in a point; subdigital lamellae smooth.

The three relevant species are separated as follows:

- 1/ Frontal and fronto-nasal entire, fifth supralabial largest, two pre-anal shields, *T. cocincinensis* Duméril and Bibron, 1839, or:

2/ Three preanal shields, dorsal pattern including faded dark and light brown markings and with two rows of dark mid-dorsal flecks running down the body, *T. microlepis* Günther, 1861, or:

3/ Three preanal shields without two rows of dark mid-dorsal flecks running down the body, but instead an obvious dorsal pattern consisting of semi-distinct irregularly shaped yellow crossbands on a chocolate brown background *T. joeymontebelloi* sp. nov.

The genus *Enoplosaurus* Sauvage, 1879, type species *Enoplosaurus insignis* Sauvage, 1879, better known as a junior synonym of *Tropidophorus grayi* Günther 1861, is herein resurrected from the synonymy of *Tropidophorus*.

The relevant species in the genus *Enoplosaurus* are separated from *Tropidophorus* and the other six genera by the following suite of characters: These being as for *Tropidophorus* as defined above, save for dorsal scales that are not only strongly keeled but also spinose, ventrals usually keeled as well and keeled subdigital lamellae (versus smooth in *Tropidophorus*).

The genus *Aspris* Blyth, 1853, type species *Aspris berdmorei* Blyth, 1853, is also resurrected from the synonymy of *Tropidophorus*. The genus is separated from *Tropidophorus* as defined above and the other six genera herein split from *Tropidophorus*, by the unique combination of lateral scales directed straight backwards and smooth head shields. *A. berdmorei* Blyth, 1853 and the three other species treated as conspecific with it until now are defined by having an entire fronto-nasal, versus divided in *A. laotus* (Smith, 1923).

The four species treated as being conspecific with *A. berdmorei* until now are separated from each other as follows.

Aspris berdmorei Blyth, 1853 has 32-34 mid-body rows, slight to significant dorsal keels and two loreal shields, one behind the other.

Aspris peterkraussi sp. nov. has 36-40 mid-body rows and two loreal shields, one behind the other.

Aspris russellgranti sp. nov. has 32-38 mid-body rows and three loreal shields, the anterior one being divided horizontally.

Aspris yunnanensis Boulenger, 1887 has 34 mid-body rows, no dorsal keels of any sort and two loreal shields, one behind the other.

The genus *Norbea* Gray, 1845, type species *Norbea brookei* Gray, 1845 is also resurrected from the synonymy of *Tropidophorus*. The genus name *Amphixestus* Peters, 1871 is also placed within the synonymy of *Norbea*, having a type species of *Amphixestus beccarii* Peters, 1871, being within the same clade of closely related species.

Norbea is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of two frontoparietals and a single large preanal.

The genus *Greersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by one or other of the following three suites of characters:

1/ Lateral scales directed straight backwards and head shields feebly rugose, *G. robinsoni* (Smith, 1919), or:

2/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal and fronto-nasal divided *G. thai* (Smith, 1919), or:

3/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal entire, fronto-nasal divided, *G. sinicus* (Boettger, 1886), *G. guangxiensis* (Wen, 1992) (subgenus *Paragreerscincus* subgen. nov.).

The genus *Barnettsaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of keeled dorsal scales and four supraoculars, treated herein as monotypic for *B. micropus* (Lidth De Juede, 1905). Otherwise *Barnettsaurus* gen. nov. is most similar to *Norbea*.

The genus *Kerryleewennigea* gen. nov. is separated from

Tropidophorus as defined above and the other six genera formerly treated as within *Tropidophorus* by the following unique suite of characters: Some or all of the lateral scale-rows directed obliquely, two pre-anal shields, frontal and fronto-nasal entire (not divided), fourth (not fifth) supralabial largest.

The genus *Coggersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of smooth head scales (not striated) a completed supraciliary row along the entire length of lateral edge of supraoculars (versus incomplete) and one or other of the following four suites of characters:

1/ Frontonasal undivided; Midbody scales in 22-24 rows; 9-10 scale rows at position of 10th subcaudal, *C. noggei* (Ziegler, Thanh and Thanh, 2005), or:

2/ Frontonasal undivided; midbody scales in 28-32 rows; 11-15 scale rows at position of tenth subcaudal; vertebral scale rows two times broader than neighboring scales, *C. latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002), or:

3/ Frontonasal undivided; prefrontals small, widely separated from each other; nuchals 1-4; supralabials 6; supraciliaries 7-8; midbody scale rows 30-32; dorsal and lateral scales smooth; paravertebral scales 60-69, not widened; ventral scales 56-66; scale rows at position of tenth subcaudal 17-18; medial subcaudals divided from first to fifth, remaining ones approximately 1.5 times wider than neighboring scales *C. boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010), or:

4/ Frontonasal divided; midbody scales in 34 rows *C. matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002).

Distribution: Vietnam, Thailand, Cambodia, Laos.

Content: *Tropidophorus cocincinensis* Duméril and Bibron, 1839 (type species), *T. joeymontebelloi* sp. nov.; *T. microlepis* Günther, 1861

GENUS ENOPLOSAURUS SAUVAGE, 1879

Type species: *Enoplosaurus insignis* Sauvage, 1879 (better known as a junior synonym of *Tropidophorus grayi* Günther 1861).

Diagnosis: See within the diagnosis for *Tropidophorus* in this paper.

Distribution: Philippines and Sulawesi.

Content: *Enoplosaurus grayi* (Günther, 1861) (type species); *E. baconi* (Hikida, Riyanto and Ota, 2003).

GENUS ASPRIS BLYTH, 1853

Type species: *Aspris berdmorei* Blyth, 1853.

Diagnosis: See within the diagnosis for *Tropidophorus* in this paper.

Distribution: Thailand, Laos, China, Vietnam.

Content: *Aspris berdmorei* Blyth, 1853 (type species); *A. laotus* (Smith, 1923); *A. peterkraussi* sp. nov.; *A. russellgranti* sp. nov.; *A. yunnanensis* Boulenger, 1887.

GENUS NORBEA GRAY, 1845.

Type species: *Norbea brookei* Gray, 1845.

Diagnosis: See within the diagnosis for *Tropidophorus* in this paper.

Distribution: Borneo and Philippines.

Content: *Norbea brookei* Gray, 1845 (type species); *N. beccarii* (Peters, 1871); *N. davaoensis* (Bacon, 1980); *N. iniquus* (Lidth De Juede, 1905); *N. misaminus* (Stejneger, 1908); *N. mocquardii* (Boulenger, 1895); *N. partelloi* (Stejneger, 1910); *N. perplexus* (Barbour, 1921); *N. sebi* (Pui, Karin, Bauer and Das, 2017).

GENUS GREERSAURUS GEN. NOV.

LSID urn:lsid:zoobank.org:act:3583E7E7-62BB-41EE-B282-F11E9EBE9725

Type species: *Tropidophorus robinsoni* Smith, 1919.

Diagnosis: Morphologically the genus *Tropidophorus* Duméril

and Bibron, 1839 *sensu lato*, is diagnosed by several characteristics, such as exposure of the superficial tympanum and presence of a single scale at the corner of the eyelid (Greer 1970, Hikida *et al.* 2002, Greer and Biswas 2004).

The relevant species are further diagnosed and separated from other genera by the following: Palatine and pterygoid bones in contact on the middle line of the palate, which is toothless. Teeth conical. Eyelids well developed and scaly. Nostril pierced in a single nasal; no supranasals; prefrontals well developed; frontoparietal present, single or double interparietal distinct. Limbs well developed, pentadactyle; digits cylindrical, with transverse lamellae interiorly.

The genus *Tropidophorus* as herein defined (*sensu stricto*), type species *Tropidophorus cocincinensis* Duméril and Bibron, 1839., is further separated from the other seven genera (formerly treated as being within *Tropidophorus* by the following suite of characters: Some or all of the lateral scale-rows directed obliquely. Two frontoparietals. Two or three large preanals (not one only). Upper head-shields rugose or striated. Dorsal scales strongly keeled, ending in a point; subdigital lamellae smooth.

The three relevant species are separated as follows:

- 1/ Frontal and fronto-nasal entire, fifth supralabial largest, two pre-anal shields, *T. cocincinensis* Duméril and Bibron, 1839, or:
- 2/ Three preanal shields, dorsal pattern including faded dark and light brown markings and with two rows of dark mid-dorsal flecks running down the body, *T. microlepis* Günther, 1861, or:
- 3/ Three preanal shields without two rows of dark mid-dorsal flecks running down the body, but instead an obvious dorsal pattern consisting of semi-distinct irregularly shaped yellow crossbands on a chocolate brown background *T. joeymontebelloi* sp. nov..

The genus *Enoplosaurus* Sauvage, 1879, type species *Enoplosaurus insignis* Sauvage, 1879, better known as a junior synonym of *Tropidophorus grayi* Günther 1861, is herein resurrected from the synonymy of *Tropidophorus*.

The relevant species in the genus *Enoplosaurus* are separated from *Tropidophorus* and the other six genera by the following suite of characters: These being as for *Tropidophorus* as defined above, save for dorsal scales that are not only strongly keeled but also spinose, ventrals usually keeled as well and keeled subdigital lamellae (versus smooth in *Tropidophorus*).

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The four species treated as being conspecific with *A. berdmorei* until now are separated from each other as follows.

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Aspris russellgranti sp. nov. has 32-38 mid-body rows and three loreal shields, the anterior one being divided horizontally.

Aspris yunnanensis Boulenger, 1887 has 34 mid-body rows, no dorsal keels of any sort and two loreal shields, one behind the other.

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Norbea is separated from *Tropidophorus* as defined above and

the other six genera formerly treated as within *Tropidophorus* by the presence of two frontoparietals and a single large preanal.

The genus *Greersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by one or other of the following three suites of characters:

1/ Lateral scales directed straight backwards and head shields feebly rugose, *G. robinsoni* (Smith, 1919), or:

2/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal and fronto-nasal divided *G. thai* (Smith, 1919), or:

3/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal entire, fronto-nasal divided, *G. sinicus* (Boettger, 1886), *G. quangxiensis* (Wen, 1992) (subgenus *Paragreerscincus* subgen. nov.).

The genus *Barnettsaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of keeled dorsal scales and four supraoculars, treated herein as monotypic for *B. micropus* (Lidith De Juede, 1905). Otherwise *Barnettsaurus* gen. nov. is most similar to *Norbea*.

The genus *Kerryleewennigea* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the following unique suite of characters: Some or all of the lateral scale-rows directed obliquely, two pre-anal shields, frontal and fronto-nasal entire (not divided), fourth (not fifth) supralabial largest.

The genus *Coggersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of smooth head scales (not striated) a completed supraciliary row along the entire length of lateral edge of supraoculars (versus incomplete) and one or other of the following four suites of characters:

1/ Frontonasal undivided; Midbody scales in 22-24 rows; 9-10 scale rows at position of 10th subcaudal, *C. noggei* (Ziegler, Thanh and Thanh, 2005), or:

2/ Frontonasal undivided; midbody scales in 28-32 rows; 11-15 scale rows at position of tenth subcaudal; vertebral scale rows two times broader than neighboring scales, *C. latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002), or:

3/ Frontonasal undivided; prefrontals small, widely separated from each other; nuchals 1-4; supralabials 6; supraciliaries 7-8; midbody scale rows 30-32; dorsal and lateral scales smooth; paravertebral scales 60-69, not widened; ventral scales 56-66; scale rows at position of tenth subcaudal 17-18; medial subcaudals divided from first to fifth, remaining ones approximately 1.5 times wider than neighboring scales *C. boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010), or:

4/ Frontonasal divided; midbody scales in 34 rows *C. matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002).

Distribution: Thailand, Myanmar (nominated subgenus) and China (Guangxi, Guangdong, Hong Kong), Vietnam (for *Paragreerscincus* subgen. nov.).

Etymology: Named in honour of Allen E. Greer, former curator of herpetology at the Australian Museum in Sydney, New South Wales, Australia, now of Mudgee, New South Wales, Australia, in recognition of his immense contributions to herpetology worldwide. "Saurus" is Latin for lizard.

Content: *Greersaurus robinsoni* (Smith, 1919) (type species); *G. quangxiensis* (Wen, 1992); *G. sinicus* (Boettger, 1886); *G. thai* (Smith, 1919).

SUBGENUS PARAGREERSAURUS SUBGEN. NOV.

LSID urn:lsid:zoobank.org:act:51BF36F8-8530-4468-A062-27E24DB06FDD

Type species: *Tropidophorus sinicus* Boettger, 1886.

Diagnosis: Morphologically the genus *Tropidophorus* Duméril

and Bibron, 1839 *sensu lato*, is diagnosed by several characteristics, such as exposure of the superficial tympanum and presence of a single scale at the corner of the eyelid (Greer 1970, Hikida *et al.* 2002, Greer and Biswas 2004).

The relevant species are further diagnosed and separated from other genera by the following: Palatine and pterygoid bones in contact on the middle line of the palate, which is toothless. Teeth conical. Eyelids well developed and scaly. Nostril pierced in a single nasal; no supranasals; prefrontals well developed; frontoparietal present, single or double interparietal distinct. Limbs well developed, pentadactyle; digits cylindrical, with transverse lamellae interiorly.

The genus *Tropidophorus* as herein defined (*sensu stricto*), type species *Tropidophorus coccinensis* Duméril and Bibron, 1839., is further separated from the other seven genera (formerly treated as being within *Tropidophorus* by the following suite of characters: Some or all of the lateral scale-rows directed obliquely. Two frontoparietals. Two or three large preanals (not one only). Upper head-shields rugose or striated. Dorsal scales strongly keeled, ending in a point; subdigital lamellae smooth.

The three relevant species are separated as follows:

- 1/ Frontal and fronto-nasal entire, fifth supralabial largest, two pre-anal shields, *T. coccinensis* Duméril and Bibron, 1839, or:
- 2/ Three preanal shields, dorsal pattern including faded dark and light brown markings and with two rows of dark mid-dorsal flecks running down the body, *T. microlepis* Günther, 1861, or:
- 3/ Three preanal shields without two rows of dark mid-dorsal flecks running down the body, but instead an obvious dorsal pattern consisting of semi-distinct irregularly shaped yellow crossbands on a chocolate brown background *T. joeymontebelloi* sp. nov..

The genus *Enoplosaurus* Sauvage, 1879, type species *Enoplosaurus insignis* Sauvage, 1879, better known as a junior synonym of *Tropidophorus grayi* Günther 1861, is herein resurrected from the synonymy of *Tropidophorus*.

The relevant species in the genus *Enoplosaurus* are separated from *Tropidophorus* and the other six genera by the following suite of characters: These being as for *Tropidophorus* as defined above, save for dorsal scales that are not only strongly keeled but also spinose, ventrals usually keeled as well and keeled subdigital lamellae (versus smooth in *Tropidophorus*).

The genus *Aspris* Blyth, 1853, type species *Aspris bermorei* Blyth, 1853, is also resurrected from the synonymy of *Tropidophorus*. The genus is separated from *Tropidophorus* as defined above and the other six genera herein split from *Tropidophorus*, by the unique combination of lateral scales directed straight backwards and smooth head shields. *A. bermorei* Blyth, 1853 and the three other species treated as conspecific with it until now are defined by having an entire fronto-nasal, versus divided in *A. laotus* (Smith, 1923).

The four species treated as being conspecific with *A. bermorei* until now are separated from each other as follows.

Aspris bermorei Blyth, 1853 has 32-34 mid-body rows, slight to significant dorsal keels and two loreal shields, one behind the other.

Aspris peterkraussi sp. nov. has 36-40 mid-body rows and two loreal shields, one behind the other.

Aspris russellgranti sp. nov. has 32-38 mid-body rows and three loreal shields, the anterior one being divided horizontally.

Aspris yunnanensis Boulenger, 1887 has 34 mid-body rows, no dorsal keels of any sort and two loreal shields, one behind the other.

The genus *Norbea* Gray, 1845, type species *Norbea brookei* Gray, 1845 is also resurrected from the synonymy of *Tropidophorus*. The genus name *Amphixestus* Peters, 1871 is also placed within the synonymy of *Norbea*, having a type species of *Amphixestus beccarii* Peters, 1871, being within the same clade of closely related species.

Norbea is separated from *Tropidophorus* as defined above and

the other six genera formerly treated as within *Tropidophorus* by the presence of two frontoparietals and a single large preanal.

The genus *Greersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by one or other of the following three suites of characters:

1/ Lateral scales directed straight backwards and head shields feebly rugose, *G. robinsoni* (Smith, 1919), or:

2/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal and fronto-nasal divided *G. thai* (Smith, 1919), or:

3/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal entire, fronto-nasal divided, *G. sinicus* (Boettger, 1886), *G. guangxiensis* (Wen, 1992) (subgenus *Paragreerscincus* subgen. nov.).

The genus *Barnettsaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of keeled dorsal scales and four supraoculars, treated herein as monotypic for *B. micropus* (Lidth De Juede, 1905). Otherwise *Barnettsaurus* gen. nov. is most similar to *Norbea*.

The genus *Kerryleewennigea* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the following unique suite of characters: Some or all of the lateral scale-rows directed obliquely, two pre-anal shields, frontal and fronto-nasal entire (not divided), fourth (not fifth) supralabial largest.

The genus *Coggersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of smooth head scales (not striated) a completed supraciliary row along the entire length of lateral edge of supraoculars (versus incomplete) and one or other of the following four suites of characters:

1/ Frontonasal undivided; Midbody scales in 22-24 rows; 9-10 scale rows at position of 10th subcaudal, *C. noggei* (Ziegler, Thanh and Thanh, 2005), or:

2/ Frontonasal undivided; midbody scales in 28-32 rows; 11-15 scale rows at position of tenth subcaudal; vertebral scale rows two times broader than neighboring scales, *C. latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002), or:

3/ Frontonasal undivided; prefrontals small, widely separated from each other; nuchals 1-4; supralabials 6; supraciliaries 7-8; midbody scale rows 30-32; dorsal and lateral scales smooth; paravertebral scales 60-69, not widened; ventral scales 56-66; scale rows at position of tenth subcaudal 17-18; medial subcaudals divided from first to fifth, remaining ones approximately 1.5 times wider than neighboring scales *C. boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010), or:

4/ Frontonasal divided; midbody scales in 34 rows *C. matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002).

Distribution: Thailand, Myanmar (for the nominate subgenus *Greersaurus* subgen. nov. by default) and China (Guangxi, Guangdong, Hong Kong), Vietnam (for *Paragreerscincus* subgen. nov.).

Etymology: The prefix "*para*", means not quite, in reflection of these taxa being not quite the same as those of the nominate subgenus (etymology above).

Content: *Greersaurus* (*paragreersaurus*) *sinicus* (Boettger, 1886) (type species); *G. (paragreersaurus) guangxiensis* (Wen, 1992).

GENUS BARNETTSAURUS GEN. NOV.

LSID urn:lsid:zoobank.org:act:10C1E88C-8B44-49D3-9D07-F107B0E3393D

Type species: *Tropidophorus micropus* Lidth De Juede, 1905.

Diagnosis: Morphologically the genus *Tropidophorus* Duméril and Bibron, 1839 *sensu lato*, is diagnosed by several

characteristics, such as exposure of the superficial tympanum and presence of a single scale at the corner of the eyelid (Greer 1970, Hikida *et al.* 2002, Greer and Biswas 2004).

The relevant species are further diagnosed and separated from other genera by the following: Palatine and pterygoid bones in contact on the middle line of the palate, which is toothless. Teeth conical. Eyelids well developed and scaly. Nostril pierced in a single nasal; no supranasals; prefrontals well developed; frontoparietal present, single or double interparietal distinct. Limbs well developed, pentadactyle; digits cylindrical, with transverse lamellae anteriorly.

The genus *Tropidophorus* as herein defined (*sensu stricto*), type species *Tropidophorus cocincinensis* Duméril and Bibron, 1839, is further separated from the other seven genera (formerly treated as being within *Tropidophorus* by the following suite of characters: Some or all of the lateral scale-rows directed obliquely. Two frontoparietals. Two or three large preanals (not one only). Upper head-shields rugose or striated. Dorsal scales strongly keeled, ending in a point; subdigital lamellae smooth.

The three relevant species are separated as follows:

- 1/ Frontal and fronto-nasal entire, fifth supralabial largest, two pre-anal shields, *T. cocincinensis* Duméril and Bibron, 1839, or:
- 2/ Three preanal shields, dorsal pattern including faded dark and light brown markings and with two rows of dark mid-dorsal flecks running down the body, *T. microlepis* Günther, 1861, or:
- 3/ Three preanal shields without two rows of dark mid-dorsal flecks running down the body, but instead an obvious dorsal pattern consisting of semi-distinct irregularly shaped yellow crossbands on a chocolate brown background *T. joeymontebelloi* sp. nov.

The genus *Enoplosaurus* Sauvage, 1879, type species *Enoplosaurus insignis* Sauvage, 1879, better known as a junior synonym of *Tropidophorus grayi* Günther 1861, is herein resurrected from the synonymy of *Tropidophorus*.

The relevant species in the genus *Enoplosaurus* are separated from *Tropidophorus* and the other six genera by the following suite of characters: These being as for *Tropidophorus* as defined above, save for dorsal scales that are not only strongly keeled but also spinose, ventrals usually keeled as well and keeled subdigital lamellae (versus smooth in *Tropidophorus*).

The genus *Aspris* Blyth, 1853, type species *Aspris berdmorei* Blyth, 1853, is also resurrected from the synonymy of *Tropidophorus*. The genus is separated from *Tropidophorus* as defined above and the other six genera herein split from *Tropidophorus*, by the unique combination of lateral scales directed straight backwards and smooth head shields. *A. berdmorei* Blyth, 1853 and the three other species treated as conspecific with it until now are defined by having an entire fronto-nasal, versus divided in *A. laotus* (Smith, 1923).

The four species treated as being conspecific with *A. berdmorei* until now are separated from each other as follows.

Aspris berdmorei Blyth, 1853 has 32-34 mid-body rows, slight to significant dorsal keels and two loreal shields, one behind the other.

Aspris peterkraussi sp. nov. has 36-40 mid-body rows and two loreal shields, one behind the other.

Aspris russellgranti sp. nov. has 32-38 mid-body rows and three loreal shields, the anterior one being divided horizontally.

Aspris yunnanensis Boulenger, 1887 has 34 mid-body rows, no dorsal keels of any sort and two loreal shields, one behind the other.

The genus *Norbea* Gray, 1845, type species *Norbea brookei* Gray, 1845 is also resurrected from the synonymy of *Tropidophorus*. The genus name *Amphixestus* Peters, 1871 is also placed within the synonymy of *Norbea*, having a type species of *Amphixestus beccarii* Peters, 1871, being within the same clade of closely related species.

Norbea is separated from *Tropidophorus* as defined above and

the other six genera formerly treated as within *Tropidophorus* by the presence of two frontoparietals and a single large preanal.

The genus *Greersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by one or other of the following three suites of characters:

- 1/ Lateral scales directed straight backwards and head shields feebly rugose, *G. robinsoni* (Smith, 1919), or:
- 2/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal and fronto-nasal divided *G. thai* (Smith, 1919), or:
- 3/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal entire, fronto-nasal divided, *G. sinicus* (Boettger, 1886), *G. guangxiensis* (Wen, 1992) (subgenus *Paragreerscincus* subgen. nov.).

The genus *Barnettsaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of keeled dorsal scales and four supraoculars, treated herein as monotypic for *B. micropus* (Lidth De Juede, 1905). Otherwise *Barnettsaurus* gen. nov. is most similar to *Norbea*.

The genus *Kerryleewennigee* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the following unique suite of characters: Some or all of the lateral scale-rows directed obliquely, two pre-anal shields, frontal and fronto-nasal entire (not divided), fourth (not fifth) supralabial largest.

The genus *Coggersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of smooth head scales (not striated) a completed supraciliary row along the entire length of lateral edge of supraoculars (versus incomplete) and one or other of the following four suites of characters:

- 1/ Frontonasal undivided; Midbody scales in 22-24 rows; 9-10 scale rows at position of 10th subcaudal, *C. noggei* (Ziegler, Thanh and Thanh, 2005), or:
- 2/ Frontonasal undivided; midbody scales in 28-32 rows; 11-15 scale rows at position of tenth subcaudal; vertebral scale rows two times broader than neighboring scales, *C. latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002), or:
- 3/ Frontonasal undivided; prefrontals small, widely separated from each other; nuchals 1-4; supralabials 6; supraciliaries 7-8; midbody scale rows 30-32; dorsal and lateral scales smooth; paravertebral scales 60-69, not widened; ventral scales 56-66; scale rows at position of tenth subcaudal 17-18; medial subcaudals divided from first to fifth, remaining ones approximately 1.5 times wider than neighboring scales *C. boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010), or:
- 4/ Frontonasal divided; midbody scales in 34 rows *C. matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002).

Distribution: Borneo.

Etymology: Named in honour of Brian Barnett of Ardeer, Victoria, Australia, former president of the Victorian Herpetological Society Incorporated in recognition of a lifetime's contributions to herpetology as outlined in Hoser (1996). "Saurus" is Latin for lizard.

Content: *Barnettsaurus micropus* (Lidth De Juede, 1905) treated herein as monotypic.

GENUS KERRYLEEWENNIGEE GEN. NOV.

LSID urn:lsid:zoobank.org:act:1D22518B-148E-4001-8BEB-0178390237E6

Type species: *Tropidophorus hainanus* Smith, 1923.

Diagnosis: Morphologically the genus *Tropidophorus* Duméril and Bibron, 1839 *sensu lato*, is diagnosed by several characteristics, such as exposure of the superficial tympanum and presence of a single scale at the corner of the eyelid (Greer

1970, Hikida *et al.* 2002, Greer and Biswas 2004).

The relevant species are further diagnosed and separated from other genera by the following: Palatine and pterygoid bones in contact on the middle line of the palate, which is toothless. Teeth conical. Eyelids well developed and scaly. Nostril pierced in a single nasal; no supranasals; prefrontals well developed; frontoparietal present, single or double interparietal distinct. Limbs well developed, pentadactyle; digits cylindrical, with transverse lamellae anteriorly.

The genus *Tropidophorus* as herein defined (*sensu stricto*), type species *Tropidophorus cocincinensis* Duméril and Bibron, 1839, is further separated from the other seven genera (formerly treated as being within *Tropidophorus*) by the following suite of characters: Some or all of the lateral scale-rows directed obliquely. Two frontoparietals. Two or three large preanals (not one only). Upper head-shields rugose or striated. Dorsal scales strongly keeled, ending in a point; subdigital lamellae smooth.

The three relevant species are separated as follows:

- 1/ Frontal and fronto-nasal entire, fifth supralabial largest, two pre-anal shields, *T. cocincinensis* Duméril and Bibron, 1839, or:
- 2/ Three preanal shields, dorsal pattern including faded dark and light brown markings and with two rows of dark mid-dorsal flecks running down the body, *T. microlepis* Günther, 1861, or:
- 3/ Three preanal shields without two rows of dark mid-dorsal flecks running down the body, but instead an obvious dorsal pattern consisting of semi-distinct irregularly shaped yellow crossbands on a chocolate brown background *T. joeymontebelloi* sp. nov.

The genus *Enoplosaurus* Sauvage, 1879, type species *Enoplosaurus insignis* Sauvage, 1879, better known as a junior synonym of *Tropidophorus grayi* Günther 1861, is herein resurrected from the synonymy of *Tropidophorus*.

The relevant species in the genus *Enoplosaurus* are separated from *Tropidophorus* and the other six genera by the following suite of characters: These being as for *Tropidophorus* as defined above, save for dorsal scales that are not only strongly keeled but also spinose, ventrals usually keeled as well and keeled subdigital lamellae (versus smooth in *Tropidophorus*).

The genus *Aspris* Blyth, 1853, type species *Aspris berdmorei* Blyth, 1853, is also resurrected from the synonymy of *Tropidophorus*. The genus is separated from *Tropidophorus* as defined above and the other six genera herein split from *Tropidophorus*, by the unique combination of lateral scales directed straight backwards and smooth head shields. *A. berdmorei* Blyth, 1853 and the three other species treated as conspecific with it until now are defined by having an entire fronto-nasal, versus divided in *A. laotus* (Smith, 1923).

The four species treated as being conspecific with *A. berdmorei* until now are separated from each other as follows.

Aspris berdmorei Blyth, 1853 has 32-34 mid-body rows, slight to significant dorsal keels and two loreal shields, one behind the other.

Aspris peterkraussi sp. nov. has 36-40 mid-body rows and two loreal shields, one behind the other.

Aspris russellgranti sp. nov. has 32-38 mid-body rows and three loreal shields, the anterior one being divided horizontally.

Aspris yunnanensis Boulenger, 1887 has 34 mid-body rows, no dorsal keels of any sort and two loreal shields, one behind the other.

The genus *Norbea* Gray, 1845, type species *Norbea brookei* Gray, 1845 is also resurrected from the synonymy of *Tropidophorus*. The genus name *Amphixestus* Peters, 1871 is also placed within the synonymy of *Norbea*, having a type species of *Amphixestus beccarii* Peters, 1871, being within the same clade of closely related species.

Norbea is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of two frontoparietals and a single large preanal.

The genus *Greersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by one or other of the following three suites of characters:

- 1/ Lateral scales directed straight backwards and head shields feebly rugose, *G. robinsoni* (Smith, 1919), or:
- 2/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal and fronto-nasal divided *G. thai* (Smith, 1919), or:
- 3/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal entire, fronto-nasal divided, *G. sinicus* (Boettger, 1886), *G. guangxiensis* (Wen, 1992) (subgenus *Paragreerscincus* subgen. nov.).

The genus *Barnettsaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of keeled dorsal scales and four supraoculars, treated herein as monotypic for *B. micropus* (Lidith De Juede, 1905). Otherwise *Barnettsaurus* gen. nov. is most similar to *Norbea*.

The genus *Kerryleewennigea* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the following unique suite of characters: Some or all of the lateral scale-rows directed obliquely, two pre-anal shields, frontal and fronto-nasal entire (not divided), fourth (not fifth) supralabial largest.

The genus *Coggersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of smooth head scales (not striated) a completed supracliliary row along the entire length of lateral edge of supraoculars (versus incomplete) and one or other of the following four suites of characters:

- 1/ Frontonasal undivided; Midbody scales in 22-24 rows; 9-10 scale rows at position of 10th subcaudal, *C. noggei* (Ziegler, Thanh and Thanh, 2005), or:
- 2/ Frontonasal undivided; midbody scales in 28-32 rows; 11-15 scale rows at position of tenth subcaudal; vertebral scale rows two times broader than neighboring scales, *C. latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002), or:
- 3/ Frontonasal undivided; prefrontals small, widely separated from each other; nuchals 1-4; supralabials 6; supracliliaries 7-8; midbody scale rows 30-32; dorsal and lateral scales smooth; paravertebral scales 60-69, not widened; ventral scales 56-66; scale rows at position of tenth subcaudal 17-18; medial subcaudals divided from first to fifth, remaining ones approximately 1.5 times wider than neighboring scales *C. boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010), or:
- 4/ Frontonasal divided; midbody scales in 34 rows *C. matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002).

Distribution: China, Vietnam, Thailand, Bangladesh, India.

Etymology: Named in honour of Kerry Lee Wennig of Geelong, Victoria, Australia for her contributions to exposing organised crime as outlined in pages 366-372 of Hoser (1999).

Content: *Kerryleewennigea hainanus* (Smith, 1923) (type species); *K. assamensis* (Annandale, 1912); *K. baviensis* (Bourret, 1939); *K. hangnam* (Chuaynkern, Nabhitabhata, Inthara, Kamsook and Somsri, 2005); *K. murphyi* (Hikida, Orlov, Nabhitabhata and Ota, 2002).

GENUS COGGERSAURUS GEN. NOV.

LSID urn:lsid:zoobank.org:act:C7289577-E7D0-4AF3-815B-A42C1D5C5A29

Type species: *Tropidophorus matsuii* Hikida, Orlov, Nabhitabhata and Ota, 2002.

Diagnosis: Morphologically the genus *Tropidophorus* Duméril and Bibron, 1839 *sensu lato*, is diagnosed by several characteristics, such as exposure of the superficial tympanum and presence of a single scale at the corner of the eyelid (Greer

1970, Hikida *et al.* 2002, Greer and Biswas 2004).

The relevant species are further diagnosed and separated from other genera by the following: Palatine and pterygoid bones in contact on the middle line of the palate, which is toothless. Teeth conical. Eyelids well developed and scaly. Nostril pierced in a single nasal; no supranasals; prefrontals well developed; frontoparietal present, single or double interparietal distinct. Limbs well developed, pentadactyle; digits cylindrical, with transverse lamellae anteriorly.

The genus *Tropidophorus* as herein defined (*sensu stricto*), type species *Tropidophorus cocincinensis* Duméril and Bibron, 1839, is further separated from the other seven genera (formerly treated as being within *Tropidophorus*) by the following suite of characters: Some or all of the lateral scale-rows directed obliquely. Two frontoparietals. Two or three large preanals (not one only). Upper head-shields rugose or striated. Dorsal scales strongly keeled, ending in a point; subdigital lamellae smooth.

The three relevant species are separated as follows:

- 1/ Frontal and fronto-nasal entire, fifth supralabial largest, two pre-anal shields, *T. cocincinensis* Duméril and Bibron, 1839, or:
- 2/ Three preanal shields, dorsal pattern including faded dark and light brown markings and with two rows of dark mid-dorsal flecks running down the body, *T. microlepis* Günther, 1861, or:
- 3/ Three preanal shields without two rows of dark mid-dorsal flecks running down the body, but instead an obvious dorsal pattern consisting of semi-distinct irregularly shaped yellow crossbands on a chocolate brown background *T. joeymontebelloi* sp. nov.

The genus *Enoplosaurus* Sauvage, 1879, type species *Enoplosaurus insignis* Sauvage, 1879, better known as a junior synonym of *Tropidophorus grayi* Günther 1861, is herein resurrected from the synonymy of *Tropidophorus*.

The relevant species in the genus *Enoplosaurus* are separated from *Tropidophorus* and the other six genera by the following suite of characters: These being as for *Tropidophorus* as defined above, save for dorsal scales that are not only strongly keeled but also spinose, ventrals usually keeled as well and keeled subdigital lamellae (versus smooth in *Tropidophorus*).

The genus *Aspris* Blyth, 1853, type species *Aspris berdmorei* Blyth, 1853, is also resurrected from the synonymy of *Tropidophorus*. The genus is separated from *Tropidophorus* as defined above and the other six genera herein split from *Tropidophorus*, by the unique combination of lateral scales directed straight backwards and smooth head shields. *A. berdmorei* Blyth, 1853 and the three other species treated as conspecific with it until now are defined by having an entire fronto-nasal, versus divided in *A. laotus* (Smith, 1923).

The four species treated as being conspecific with *A. berdmorei* until now are separated from each other as follows.

Aspris berdmorei Blyth, 1853 has 32-34 mid-body rows, slight to significant dorsal keels and two loreal shields, one behind the other.

Aspris peterkraussi sp. nov. has 36-40 mid-body rows and two loreal shields, one behind the other.

Aspris russellgranti sp. nov. has 32-38 mid-body rows and three loreal shields, the anterior one being divided horizontally.

Aspris yunnanensis Boulenger, 1887 has 34 mid-body rows, no dorsal keels of any sort and two loreal shields, one behind the other.

The genus *Norbea* Gray, 1845, type species *Norbea brookei* Gray, 1845 is also resurrected from the synonymy of *Tropidophorus*. The genus name *Amphixestus* Peters, 1871 is also placed within the synonymy of *Norbea*, having a type species of *Amphixestus beccarii* Peters, 1871, being within the same clade of closely related species.

Norbea is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of two frontoparietals and a single large preanal.

The genus *Greersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by one or other of the following three suites of characters:

- 1/ Lateral scales directed straight backwards and head shields feebly rugose, *G. robinsoni* (Smith, 1919), or:
- 2/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal and fronto-nasal divided *G. thai* (Smith, 1919), or:
- 3/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal entire, fronto-nasal divided, *G. sinicus* (Boettger, 1886), *G. guangxiensis* (Wen, 1992) (subgenus *Paragreerscincus* subgen. nov.).

The genus *Barnettsaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of keeled dorsal scales and four supraoculars, treated herein as monotypic for *B. micropus* (Lidith De Juede, 1905). Otherwise *Barnettsaurus* gen. nov. is most similar to *Norbea*.

The genus *Kerryleewennigea* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the following unique suite of characters: Some or all of the lateral scale-rows directed obliquely, two pre-anal shields, frontal and fronto-nasal entire (not divided), fourth (not fifth) supralabial largest.

The genus *Coggersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of smooth head scales (not striated) a completed supraciliary row along the entire length of lateral edge of supraoculars (versus incomplete) and one or other of the following four suites of characters:

- 1/ Frontonasal undivided; Midbody scales in 22-24 rows; 9-10 scale rows at position of 10th subcaudal, *C. noggei* (Ziegler, Thanh and Thanh, 2005), or:
- 2/ Frontonasal undivided; midbody scales in 28-32 rows; 11-15 scale rows at position of tenth subcaudal; vertebral scale rows two times broader than neighboring scales, *C. latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002), or:
- 3/ Frontonasal undivided; prefrontals small, widely separated from each other; nuchals 1-4; supralabials 6; supraciliaries 7-8; midbody scale rows 30-32; dorsal and lateral scales smooth; paravertebral scales 60-69, not widened; ventral scales 56-66; scale rows at position of tenth subcaudal 17-18; medial subcaudals divided from first to fifth, remaining ones approximately 1.5 times wider than neighboring scales *C. boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010), or:
- 4/ Frontonasal divided; midbody scales in 34 rows *C. matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002).

Distribution: Vietnam, Thailand.

Etymology: Named in honour of Harold (Hal) Cogger, former curator of herpetology and Deputy Director of the Australian Museum in Sydney, New South Wales, Australia and past commissioner of the International Commission for Zoological Nomenclature (ICZN) in recognition for his services to herpetology spanning a lifetime. "*Saurus*" is Latin for lizard.

Content: *Coggersaurus matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002) (type species); *C. boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010); *C. latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002); *Tropidophorus noggei* (Ziegler, Thanh and Thanh, 2005).

SPECIES TROPIDOPHORUS JOEYMONTEBELLOI SP. NOV.
LSID urn:lsid:zoobank.org:act:6A249AEE-61CB-46F8-A50F-7E5EEA9056E5

Holotype: A preserved specimen at the Field Museum of Natural History, Chicago, Illinois, USA, specimen number FMNH Amphibians and Reptiles 262170, from Lam Dong, Vietnam.

Paratypes: Two preserved specimens at the Field Museum of Natural History, Chicago, Illinois, USA, specimen number FMNH Amphibians and Reptiles 262169 and 262171, from Lam Dong, Vietnam.

Diagnosis: Until now *Tropidophorus joeymontebelloi* sp. nov. has been treated as an eastern population of *T. microlepis* Günther, 1861. All three species in the genus *Tropidophorus* Günther, 1861 as defined in this paper are readily separated from one another by the following three unique suites of characters.

- 1/ Frontal and fronto-nasal entire, fifth supralabial largest, two pre-anal shields, *T. cocincinensis* Duméril and Bibron, 1839, or:
- 2/ Three preanal shields, dorsal pattern including faded dark and light brown markings and with two rows of dark mid-dorsal flecks running down the body, *T. microlepis* Günther, 1861, or:
- 3/ Three preanal shields without two rows of dark mid-dorsal flecks running down the body, but instead an obvious dorsal pattern consisting of semi-distinct irregularly shaped yellow crossbands on a chocolate brown background *T. joeymontebelloi* sp. nov.

Morphologically the genus *Tropidophorus* Duméril and Bibron, 1839 *sensu lato*, is diagnosed by several characteristics, such as exposure of the superficial tympanum and presence of a single scale at the corner of the eyelid (Greer 1970, Hikida *et al.* 2002, Greer and Biswas 2004).

The relevant species are further diagnosed and separated from other genera by the following: Palatine and pterygoid bones in contact on the middle line of the palate, which is toothless. Teeth conical. Eyelids well developed and scaly. Nostril pierced in a single nasal; no supranasals; prefrontals well developed; frontoparietal present, single or double interparietal distinct. Limbs well developed, pentadactyle; digits cylindrical, with transverse lamellae anteriorly.

The genus *Tropidophorus* as herein defined (*sensu stricto*), type species *Tropidophorus cocincinensis* Duméril and Bibron, 1839, is further separated from the other seven genera (formerly treated as being within *Tropidophorus* by the following suite of characters: Some or all of the lateral scale-rows directed obliquely. Two frontoparietals. Two or three large preanals (not one only). Upper head-shields rugose or striated. Dorsal scales strongly keeled, ending in a point; subdigital lamellae smooth.

The genus *Enoplosaurus* Sauvage, 1879, type species *Enoplosaurus insignis* Sauvage, 1879, better known as a junior synonym of *Tropidophorus grayi* Günther 1861, is herein resurrected from the synonymy of *Tropidophorus*.

The relevant species in the genus *Enoplosaurus* are separated from *Tropidophorus* and the other six genera by the following suite of characters: These being as for *Tropidophorus* as defined above, save for dorsal scales that are not only strongly keeled but also spinose, ventrals usually keeled as well and keeled subdigital lamellae (versus smooth in *Tropidophorus*).

The genus *Aspris* Blyth, 1853, type species *Aspris berdmorei* Blyth, 1853, is also resurrected from the synonymy of *Tropidophorus*. The genus is separated from *Tropidophorus* as defined above and the other six genera herein split from *Tropidophorus*, by the unique combination of lateral scales directed straight backwards and smooth head shields. *A. berdmorei* Blyth, 1853 and the three other species treated as conspecific with it until now are defined by having an entire fronto-nasal, versus divided in *A. laotus* (Smith, 1923).

The four species treated as being conspecific with *A. berdmorei* until now are separated from each other as follows.

Aspris berdmorei Blyth, 1853 has 32-34 mid-body rows, slight to significant dorsal keels and two loreal shields, one behind the other.

Aspris peterkraussi sp. nov. has 36-40 mid-body rows and two loreal shields, one behind the other.

Aspris russellgranti sp. nov. has 32-38 mid-body rows and three loreal shields, the anterior one being divided horizontally.

Aspris yunnanensis Boulenger, 1887 has 34 mid-body rows, no dorsal keels of any sort and two loreal shields, one behind the other.

The genus *Norbea* Gray, 1845, type species *Norbea brookei* Gray, 1845 is also resurrected from the synonymy of *Tropidophorus*. The genus name *Amphixestus* Peters, 1871 is also placed within the synonymy of *Norbea*, having a type species of *Amphixestus beccarii* Peters, 1871, being within the same clade of closely related species.

Norbea is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of two frontoparietals and a single large preanal.

The genus *Greersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by one or other of the following three suites of characters:

- 1/ Lateral scales directed straight backwards and head shields feebly rugose, *G. robinsoni* (Smith, 1919), or:
- 2/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal and fronto-nasal divided *G. thai* (Smith, 1919), or:
- 3/ Some or all of the lateral scale rows directed obliquely, two preanal shields, frontal entire, fronto-nasal divided, *G. sinicus* (Boettger, 1886), *G. guangxiensis* (Wen, 1992) (subgenus *Paragreerscincus* subgen. nov.).

The genus *Barnettsaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of keeled dorsal scales and four supraoculars, treated herein as monotypic for *B. micropus* (Lidth De Juede, 1905). Otherwise *Barnettsaurus* gen. nov. is most similar to *Norbea*.

The genus *Kerryleewennigea* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the following unique suite of characters: Some or all of the lateral scale-rows directed obliquely, two pre-anal shields, frontal and fronto-nasal entire (not divided), fourth (not fifth) supralabial largest.

The genus *Coggersaurus* gen. nov. is separated from *Tropidophorus* as defined above and the other six genera formerly treated as within *Tropidophorus* by the presence of smooth head scales (not striated) a completed supracliliary row along the entire length of lateral edge of supraoculars (versus incomplete) and one or other of the following four suites of characters:

- 1/ Frontonasal undivided; Midbody scales in 22-24 rows; 9-10 scale rows at position of 10th subcaudal, *C. noggei* (Ziegler, Thanh and Thanh, 2005), or:
- 2/ Frontonasal undivided; midbody scales in 28-32 rows; 11-15 scale rows at position of tenth subcaudal; vertebral scale rows two times broader than neighboring scales, *C. latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002), or:
- 3/ Frontonasal undivided; prefrontals small, widely separated from each other; nuchals 1-4; supralabials 6; supracliliaries 7-8; midbody scale rows 30-32; dorsal and lateral scales smooth; paravertebral scales 60-69, not widened; ventral scales 56-66; scale rows at position of tenth subcaudal 17-18; medial subcaudals divided from first to fifth, remaining ones approximately 1.5 times wider than neighboring scales *C. boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010), or:
- 4/ Frontonasal divided; midbody scales in 34 rows *C. matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002).

Distribution: Mainly southern Vietnam, in the hills north of Ho Chi Minh City, with outlier populations in nearby Cambodia and Laos, east of the relatively flat Mekong River region.

Etymology: Named in honour of Joey Montebello of Chirnside Park, Victoria, Australia, a well-known snake breeder, specializing in pythons in recognition for his efforts in conservation and education in relation to Australian snakes.

SPECIES ASPRIS PETERKRAUSSI SP. NOV.

LSID urn:lsid:zoobank.org:act:66A33376-F669-47D4-87C4-B75F8A0356DF

Holotype: A preserved specimen at the California Academy of Sciences in San Francisco, California, USA, specimen number CAS HERP 210182, collected at the Alaungdaw Kathapa National Park, Sunthaiik Chaung (tributary to Hkaungdin Chaung), Sagaing Division, Myanmar (Burma), Latitude 22.18 N, Longitude 94.24 E. This facility allows access to its holdings.

Paratype: A preserved specimen at the California Academy of Sciences in San Francisco, California, USA, specimen number CAS HERP 210236 collected at the Alaungdaw Kathapa National Park, Sunthaiik Chaung (tributary to Hkaungdin Chaung), Sagaing Division, Myanmar (Burma), Latitude 22.18 N, Longitude 94.24 E.

Diagnosis: Until now the species *Aspris peterkraussi sp. nov.* from the mountainous region in West Burma and *A. russellgranti sp. nov.* from the mountainous region in North Thailand have been treated as populations of the species *A. berdmorei* Blyth, 1853. Both would identify as that species using the relevant key in Smith (1923) at page 773.

The species *Aspris yunnanensis* Boulenger, 1887 is similar in form to *A. berdmorei* and has been treated as synonymous to it by many authors. However it is clearly sufficiently different to be recognized as a separate species and so is included in the genus-wide diagnosis for each species herein in order to separate them all from one another as part of this diagnosis.

The five relevant species are readily separated from one another as follows, each having one of the following five unique combinations of characters:

Aspris berdmorei Blyth, 1853 has 32-34 mid-body rows, slight to significant dorsal keels, single fronto-nasal and two loreal shields, one behind the other.

A. peterkraussi sp. nov. has 36-40 mid-body rows, single fronto-nasal and two loreal shields, one behind the other.

A. russellgranti sp. nov. has 32-38 mid-body rows, single fronto-nasal and three loreal shields, the anterior one being divided horizontally.

A. yunnanensis (Boulenger, 1887) has 34 mid-body rows, no dorsal keels of any sort, single fronto-nasal and two loreal shields, one behind the other.

A. laotus (Smith, 1923) is separated from the four preceding species by having a divided fronto-nasal, versus single in the other four species.

Distribution: Found in the mountainous region and nearby areas to the North-west of Myanmar (Burma), centred on the Chin Hills.

Etymology: Named in honour of Peter Krauss of north Queensland, Australia, a well-known snake breeder, specializing in pythons in recognition for his efforts in conservation and education in relation to Australian snakes.

SPECIES ASPRIS RUSSELLGRANTI SP. NOV.

LSID urn:lsid:zoobank.org:act:0089FF4D-F50D-4109-86A6-09F8974C895A

Holotype: A preserved specimen at the Field Museum of Natural History, Chicago, Illinois, USA, specimen number FMNH Amphibians and Reptiles 197801, collected at Chiang Mai, Thailand. This facility allows access to its holdings.

Paratype: A preserved specimen at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, specimen number MCZ Herp R-39324 collected at Chiang Mai, Thailand.

Diagnosis: Until now the species *Aspris russellgranti sp. nov.* from the mountainous region in North Thailand and *A. peterkraussi sp. nov.* from the mountainous region in West Burma have been treated as populations of the species *A. berdmorei* Blyth, 1853. Both would identify as that species using the relevant key in Smith (1923) at page 773.

The species *Aspris yunnanensis* Boulenger, 1887 is similar in form to *A. berdmorei* and has been treated as synonymous to it by many authors. However it is clearly sufficiently different to be recognized as a separate species and so is included in the genus-wide diagnosis for each species herein in order to separate them all from one another as part of this diagnosis.

The five relevant species are readily separated from one another as follows, each having one of the following five unique combinations of characters:

Aspris berdmorei Blyth, 1853 has 32-34 mid-body rows, slight to significant dorsal keels, single fronto-nasal and two loreal shields, one behind the other.

A. peterkraussi sp. nov. has 36-40 mid-body rows, single fronto-nasal and two loreal shields, one behind the other.

A. russellgranti sp. nov. has 32-38 mid-body rows, single fronto-nasal and three loreal shields, the anterior one being divided horizontally.

A. yunnanensis (Boulenger, 1887) has 34 mid-body rows, no dorsal keels of any sort, single fronto-nasal and two loreal shields, one behind the other.

A. laotus (Smith, 1923) is separated from the four preceding species by having a divided fronto-nasal, versus single in the other four species.

Distribution: The Mountainous region in the north-west of Thailand, centred on the area around Chiang Mai.

Etymology: Named in honour of Russell Grant of Launching Place, Victoria, Australia, a well-known snake breeder, specializing in pythons in recognition for his efforts in conservation and education in relation to Australian snakes.

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TROPIDOPHORUS SENSU LATO**GENUS AND SPECIES LIST****Genus *Tropidophorus* Duméril and Bibron, 1839***Tropidophorus cocincinensis* Duméril and Bibron, 1839 (type species)*Tropidophorus joeymontebelloi* sp. nov.*Tropidophorus microlepis* Günther, 1861**Genus: *Enoplosaurus* Sauvage, 1879***Enoplosaurus grayi* (Günther, 1861)*Enoplosaurus baconi* (Hikida, Riyanto and Ota, 2003)**Genus *Aspris* Blyth, 1853***Aspris berdmorei* Blyth, 1853 (type species)*Aspris laotus* (Smith, 1923)*Aspris peterkraussi* sp. nov.*Aspris russellgranti* sp. nov.**Genus *Norbea* Gray***Norbea brookei* Gray, 1845 (type species)*Norbea beccarii* (Peters, 1871)*Norbea davaoensis* (Bacon, 1980)*Norbea iniquus* (Lidth De Juede, 1905)*Norbea misaminius* (Stejneger, 1908)*Norbea mocquardii* (Boulenger, 1895)*Norbea partelloi* (Stejneger, 1910)*Norbea perplexus* (Barbour, 1921)*Norbea sebi* (Pui, Karin, Bauer and Das, 2017)**Genus *Greersaurus* gen. nov.***Greersaurus robinsoni* (Smith, 1919)*Greersaurus thai* (Smith, 1919)**Subgenus *Paragreerscincus* subgen. nov.***Greersaurus (Paragreerscincus) sinicus* (Boettger, 1886) (type species)*Greersaurus (Paragreerscincus) guangxiensis* (Wen, 1992)**Genus *Barnettsaurus* gen. nov.***Barnettsaurus micropus* (Lidth De Juede, 1905) (monotypic)**Genus *Kerryleewennigea* gen. nov.***Kerryleewennigea hainanus* (Smith, 1923) (type species)*Kerryleewennigea assamensis* (Annandale, 1912)*Kerryleewennigea hangnam* (Chuaynkern, Nabhitabhata, Inthara, Kamsook and Somsri, 2005)*Kerryleewennigea baviensis* (Bouret, 1939)*Kerryleewennigea murphyi* (Hikida, Orlov, Nabhitabhata and Ota, 2002)**Genus *Coggersaurus* gen. nov.***Coggersaurus matsuii* (Hikida, Orlov, Nabhitabhata and Ota, 2002) (type species)*Coggersaurus noggei* (Ziegler, Thanh and Thanh, 2005)*Coggersaurus latiscutatus* (Hikida, Orlov, Nabhitabhata and Ota, 2002)*Coggersaurus boehmei* (Nguyen, Nguyen, Schmitz, Orlov and Ziegler, 2010)