

A re-evaluation of the Crocodile Skinks, genus *Tribolonotus* Duméril and Bibron, 1839 *sensu lato* including the division of the genus into three, description of three new species, a new subspecies and the placement of all within a new tribe.

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ABSTRACT

The Lygosominae, Crocodile Skinks genus *Tribolonotus* Duméril and Bibron, 1839 as currently recognized consists of eight described species. A related genus, *Fojia* Greer and Simon, 1982 consists of a single species *Fojia bumui* Greer and Simon, 1982.

Molecular studies have shown the some of the known species of *Tribolonotus* (type species *Zonurus novaeguineae* Schlegel, 1834), to be significantly divergent from one another in spite of morphological similarities and distributional proximity (Austin *et al.* 2010).

As a result of these studies, a re-assessment of the morphology of the relevant species and comparison with the geographical and geological records of the Solomon Islands, it is clear that the assemblage needs to be divided (as do some other species complexes in the area).

At the genus level *Tribolonotus* needs to be divided in order to maintain relative parity as compared to other skink genera from the Australo-Papuan region in terms of their relative divergences.

Therefore, *Tribolonotus* as currently recognized is herein divided into three genera, namely *Tribolonotus*, for the New Guinea species, *Quazitribolonotus gen. nov.* for *T. blanchardi* Burt, 1930 and two similar species formally described herein, namely *Q. frankanthonyi sp. nov.* and *Q. tomlonsdalei sp. nov.*, and the genus *Feretribolonotus gen. nov.* for the rest of the species formerly within *Tribolonotus*.

Feretribolonotus gen. nov. is further divided into two subgenera, the other named *Propetribolonotus subgen. nov.* to accommodate the divergent species "*Tribolonotus brongersmai* Cogger, 1972".

All of these and *Fojia* are in turn placed in a newly named tribe *Tribolonotiini tribe nov.* *Fojia* is also placed into a subtribe *Fojiina subtribe nov.*

The species described as *Tribolonotus pseudoponceleti* Greer and Parker, 1968, is divided into two based on criteria set out by Greer and Parker (1968) and (Austin *et al.* 2010).

The Buka Island population is formally named *Feretribolonotus greeri sp. nov.*

Kar Kar Island and Huon Peninsula specimens of *Tribolonotus gracilis* de Rooij, 1909 being significantly different in form to the nominate race, and divergent genetically are herein described as a new subspecies, *T. gracilis karkarensis sp. nov.*

Keywords: Taxonomy; lizards; Tribe; new tribe; Tribolonotiini; new subtribe; Fojiina; genus; genera; *Tribolonotus*; Solomon Islands; Solomons; Guadalcanal; Bougainville; Nggela; new genus; *Quazitribolonotus*; *Feretribolonotus*; new subgenus; *Propetribolonotus*; new species; Buka Island; *greeri*; *frankanthonyi*; *tomlonsdalei*; new subspecies; *karkarensis*.

INTRODUCTION

The so-called Crocodile Skinks *Tribolonotus* Duméril and Bibron, 1839 are found in New Guinea and islands to the north, including the Bismarck Archipelago, and the Solomon Islands.

The genus *Tribolonotus* as currently recognized consists of eight described species all of which superficially at least appear to be morphologically similar. A related genus, *Fojia* Greer and Simon, 1982 consists of a single species *Fojia bumui* Greer and Simon, 1982, but as noted in the original description, clearly shares affinities with *Tribolonotus* to the exclusion of all other

genera. Molecular studies have shown that some of the known species of *Tribolonotus* to be significantly divergent from one another in spite of morphological similarities and distributional proximity (Austin *et al.* 2010).

Pyron *et al.* (2013) found much the same in their more wide-ranging squamate phylogeny and showed the depth of divergence between the relevant species-level taxa to be significant.

As a result of these studies and a re-assessment of the morphology of the relevant species, it is clear that at the genus

level, the assemblage needs to be divided in order to maintain relative parity as compared to other skink genera from the Australo-Papuan region in relation to divergences and generic placements.

This is most easily seen when comparing this group with other species and genera on the Pyron *et al.* (2013) figures.

Therefore, *Tribolonotus* as currently recognized is herein divided into three genera and one of these into subgenera in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

All of these and *Fojia* are in turn placed in a newly named tribe Tribolonotiini *tribe nov.* *Fojia* is also placed into a subtribe called Fojina *subtribe nov.*

Quazitribolonotus gen. nov. is the new genus name applied to the *T. blanchardi* (Burt, 1930) complex. Until now this has been treated as a single species, but is herein divided three ways.

Q. frankanthonyi sp. nov. and *Q. tomnonsdalei sp. nov.* are the two newly named species and occur in biologically distinct land zones within the Solomon Islands.

Feretribolonotus gen. nov. is the generic name now applied to the following species: *T. annectens* Zwiemel, 1966, *T. brongersmai* Cogger, 1972, *T. ponceleti* Kinghorn, 1937, *T. pseudoponceleti* Greer and Parker, 1968 as well as *Feretribolonotus greeri sp. nov.* (described below) and *T. schmidti* Burt, 1930. The divergent species *T. schmidti* Burt, 1930 is unique among the species in the tribe in being a live bearer, as opposed to laying eggs and is placed in the subgenus *Protribolonotus subgen. nov.*

Tribolonotus Duméril and Bibron, 1839 is herein restricted to the two New Guinea species, namely *Tribolonotus novaeguineae* (Schlegel, 1834) (the type species) and *T. gracilis* De Rooij, 1909.

The relevant divisions outlined above also have a robust morphological basis to support them as a further reason why I have no hesitation in breaking up the genus as currently recognized.

The species *T. pseudoponceleti* Greer and Parker, 1968 (herein placed in the new genus *Feretribolonotus gen. nov.*) was shown by both Greer and Parker (1968) and (Austin *et al.* 2010) to consist of two distinct populations.

This is formally divided into two species based on criteria set out by Greer and Parker (1968) and (Austin *et al.* 2010).

In the case of these taxa, I have married the molecular data of Austin *et al.* (2010), with the morphological data of Greer and Parker (1968) to identify the unnamed taxon and provide a description of it in compliance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

The Buka Island population is formally named *Feretribolonotus greeri sp. nov.*

Inspection of a large number of *T. gracilis* de Rooij, 1909 from the general region they occur (northern New Guinea), showed the presence of two distinct geographically disjunct morphs.

T. gracilis de Rooij, 1909 is known from two main populations, this assertion being based on records of Australian Museum holdings for the species and other available records (e.g. Austin *et al.* 2010).

One population is found in a region generally west of Wewak, PNG, along the coast into Irian Jaya. This is the nominate form. Besides this, another significant population is known from Kar Kar Island and nearby parts of the mainland in the Madang province, centred on the Huon Peninsula. These are morphologically distinct from the nominate form, most easily distinguished by the configuration of bright orange-red markings around the eye and the positioning of a flattened ridge running backwards from the eye.

Molecular data of Austin *et al.* (2010) also confirms divergence of these lizards from the nominate population by a degree worthy of subspecies recognition. The area between the two

populations is the general lower Sepik River basin, which is an area of lowlands and swamps and clearly unsuitable habitat for the species and so the absence of records can be reliably attributed to an absence of specimens, as opposed to a mere absence of collecting. The Sepik valley barrier would have been formed and maintained as the northern landmasses accreted to the New Guinea landmass in the last 5 million years as described by Hall (2002) and adapted by Austin *et al.* (2010).

Furthermore the geologically recently created hilly regions in northern New Guinea which is where the species occurs is not connected to the central cordillera of New Guinea, these being separated by a wide area of lowlands and so specimens from the east and west populations do not have an obvious bridge by which to get from one population to another.

Well established geological evidence suggests a division of the populations by more than a million years (somewhere under 4 million years) and this divergence is of the order recognized by many authorities as being worthy of taxonomic recognition (e.g. Keogh *et al.*, 2003).

Keogh *et al.*, (2003), found populations of Stephens Banded Snakes *H. stephensi* Krefft, 1869 to have diverged some 800,000 years ago and went on to state that "managers should treat the Queensland and NSW populations of *H. stephensi* as separate conservation units".

In the absence of known intermediates and a divergence greater than a million years, it is appropriate that the two populations of *T. gracilis* be afforded taxonomic recognition. The unnamed taxon is therefore described herein as *T. gracilis karkarensis subsp. nov.*

The species *T. blanchardi* Burt, 1930 as recognized to date, is clearly the most divergent in the group from the Solomon Islands and as mentioned already is herein placed in the genus *Quazitribolonotus gen. nov.*

The known populations clearly sit within three currently known well-defined groups. These are a largely montane dwelling form from Bougainville, the nominate form known from Choiseul and a third form known from Nggela and Guadalcanal. Based on their obvious differences in form (including colour variants) and habits, they are formally divided into species.

Molecular evidence, not available at present, will I anticipate support my position.

This can be pre-empted with a high degree of probability (but not certainty) on the following grounds.

The three populations of *Quazitribolonotus blanchardi* (Burt, 1930), herein divided are significantly divergent in habits, that cannot be merely explained by location, which is both proximal and in the recent geological past connected by land bridges. The allopatry of species is based on a demonstrated lack of dispersal in these lizards as shown by the current distribution of the tribe.

Even at times of reduced sea levels, during glacial maxima, potentially emergent land bridges between the relevant islands in the Solomons, in recent Pleistocene times would not have had habitat conducive to migration between the current island masses as seen by the sea floor evidence provided by Bruns *et al.* (2009). Habitat in the form of watercourses would have drained off the islands to the sea and not across newly emergent potential landbridges, which would have been largely flattish and not habitat for these lizards.

Two populations described herein, would in any event perhaps not have been connected via a land bridge even at times of lowest sea levels and so the genetic isolation would have been maintained.

Furthermore, similar species in the tribe (e.g. *F. ponceleti* Kinghorn, 1937 and *F. pseudoponceleti* (Greer and Parker, 1968)) appear to maintain allopatric distributions, even when in potential contact, as seen by evidence provided by Austin *et al.* (2010) and Greer and Parker (1968).

In spite of the other clade (genus) from the Solomons, namely

Feretribolonotus gen. nov. being able to disperse as far afield as New Britain and Manus Island, *Quazitribolonotus gen. nov.* has been unable to disperse beyond the Solomons arc and within this region appears to be more restricted in habitats than *Feretribolonotus gen. nov.* as explained by Greer and Parker (1968).

This genus (*Quazitribolonotus gen. nov.*) remains confined to the arc of islands running from Ngela (AKA Nggela) in the south-east to Bougainville in the north-west (McCoy 2006).

Absence of *Quazitribolonotus gen. nov.* specimens from intermediate or nearby islands in the Solomons also appears to be a result of absence of lizards as opposed from non-collection or being overlooked, based on evidence of unsuccessful targeted searches as outlined by Austin *et al.* (2010).

The other islands are also generally separated by sea depths greater than the lowest sea levels in recent ice age maxima (estimated at about 120 metres), as seen in the maps provided by Russell and Coupe (1984).

References relevant to the taxonomic conclusions in this paper include the following: Adler, *et al.* (1995), Austin *et al.* (2010), Balsai (1995), Bonetti (2002), Boulenger (1887), Boseto and Pikacha (2016), Bruns *et al.* (1989), Burt (1930), Burt and Burt (1932), Charlier (1999), Cogger (1972), de Rooij (1909, 1915, 1919), Dost (2001), Duméril and Bibron (1839), Evers (2006, 2010), Greer (1982), Greer and Parker (1967), Greer and Simon (1982), Hagen *et al.* (2012), Hall (2002), Iskandar and Erdelen (2006), Keogh *et al.* (2003), Kinghorn (1937), McCoy (1980, 2006), McDowell (1970), Meyer (2002, 2012), Miralles (2004), Mys (1988), Parker (1940), Peters (1970), Pianka and Vitt (2003), Reeder (2003), Rittmeyer and Austin (2015), Roux (1930), Russell and Coupe (1984), Schlegel (1834), Zweifel (1966) and sources cited therein.

A new formal description of the genus *Tribolonotus* Duméril and Bibron, 1839, as defined within this paper is effectively contained within the descriptions of the genera *Quazitribolonotus gen. nov.* and *Feretribolonotus gen. nov.*

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 (Court of Appeal Victoria 2014 and VCAT 2015), I have made a decision to publish this paper in view of the conservation significance attached to the formal recognition of unnamed species and on the basis that further delays may in fact put these unnamed taxa at greater risk of extinction due to extensive habitat destruction in the relevant areas.

MATERIALS AND METHODS

These are not formally explained in a number of my recent papers under the heading "Materials and methods" or similar, on the basis they are self evident to any vaguely perceptive reader. However, the process by which the following taxonomy and nomenclature in this and other recent papers by myself has been arrived at is explained herein for the benefit of people who have recently published so-called "criticisms" of some of my recent papers. They have alleged a serious "defect" by myself not formally explaining "Materials and methods" under such a heading.

The process involved in creating the final product for this and other relevant papers has been via a combination of the following:

Genera and component species are audited to see if their classifications are correct on the basis on known type specimens, locations and the like.

Original descriptions and contemporary concepts of the species are matched with available specimens from across the ranges of the species to see if all conform to accepted norms.

These may include those held in museums, private collections, collected in the field, photographed, posted on the internet or held by individuals and only when the location data is good and with any other relevant data available.

Where specimens do not appear to comply with the described species (and accepted concept of the species), this non-conformation is looked at with a view to ascertaining if it is worthy of taxonomic recognition or other relevant considerations.

When this appears to be the case (non-conformation), the potential target taxon is inspected as closely as practicable with a view to comparing with the nominate form or forms and other relevant data is also inspected, including any available molecular studies which may indicate likely divergence of populations.

Where molecular studies are unavailable for the relevant taxon or group, other studies involving species and groups such as genera, constrained by the same geographical or geological barriers, or with like distribution patterns are inspected as they give reasonable indications of the likely divergences of the taxa being studied herein.

Additionally other studies involving geological history, sea level and habitat changes associated with long-term climate change are also utilized to predict past movements of species and genus groups in order to further ascertain likely divergences between extant populations (as done in this very paper).

When all available information checks out to show taxonomically distinct populations worthy of recognition, they are then recognized herein according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

This means that if a name has been properly proposed in the past, it is used. Alternatively, if none is available, one is proposed according to the rules of the Code as is done several times in this paper.

As a matter of trite I mention that if a target taxon or group does check out as being "in order" or properly classified, a paper is usually not published.

The "results" are of course the taxonomic judgements made herein.

QUAZITRIBOLONOTUS GEN. NOV.

Type species: *Tribolonotus blanchardi* Burt, 1930.

Diagnosis: *Quazitribolonotus gen. nov.* is the new genus name applied to the *T. blanchardi* Burt, 1930 complex. Until now this has been treated as a single species, but is herein divided three ways inside the newly named genus.

The genus *Tribolonotus* Duméril and Bibron, 1839 is readily separated from *Quazitribolonotus gen. nov.* and *Feretribolonotus gen. nov.* by the presence of enlarged dorsal scales in four rows and projecting spines present on the posterior dorsal margin of head.

The other two genera (*Quazitribolonotus gen. nov.* and *Feretribolonotus gen. nov.*) are characterised by having enlarged dorsal scales in one vertebral row or in two rows juxtaposed along the midline and the posterior margin of the head lacks projecting spines.

The genus *Quazitribolonotus gen. nov.* is readily separated from *Feretribolonotus gen. nov.* by having enlarged vertebral scales in a single row. *Feretribolonotus gen. nov.* have enlarged vertebral scales in a double row.

Head scalation of *Quazitribolonotus gen. nov.* identified as *T. blanchardi*, is described in detail by McCoy (2006) at page 86.

The subgenus *Propetribolonotus subgen. nov.* which includes the live-bearing species *F. schmidtii* is separated from others in the genus by the following characters: Juxtaposed rows of enlarged dorsal scales commence on nape immediately posterior to the enlarged scales on head; two rows of enlarged vertebral scales in contact with parietal scales or separated by small granular and spiny scales; maximum recorded snout-vent, length 41 mm, versus, juxtaposed rows of enlarged dorsal scales commence on the posterior part of the nape, most of neck being covered with granular or spiny scales and/or spiny, enlarged scales in rows closest to enlarged vertebral rows numerous, approximately one scale for each enlarged middorsal

scale; two primary temporal scales in all other *Feretribolonotus* *gen. nov.*

All three genera are characterised as follows: They are small to medium sized lizards. The lower eyelid is scaly; no supranasals or prefrontals. The frontoparietals may be distinct or fused. The head shields are notably rugose with distinct longitudinal ridges and highly fused. The body scales are carinate or spinose. The limbs are well developed and pentadactyl.

Fojia Greer and Simon, 1982, from Madang, PNG, differs from *Tribolonotus* in having, in males, glandular patches on the chin and undersides of thighs and tail base as well as the abdomen, and in having a typical instead of a highly fused complement of head scales. Otherwise it is physically similar in most respects, although significantly different in habits as outlined by Greer and Simon (1982).

Distribution: Solomon Islands, specifically including Choiseul and Isabella (type species); Bougainville (*Q. frankanthoni* *sp. nov.*); Ngela (*Q. tomlonsdalei* *sp. nov.*).

Etymology: A derivative of the word part “quazi” or “quasi” meaning “have some of the form of” in Latin. The latter part of the name “tribolonotus” being that to which it is like.

Content: *Quazitribolonotus blanchardi* (Burt, 1930) (type species); *Q. frankanthoni* *sp. nov.*; *Q. tomlonsdale* *sp. nov.*

FERETRIBOLONOTUS GEN. NOV.

Type species: *Feretribolonotus greeri* *sp. nov.*

Diagnosis: *Feretribolonotus* *gen. nov.* is the new genus name applied to the Solomon Islands/Manus Island/New Britain clade, herein comprising a total of six species. Until now this has been treated as five species within the genus *Tribolonotus* Duméril and Bibron, 1839, with a new species named herein.

The genus *Tribolonotus* is readily separated from *Quazitribolonotus* *gen. nov.* and *Feretribolonotus* *gen. nov.* by the presence of enlarged dorsal scales in four rows and projecting spines present on the posterior dorsal margin of head. The other two genera (*Quazitribolonotus* *gen. nov.* and *Feretribolonotus* *gen. nov.*) are characterised by having enlarged dorsal scales in one vertebral row or in two rows juxtaposed along the midline and the posterior margin of the head lacks projecting spines.

The genus *Quazitribolonotus* *gen. nov.* is readily separated from *Feretribolonotus* *gen. nov.* by having enlarged vertebral scales in a single row. *Feretribolonotus* *gen. nov.* have enlarged vertebral scales in a double row.

The subgenus *Propetribolonotus* *subgen. nov.* which includes the live-bearing species *F. schmidtii* is separated from others in the genus by the following characters: Juxtaposed rows of enlarged dorsal scales commence on nape immediately posterior to the enlarged scales on head; two rows of enlarged vertebral scales in contact with parietal scales or separated by small granular and spiny scales; maximum recorded snout-vent, length 41 mm, versus, juxtaposed rows of enlarged dorsal scales commence on the posterior part of the nape, most of neck being covered with granular or spiny scales and/or spiny, enlarged scales in rows closest to enlarged vertebral rows numerous, approximately one scale for each enlarged middorsal scale; two primary temporal scales in all other *Feretribolonotus* *gen. nov.*

All three genera are characterised as follows: They are small to medium sized lizards. The lower eyelid is scaly; no supranasals or prefrontals. The frontoparietals may be distinct or fused. The head shields are notably rugose with distinct longitudinal ridges and highly fused. The body scales are carinate or spinose. The limbs are well developed and pentadactyl.

Fojia Greer and Simon, 1982, from Madang, PNG, differs from *Tribolonotus* in having, in males, glandular patches on the chin and undersides of thighs and tail base as well as the abdomen, and in having a typical instead of a highly fused complement of head scales. Otherwise it is physically similar in most respects,

although significantly different in habits as outlined by Greer and Simon (1982).

Distribution: Known from the Solomon Islands, including: Bougainville, Choiseul, Shortland, Buka, Guadalcanal, Marapna, Manus Island and New Britain.

Etymology: A derivative of the word part “fere” meaning “not quite” in Latin. The latter part of the name “tribolonotus” being that to which it is like.

Content: *Feretribolonotus greeri* *sp. nov.* (type species); *F. annectens* (Zwiefel, 1966); *F. brongersmai* (Cogger, 1972); *F. ponzeleti* (Kingham, 1937); *F. pseudoponzeleti* (Greer and Parker, 1968); *F. schmidtii* (Burt, 1930).

PROPETRIBOLONOTUS SUBGEN. NOV.

Type species: *Tribolonotus schmidtii* Burt, 1930.

Diagnosis: The subgenus *Propetribolonotus* *subgen. nov.* which is monotypic for the live-bearing species *F. schmidtii* is separated from others in the genus *Feretribolonotus* *gen. nov.* by the following characters: Juxtaposed rows of enlarged dorsal scales commence on nape immediately posterior to the enlarged scales on head; two rows of enlarged vertebral scales in contact with parietal scales or separated by small granular and spiny scales; maximum recorded snout-vent, length 41 mm, versus, juxtaposed rows of enlarged dorsal scales commence on the posterior part of the nape, most of neck being covered with granular or spiny scales and/or spiny, enlarged scales in rows closest to enlarged vertebral rows numerous, approximately one scale for each enlarged middorsal scale; two primary temporal scales in all other *Feretribolonotus* *gen. nov.*

Feretribolonotus *gen. nov.* have enlarged vertebral scales in a double row.

The genus *Quazitribolonotus* *gen. nov.* is readily separated from *Feretribolonotus* *gen. nov.* by having enlarged vertebral scales in a single row.

Quazitribolonotus *gen. nov.* is the new genus name applied to the *T. blanchardi* Burt, 1930 complex. Until now this has been treated as a single species, but is herein divided three ways inside the newly named genus.

The genus *Tribolonotus* Duméril and Bibron, 1839 is readily separated from *Quazitribolonotus* *gen. nov.* and *Feretribolonotus* *gen. nov.* by the presence of enlarged dorsal scales in four rows and projecting spines present on the posterior dorsal margin of head.

The other two genera (*Quazitribolonotus* *gen. nov.* and *Feretribolonotus* *gen. nov.*) are characterised by having enlarged dorsal scales in one vertebral row or in two rows juxtaposed along the midline and the posterior margin of the head lacks projecting spines.

All three genera are characterised as follows: They are small to medium sized lizards. The lower eyelid is scaly; no supranasals or prefrontals. The frontoparietals may be distinct or fused. The head shields are notably rugose with distinct longitudinal ridges and highly fused. The body scales are carinate or spinose. The limbs are well developed and pentadactyl.

Fojia Greer and Simon, 1982, from Madang, PNG, differs from *Tribolonotus* in having, in males, glandular patches on the chin and undersides of thighs and tail base as well as the abdomen, and in having a typical instead of a highly fused complement of head scales.

Otherwise it is physically similar in most respects, although significantly different in habits as outlined by Greer and Simon (1982).

Distribution: Guadalcanal and immediately adjacent islets, Solomon Islands.

Etymology: A derivative of the word part “prope” meaning “close to” in Latin. The latter part of the name “tribolonotus” being that to which it is like.

Content: *Propetribolonotus schmidtii* Burt, 1930 (monotypic).

QUAZITRIBOLONOTUS FRANKANTHONYI SP. NOV.

Holotype: A preserved specimen at the California Academy of Sciences (CAS), USA, specimen number: 94011 collected at Kunua, Bougainville, Lat. -5.78, Long. 154.75 in the Solomon Islands.

The California Academy of Sciences is a facility that allows access to its holdings by scientists.

Paratype: A preserved specimen at the California Academy of Sciences (CAS), USA, specimen number: 94012 collected at Kunua, Bougainville Lat. -5.78, Long. 154.75 in the Solomon Islands.

Paratype: *Quazitribolonotus frankanthonyi sp. nov.* is similar in most respects to both *Q. blanchardi* (Burt, 1930) and *Q. tomloonsdalei sp. nov.* but is most readily differentiated on the basis of colouration, being generally dark brown dorsally on the upper surfaces, versus yellowish brown on the upper surfaces in the other two species.

Q. tomloonsdalei sp. nov. possesses a well-defined squarish white patch running from the lower labial up to almost the front of the eye. This is ill-defined or absent in the other two species (*Q. blanchardi* and *Q. frankanthonyi sp. nov.*).

While colouration of specimens is variable in species until now treated as *Q. blanchardi* as described by McCoy (2006), there is a general trend towards a considerable dulling in adults, as compared to juveniles.

The genus *Quazitribolonotus gen. nov.* is readily separated from *Feretribolonotus gen. nov.* by having enlarged vertebral scales in a single row. *Feretribolonotus gen. nov.* have enlarged vertebral scales in a double row.

The genus *Tribolonotus* Duméril and Bibron, 1839 is readily separated from *Quazitribolonotus gen. nov.* and *Feretribolonotus gen. nov.* by the presence of enlarged dorsal scales in four rows and projecting spines present on the posterior dorsal margin of head.

The other two genera (*Quazitribolonotus gen. nov.* and *Feretribolonotus gen. nov.*) are characterised by having enlarged dorsal scales in one vertebral row or in two rows juxtaposed along the midline and the posterior margin of the head lacks projecting spines.

The subgenus within *Feretribolonotus gen. nov.*, namely *Propetribolonotus subgen. nov.* which includes the live-bearing species *F. schmidti* is separated from others in the genus by the following characters: Juxtaposed rows of enlarged dorsal scales commence on nape immediately posterior to the enlarged scales on head; two rows of enlarged vertebral scales in contact with parietal scales or separated by small granular and spiny scales; maximum recorded snout-vent, length 41 mm, versus, juxtaposed rows of enlarged dorsal scales commence on the posterior part of the nape, most of neck being covered with granular or spiny scales and/or spiny, enlarged scales in rows closest to enlarged vertebral rows numerous, approximately one scale for each enlarged middorsal scale; two primary temporal scales in all other *Feretribolonotus gen. nov.*

All three genera are characterised as follows: They are small to medium sized lizards. The lower eyelid is scaly; no supranasals or prefrontals. The frontoparietals may be distinct or fused. The head shields are notably rugose with distinct longitudinal ridges and highly fused. The body scales are carinate or spinose. The limbs are well developed and pentadactyl.

Fojia Greer and Simon, 1982, from Madang, PNG, differs from *Tribolonotus* in having, in males, glandular patches on the chin and undersides of thighs and tail base as well as the abdomen, and in having a typical instead of a highly fused complement of head scales. Otherwise it is physically similar in most respects, although significantly different in habits as outlined by Greer and Simon (1982).

Distribution: Known only from the island of Bougainville in the Solomon Islands.

Etymology: Named after Frank Anthony, of Quick Copy, Box Hill, Victoria, Australia, for services to herpetology and wildlife conservation in general, including through his valuable role in publishing *Australasian Journal of Herpetology*.

QUAZITRIBOLONOTUS TOMLOONSDALEI SP. NOV.

Holotype: A preserved specimen at the Australian Museum in Sydney, Australia, specimen number: R.81773 collected at Boromole Village, Ngela Sule (Big Gela), Florida Gap, Solomon Islands.

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

Paratype: A preserved specimen at the Australian Museum in Sydney, Australia, specimen number: R.91221 collected at Boromole Village, Ngela Sule (Big Gela), Florida Gap, Solomon Islands.

Diagnosis: *Quazitribolonotus tomloonsdalei sp. nov.* is most similar to *Q. blanchardi* (Burt, 1930).

Q. tomloonsdalei sp. nov. possesses a well-defined squarish white patch running from the lower labial up to almost the front of the eye. This is ill-defined or absent in the other two species (*Q. blanchardi* and *Q. frankanthonyi sp. nov.*).

Q. frankanthonyi sp. nov. is similar in most respects to both *Q. blanchardi* (Burt, 1930) and *Q. tomloonsdalei sp. nov.* but is most readily differentiated on the basis of colouration, being generally dark brown dorsally on the upper surfaces, versus yellowish brown on the upper surfaces in the other two species.

While colouration of specimens is variable in species until now treated as *Q. blanchardi* as described by McCoy (2006), there is a general trend towards a considerable dulling in adults, as compared to juveniles.

Head scalation of *Quazitribolonotus gen. nov.* described by him as *T. blanchardi*, is described in detail by McCoy (2006).

The genus *Quazitribolonotus gen. nov.* is readily separated from *Feretribolonotus gen. nov.* by having enlarged vertebral scales in a single row. *Feretribolonotus gen. nov.* have enlarged vertebral scales in a double row.

The genus *Tribolonotus* Duméril and Bibron, 1839 is readily separated from *Quazitribolonotus gen. nov.* and *Feretribolonotus gen. nov.* by the presence of enlarged dorsal scales in four rows and projecting spines present on the posterior dorsal margin of head.

The other two genera (*Quazitribolonotus gen. nov.* and *Feretribolonotus gen. nov.*) are characterised by having enlarged dorsal scales in one vertebral row or in two rows juxtaposed along the midline and the posterior margin of the head lacks projecting spines.

The subgenus within *Feretribolonotus gen. nov.*, namely *Propetribolonotus subgen. nov.* which includes the live-bearing species *F. schmidti* is separated from others in the genus by the following characters: Juxtaposed rows of enlarged dorsal scales commence on nape immediately posterior to the enlarged scales on head; two rows of enlarged vertebral scales in contact with parietal scales or separated by small granular and spiny scales; maximum recorded snout-vent, length 41 mm, versus, juxtaposed rows of enlarged dorsal scales commence on the posterior part of the nape, most of neck being covered with granular or spiny scales and/or spiny, enlarged scales in rows closest to enlarged vertebral rows numerous, approximately one scale for each enlarged middorsal scale; two primary temporal scales in all other *Feretribolonotus gen. nov.*

All three genera are characterised as follows: They are small to medium sized lizards. The lower eyelid is scaly; no supranasals or prefrontals. The frontoparietals may be distinct or fused. The head shields are notably rugose with distinct longitudinal ridges and highly fused. The body scales are carinate or spinose. The limbs are well developed and pentadactyl.

Fojia Greer and Simon, 1982, from Madang, PNG, differs from *Tribolonotus* in having, in males, glandular patches on the chin

and undersides of thighs and tail base as well as the abdomen, and in having a typical instead of a highly fused complement of head scales. Otherwise it is physically similar in most respects, although significantly different in habits as outlined by Greer and Simon (1982).

Distribution: Known only from Ngela Sule (Big Gela), Florida Gap, Solomon Islands.

Etymology: Named in honour of Tom Lonsdale, a veterinary surgeon from Bligh Park, New South Wales, Australia in recognition for his public exposure of bogus animal welfare charities.

FERETRIBOLONOTUS GREERI SP. NOV.

Holotype: A preserved specimen in the American Museum of Natural History (AMNH) specimen number: 89434, from Buka Island in the Autonomous Region of Bougainville, in eastern Papua New Guinea. The American Museum of Natural History is a facility that allows access to its holdings.

Paratypes: Preserved specimens in the Museum of Comparative Zoology (MCZ) Harvard University, USA, specimen numbers: 67706-67716 and 73850-73861 from Buka Island in the Autonomous Region of Bougainville, in eastern Papua New Guinea.

Diagnosis: *Feretribolonotus greeri sp. nov.* is similar in most respects to *Feretribolonotus pseudoponceleti* Greer and Parker (1968) that being the species specimens have been referred to until now.

There is a noticeable difference in the dorsal color of the Bougainville species (*F. pseudoponceleti*) and Buka specimens (*F. greeri sp. nov.*).

F. pseudoponceleti from Bougainville are dark brown dorsally with a slight amount of mottling, versus a light dorsal color tending towards a creamy tan or light brown colour with a significant amount of brown mottling in *F. greeri sp. nov.*

The general differences in color pattern between the Buka Island species and Bougainville species are correlated with differences in the distribution of certain scale counts between the two populations as outlined by Greer and Simon (1982) in their "Table 1".

Distribution: Known only from from the southern part of Buka Island in the Autonomous Region of Bougainville, in eastern Papua New Guinea.

Etymology: Named in honour of Allen E. Greer, formerly of the Australian Museum in Sydney in recognition of his significant contribution to herpetology, including with reference to the newly named species, as well as his contributions to social debate, via the *tavloid media* in the years since his formal retirement.

TRIBOLONOTUS GRACILIS KARKARENSIS SUBSP. NOV.

Holotype: A preserved specimen at the Australian Museum in Sydney, specimen number: R.66804 collected at Kar Kar Island, Madang District, Papua New Guinea.

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

Paratypes: Preserved specimens at the Australian Museum in Sydney, specimen numbers R.24859 and R.24860 collected at Kar Kar Island, Madang District, Papua New Guinea.

Diagnosis: Similar in most respects to the nominate form of *T. gracilis* de Rooij, 1909, but is most easily differentiated by the configuration of the eye markings in adults.

In nominate *T. gracilis* the characteristic orange encircles the eye, except for the top part of the ocular. By contrast in *T. gracilis karkarensis subsp. nov.* the orange is only present anterior and posterior to the eye, where there are large blotches and there is a large gap below the eye, where the scales remain the normal greyish-brown colour.

In *T. gracilis karkarensis subsp. nov.* there is a distinct flattened ridge that runs from the front of the top of the eye, backwards across the skull. This same ridge commences further back, as in from the rear half of the top of the eye in nominate *T. gracilis*.

Distribution: Known only from Kar Kar Island and the immediately adjacent mainland around the Huon Peninsula, Madang, PNG.

Etymology: Named in reflection of where the taxon is found in large numbers (Kar Kar Island).

TRIBOLONOTIINI TRIBE NOV.

(Terminal taxon: *Zonurus novaeguineae* Schlegel, 1834)

Diagnosis: The ventral glands of adult males and the juxtaposition of the normal sized middorsal scales with the granular lateral scales will instantly distinguish *Tribolonotiini tribe nov.* all other skinks. *Fojia* (subtribe *Fojiina subtribe nov.*), differs from the nominate subtribe *Tribolonotiina subtribe nov.* in having, in males, glandular patches on the chin and undersides of thighs and tail base as well as the abdomen, and in having a typical instead of a highly fused complement of head scales.

Distribution: The island arc north of New Guinea including those landmasses that have accreted to the New Guinea mainland in the recent geological past in places such as the Huon Peninsula and northern New Guinea, including the Bismark Archipelago and the Solomon Islands.

Content: *Tribolonotus* Duméril and Bibron, 1839 (type genus); *Feretribolonotus gen. nov.*; *Fojia* Greer and Simon, 1982; *Quazitribolonotus gen. nov.*

FOJIINA SUBTRIBE NOV.

(Terminal taxon: *Fojia bumui* Greer and Simon, 1982)

Diagnosis: The ventral glands of adult males and the juxtaposition of the normal sized middorsal scales with the granular lateral scales will instantly distinguish *Tribolonotiini tribe nov.* all other skinks. *Fojia* (subtribe *Fojiina subtribe nov.*), differs from the nominate subtribe *Tribolonotiina subtribe nov.* in having in males, glandular patches on the chin and undersides of thighs and tail base as well as the abdomen, and in having a typical instead of a highly fused complement of head scales.

Distribution: Known only from the vicinity of the type locality in the Moikisung area at an Elevation of 550 metres, on the Huon Peninsula, Morobe Province, Papua New Guinea, (147°30'E, 6°34'S).

Content: *Fojia* Greer and Simon, 1982 (monotypic).

TRIBOLONOTIINA SUBTRIBE NOV.

(Terminal taxon: *Zonurus novaeguineae* Schlegel, 1834)

Diagnosis: The ventral glands of adult males and the juxtaposition of the normal sized middorsal scales with the granular lateral scales will instantly distinguish *Tribolonotiini tribe nov.* all other skinks. *Fojia* (subtribe *Fojiina subtribe nov.*), differs from the nominate subtribe *Tribolonotiina subtribe nov.* in having, in males, glandular patches on the chin and undersides of thighs and tail base as well as the abdomen, and in having a typical instead of a highly fused complement of head scales.

Distribution: The island arc north of New Guinea including those landmasses that have accreted to the New Guinea mainland in the recent geological past in places such as the Huon Peninsula and northern New Guinea, including the Bismark Archipelago and the Solomon Islands.

Content: *Tribolonotus* Duméril and Bibron, 1839 (type genus); *Feretribolonotus gen. nov.*; *Quazitribolonotus gen. nov.*

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CONFLICT OF INTEREST

The author has no known relevant conflicts of interest.