

# The taxonomy of the snake genus *Broghammerus* Hoser, 2004 revisited, including the creation of a new subgenus for *Broghammerus timoriensis* (Peters, 1876).

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Received 13 March 2013, Accepted 28 March 2013, Published 29 April 2013.

## ABSTRACT

The placement of the so-called Timor Python (species *timoriensis* Peters, 1876) into the genus *Broghammerus* Hoser, 2004 has been generally accepted since the publication of a molecular phylogeny by Rawlings *et al.* in 2008.

The phylogenetic evidence suggests a divergence between the species *Broghammerus reticulatus* (Schneider, 1801) and *B. timoriensis* in excess of 20 million years. Combined with well-defined morphological differences, this paper adopts the compelling view for separating the two species at the genus level. Taking an extremely conservative position, this paper defines and names a new subgenus for the species *B. timoriensis* in accordance with the Zoological Code.

Furthermore, subspecies of *B. reticulatus* are defined and named according to the Zoological Code.

**Keywords:** Taxonomy; Nomenclature; Zoological Code; Subgenus; *Wellspython*; Subspecies; *dalegibbonsi*; *euanedwardsi*; *haydnmacphieii*; *neilsonnemani*; *patrickcouperi*; *stuartbigmorei*.

## INTRODUCTION

The taxonomy of the extant pythons (Family Pythonidae) has been far from stable.

Numerous taxonomic papers have been published over the last century with new forms being described as recently as 2011 (Zug *et al.*) and 2012 (Hoser 2012b).

Numerous papers by this author, namely, Hoser 2000, 2003, 2003/4, 2009 and 2012b, have been major steps towards the stabilization of the taxonomy and nomenclature of the extant pythons as was that of Harvey *et al.* (2000).

A molecular phylogeny of Rawlings *et al.* (2008) confirmed the major taxonomic judgments of Hoser 2000 and 2003/4 at the genus level for the extant pythons, with papers of Hoser (2009 and 2012b) incorporating the data of Rawlings *et al.* (2008) and Harvey *et al.* (2000) to make further modifications and refinements to the taxonomy and nomenclature of the pythons.

Rawlings *et al.* (2003 and 2008) have also resolved taxonomic issues in terms of the pythons.

Austin *et al.* (2010) confirmed the Hoser position of not giving formal taxonomic recognition to outlier populations of *Lenhoserus boeleni* (Brongersma, 1953) in contrast to the situation for the species within the genus *Chondropython* Meyer, 1874, noting Hoser (2003 (and 2003/4) and Hoser 2009 (and 2012) had named two outlier populations of *Chondropython viridis* as subspecies.

As a result of the above, the taxonomy and nomenclature of Hoser (2012b) broadly and accurately reflects both the morphological differences between the extant pythons and the molecular data as published.

While adoption of the genus name *Broghammerus* for the species *reticulatus* (Schneider, 1801) and *timoriensis*, Peters, 1876 has been near universal among herpetologists since the publication of Rawlings *et al.* (2008), this has not been the case for other genera named by Hoser in Hoser (2000) and Hoser (2003/4) or the earlier genera named by Wells and Wellington in 1983 and/or 1985, even though all these described genera are better supported by the molecular data than the better-known and commonly used *Leiopython* Hubrecht, 1879.

*Apodora* Kluge, 1993 remains in common usage in spite of being rebutted by Hoser (2000 and later papers) on the basis of morphological and geological evidence, as well as the molecular evidence of Rawlings *et al.* (2008). As a genus *Apodora* has no sound basis whatsoever.

I remain of the view that *Apodora* should be treated as a junior synonym of *Liasis*.

Instability of nomenclature of the pythons has been largely driven by the activities of a group identifying themselves as the "Truth Haters", including Wolfgang Wüster, Mark O'Shea, David Williams, Hinrich Kaiser, Wulf Schleip and Darren Naish all of whom have published numerous papers and online blogs advising people not to use "Hoser names" citing an almost limitless array of dubious reasons and excuses, invariably on the alleged basis of false claims made within their papers and blogs.

A notable example of one of their so-called papers include the fraudulent series of papers known and cited as Williams and Starkey 1999 (versions 1-3)(noting herein that Brian Starkey was listed as a co-author even though he did not write the paper and had views opposite to it, see Starkey 2008). That paper sought

to attack my elapid taxonomy, in the form of the description of a new species named *Pailsus pailsei* Hoser, 1998.

That Williams had breached all scientific ethics and morals in tacking on another person as coauthor to peddle views that were opposite to what he had published and knowing himself that the information was fraudulent was a low point in herpetology globally.

The motivation to add an author name is to lend weight and credibility to what would otherwise have been ludicrous claims that would have been immediately dismissed as that. The same process was fraudulently used by other Truth Haters in later years (see below).

While the papers set out to deny that the Hoser-named elapid taxon *Pailsus pailsei* Hoser, 1998 was a validly described new species, attempting to declare it as synonymous with "*Pseudechis australis*", both men knew that the opposite was the case.

Subsequent to this, Starkey (2008) wrote of the Williams (and Starkey) online papers:

"I had absolutely nothing to do with time alteration and the reposting on web.

If fact I was in two minds about the whole paper, without even seeing a specimen of pailus. I didn't want to pass judgement until I had got out there and looked for myself. I did four trips asap to the area and found a couple of specimens 40-50 km from Cloncurry. I knew as soon as I saw my first DOR, that you were right!

When I showed David a few pic's and close ups he knew too! Then I got a live specimen

amongst a small group of rocks, so fast I nearly lost it. I have probably seen about 3 live and 4-5 DOR specimens in 9 or more trips. I wish we didn't jump the gun.

But David wrote the paper and added my name. I never actually wrote a word, although he may have quoted things I said during phone conversations.

And that's the truth."

Even the United States based Society for the Study of Amphibians and Reptiles (SSAR) a peak body of herpetologists, in their own code of ethics as published online as of 1 August 2012, at:

<http://www.ssarherps.org/pages/ethics.php>  
states:

"*Authorship.* Researchers will only claim authorship of papers on which they have made substantial contributions, including conceiving the study, obtaining funding, designing the work, executing the research, analyzing and interpreting the data, or writing the manuscript. Authors may not be added or removed without their agreement, nor be named on a manuscript unless they have approved the final version of the manuscript."

This effectively confirms the totally unethical and morally repugnant actions of David Williams in terms of his inclusion of Starkey as listed co-author for his paper.

Following the first paper by myself involving python taxonomy published in 2000 (see Hoser 2000), Wüster and the others rushed online to condemn the new nomenclature for what had long been recognized as unnamed taxa, a good example being the species now generally recognized as *Leiopython hoserae* Hoser, 2000. Wüster then posted on the web on Jeff Barringer's Kingsnake dot com on January 22, 2001 at 11:29:07 a so-called paper he had written complaining about my work.

As Williams had done before him, Wüster did the morally reprehensible act of shopping his same "paper" to friends to get them to sign on as co-authors, even though they played no significant role in authorship, to lend "weight" to the "paper" which in fact happened.

The same paper gained several new listed authors.

Wüster shopped the exact same "paper" to various journal

editors before finding a friendly one in the form of the editor of the Dutch journal *Litteratura Serpentina* whom he posted the same piece to on 5 May 2001 where a fraudulent collection of lies was published as Wüster *et al.* (2001), the *et al.* being the newly added authors, who were added in breach of basic scientific ethics even though none had anything whatsoever to do with the final manuscript other than a general agreement with the contents and axe to grind against myself.

Numerous other ethical breaches and fraudulent acts by Wüster and Williams are detailed in Hoser 2012a.

In 2012, Wüster's close friend Hinrich Kaiser again breached basic (SSAR) ethics (as quoted above) by shopping a hate article (Kaiser 2012b) as an attached e-mail file to others attacking Hoser taxonomy via a SPAM email (Kaiser 2012a) disseminated to thousands of herpetologists globally.

In his covering e-mail of 5 June 2012 he wrote:

**"We therefore plan to submit the attached manuscript as a Point of View to *Herpetological Review*, and we wish to do so with the broadest possible support from the herpetological community. To achieve this end, we hope you will take the time to read our manuscript, send us your comments, and let us know whether we may include your name as a supporter (in Appendix 2) or even as a co-author, should the journal feel that broader authorship can lend our article greater weight with the scientific community."**

Notable is that *Herpetological Review* is published by the SSAR (quoted above), and hence this submission was in direct breach of SSAR's own published ethics statement!

This hate rant was in fact published in *Herpetological Review*, in breach of the SSAR's own ethics statement on or about 19 March 2013 (Kaiser *et al.* 2013).

Other ridiculous and scandalous attacks on the Hoser taxonomy and nomenclature in direct breach of the rules of the ICZN included Williams *et al.* (2006, 2008) and Schleip (2008), with dozens of other publications by the Truth Haters listed in Hoser (2001), Hoser (2009) and Hoser (2012a), noting all the Truth Haters publications, including online posts were designed to create nomenclatural instability and taxonomic confusion.

These various claims and reasons not to use Hoser names include the bizarre claim that the Hoser descriptions comply with the Zoological Code and therefore the Zoological Code itself should be changed to enable the Truth Haters the right to rename the same taxa by themselves and in honor of their own friends and relatives (see Kaiser 2012).

This was changed in 2013 to be an all-out attack on the Zoological Code, with a call to ignore it and rename all Hoser-named taxa (Kaiser *et al.* 2013).

I do note however that the group involved in the 2013 attempt to go outside the code to rename species and genera, went further and have sought to rename taxa formally named by myself (Hoser), and the great taxonomists, Wells and Fitzinger.

In 2000, Wüster and others approached journal editors not to publish Hoser taxonomic papers to enable them time to steal naming rights on the same taxa. They then approached the same editors to publish retractions of the same papers in order that they could then rename the same taxa (see for example van Aken 2001a, 2001b or Newman 2000).

In 2001, David Williams sent an e-mail to the editor of *Boydii*, seeking a recall of all published issues in order to invalidate the description of three elapid subspecies under the Zoological Code. To the credit of all editors referred to above, none buckled to the immense pressure applied to them by truth haters Wüster and Williams.

As recently as 2010, Schleip and O'Shea published a paper (Schleip and O'Shea 2010) encouraging people not to use taxa described by Hoser in earlier papers, invoking warped and distorted interpretations of the Zoological Code (Ride *et al.*) to allege that the Hoser-named taxa were not validly described

according to the Zoological Code.

These claims applied to the various subspecies of *Chondropython viridis* (Schlegel, 1872), described by Hoser as well as the various subspecies of *Broghammerus reticulatus* described by Hoser.

While I do not agree with the claims of Schleip and O'Shea, or their interpretation of the Zoological Code, to argue the matter and gain acceptance of the nomenclature in the face of ongoing false claims by the pair, will destabilize the taxonomy and nomenclature for years. This is of course the reckless intent of the pair, Schleip and O'Shea.

The main part of the problem involving Schleip, O'Shea, Wüster and the other Truth Haters is their ability to make "noise" to create a veneer of something that is in fact not real. This was seen in the attempt by these people to fraudulently get convicted wildlife smuggler David Williams nominated as an unsung hero in a competition where the first prize was worth a huge sum of money.

The plan failed after Williams scored thousands of votes from a single IP address, but not after they generated many more thousands of "votes" for Williams. See Hoser (2009) for the details.

Arguing fact with the Truth Haters gets nowhere in terms of solving the taxonomic and nomenclatural problems that they have deliberately created.

So instead a different strategy, not involving arguing about past papers is required to deal with the problem they have created.

In order to stabilize the taxonomy and nomenclature of the relevant *Broghammerus* pythons, all subspecies are herein described as new taxa and without reference to earlier published material.

This will enable others to use the names with the full confidence that they are valid, validly published, described in accordance with the letter of the Zoological Rules and in accordance with the strictest possible interpretation and totally comply with the current Zoological Code (Ride *et al.* 1999) and for the relevant subspecies taxa.

It is of course critical that subspecies be recognized taxonomically for conservation reasons as failure to do so may result in specimens of different subspecies being released into wrong locations and perhaps damaging the integrity of gene pools.

Of course, should subspecies be recognized after release of other forms into the same locations, damage could be irreparable.

The Kaiser (2012) claims against the Hoser papers, the main claim being that they comply with the code of Zoology and therefore it should be changed, have been invoked as a reason to not use the Hoser *Broghammerus* subspecies names, as these men do not like Raymond Hoser.

This is in direct conflict with the assertions of Schleip and O'Shea (2010) to the effect that the descriptions are not valid under the same code.

Notwithstanding these conflicting claims by the "Truth Haters", I have decided the best way to deal with the *Broghammerus* subspecies is to describe them herein as new for the purposes of stability.

I note herein that Glen Shea of Australia noted in an e-mail of 2013, that Kaiser's (2012b) allegations, claims and plot against the rules of Zoological Nomenclature were "clearly ridiculous and unworkable" (Shea 2013).

In terms of the subspecies of *Chondropython viridis* (Schlegel, 1872) described by Hoser (2009) allegedly not published by Hoser, according to Schleip and O'Shea in 2010, this statement by Schleip and O'Shea was shown to be false by Hoser (2012a).

Notwithstanding this, the same taxon was described by Hoser (2012b) thereby stabilizing the taxonomy and nomenclature of the subspecies, allowing the name to be used with confidence

by later herpetologists and secure in the knowledge it has been validly described and named on two separate occasions, namely 2009 and again in 2012.

Also of note here is the "creation" of three species of *Leiopython* by Schleip (2008), shown to be fraudulent and in the absence of molecular data (as alleged in the published abstract), as detailed by Hoser (2009), who had read the entire paper and noted the absence of the cited molecular data.

Schleip later admitted on an internet chat forum that he lacked such data, confirming the fraud.

As a result, the three taxa named by Schleip 2008 are not generally recognized in herpetology (see for example Natusch and Lyons 2011, who were unable to tell the alleged forms apart), and while the Schleip named taxa appear on various online databases and the like, this is mainly as a result of direct pressure by Schleip on the webmasters and the like as opposed to an evidence-based taxonomic decision by a disinterested third party.

The same applies in terms of listing of the three species on the website "Wikipedia" at:

<http://en.wikipedia.org/wiki/Leiopython>, (Various authors 2012), directly edited by Schleip himself, complete with a series of self-congratulating posts, noting that Wikipedia falsely claims to allow material to be written only from the "neutral" perspective.

However, in the continuing absence of molecular and morphological evidence to support any division of *L. albertisi* at the species level in terms of Schleip's alleged taxa, I suggest they remain unrecognized and all treated as *L. albertisi* (Peters and Doria, 1878).

Of note as well is that the paper Schleip (2008) was published in *Journal of Herpetology*, which also happens to be published by the SSAR.

I note further that Schleip himself is listed as an editor of SSAR publications on their own website.

Nowhere however is this conflict of interest noted in terms of the publications Schleip (2008) or Kaiser *et al.* (2013).

The SSAR's own code of ethics already partially quoted above (Anonymous 2012), reads as follows:

"*Veracity.* Members will not commit scientific fraud (e.g., through fabricating or falsifying data, suppress results, or deliberately misrepresent findings). All statements made regarding methods used and data collected will be factually correct. All interpretations made in the Introduction and Discussion will be truthful representations of the author's understanding. Relevant literature and data not compatible with the conclusions must not be intentionally omitted. Error does not constitute scientific misconduct but must be promptly reported to the Editor."

In other words Schleip's unethical and fraudulent paper somehow managed to slip through that journal's alleged "peer review" or editorial review.

In an e-mail dated 9 March 2013, *Herp Review* chief editor, Robert W. Hansen wrote:

"we do not reveal the identity of peer reviewers, as in most cases they remain anonymous (to authors), as is standard practice in science journal publishing."

Leaving the logical next questions as: Is there really peer review at *Herp Review*? and: Why have you (Hansen) ignored your own published ethics statement?

The close friendship of Schleip and Hansen is played out on their exchanges on their own private "Facebook" wall posts, as was their pre-determined plan to bypass proper peer review for their article Schleip out his name to (Kaiser *et al.* 2013) to enable it to be published as a matter of haste and urgency in order to destabilize established taxonomy and nomenclature as much as possible.

In 2012, the same group, this time with co-author of Kaiser *et al.* (2013), Brian Crother, published a rant in an SSAR publication

quoting Wallach, Wuster and Broadley (2009), telling readers not to use the proper Hoser names for recently described Rattlesnake taxa.

Brian Crother's earlier reckless and unethical misconduct in terms of zoology, taxonomy and nomenclature had come under attack for similar statements he made in another SSAR publication without proper peer review in 2008 (Crother *et al.* 2008) in 2009 (Pauly *et al.* 2009).

There are numerous other unethical and dishonest actions by the Truth Haters, but these shall be dealt with at another time and place. Suffice to say, any claims they make against the taxonomy and nomenclature within this paper should be treated with the skepticism they deserve.

#### GENUS BROGHAMMERUS HOSER, 2004

**Type species:** *Boa reticulata* Schneider, 1801

**Currently generally known as:** *Broghammerus reticulatus* (Schneider, 1801)

**Diagnosis:** (Adopted from Rawlings *et al.* 2008 in turn adopted from Hoser 2003/4 and sources cited within): A genus of pythonine snakes, of large to gigantic size (adult total length reportedly to nearly 10 metres). Differentiated from the genus *Python* (*sensu stricto*) by having the supralabial thermoreceptive pits less well defined than the infralabial pits (converse arrangement in *Python*); by infralabial pits set in a longitudinal groove defined ventrally by a longitudinal fold; colour pattern of the suborbital supralabial region similar to the rest of the supralabials, compared with *Python*, in which there is a dark suborbital patch; elongate medial anterior process of the ectopterygoid, which extends much further anteriorly than the lateral anterior process, compared with subequal processes in *Python* (excluding *P. curtus*); and by hemipenial morphology (McDowell *et al.*, 1975); not known for *timoriensis*). Otherwise most similar to species within the tribe Moreliini (see Hoser 2012b) from which it can be differentiated (along with species of *Python*) by having the suborbital portion of the maxilla without any lateral flare or projection; the mandibular foramen of the compound bone lying below the posterior end of the dentary tooth row, rather than fully posterior to it; a large medially divided frontal; high midbody scale count (54 or more).

#### SUBGENUS WELLSPYTHON SUBGEN. NOV.

**Type species:** *Liasis amethystinus* var. *timoriensis* Peters, 1876

**Currently generally known as:** *Broghammerus timoriensis* (Peters, 1876)

**Diagnosis:** The subgenus *Wellspython subgen. nov.* is separated from the nominate subgenus *Broghammerus* by the following suite of characters: Yellow to red-brown dorsal ground colour, versus beige to brown and iridescent in subgenus *Broghammerus*; a dorsal reticulate pattern of large patches of dark scales, versus large black-bordered, yellow or brown blotches in *Broghammerus*; a grayish eye-colour, versus bright orange in *Broghammerus*; 5-6 loreal scales versus 3-5 in *Broghammerus*. *Wellspython subgen. nov.* is also differentiated from *Broghammerus* by the following traits: 55-63 mid-body rows versus 68-78 in *Broghammerus*, 287-289 ventrals, versus 304-325 in *Broghammerus*.

The subgenus *Wellspython subgen. nov.* is known only from Lombok, Flores, Solor, Adonara, Lomblen and Pantar in the Lesser Sunda Island Group of Indonesia.

The subgenus is currently monotypic for the species *Broghammerus timoriensis* (Peters, 1876).

**Etymology:** Named in honour of Richard Wells of NSW, Australia in recognition for his various major taxonomic papers of the 1980's (coauthored with C. Ross Wellington) and others in the years postdating this period. It is noted that his decision to erect three genera to accommodate Australian species of pythons in the 1980's has been effectively confirmed as correct on the basis of the molecular evidence provided by Rawlings *et al.* (2008).

#### SUBGENUS BROGHAMMERUS HOSER, 2004

**Type species:** *Boa reticulata* Schneider, 1801

**Currently generally known as:** *Broghammerus reticulatus* (Schneider, 1801)

The subgenus *Broghammerus* is separated from *Wellspython subgen. nov.* by the following suite of characters: Beige to brown and iridescent above versus yellow to red-brown dorsally in *Wellspython subgen. nov.*; a dorsal reticulate pattern of large black-bordered, yellow or brown blotches versus large patches of dark scales in *Wellspython subgen. nov.*; a bright orange eye colour, versus grayish eye-colour in *Wellspython subgen. nov.*; 3-5 loreal scales versus 5-6 in *Wellspython subgen. nov.*

*Wellspython subgen. nov.* is also differentiated from *Broghammerus* by the following traits: 55-63 mid-body rows versus 68-78 in *Broghammerus*, 287-289 ventrals, versus 304-325 in *Broghammerus*.

**Distribution:** (Taken from Hoser 2003/4): According to the internet site at:

<http://www.nature-conservation.or.id/pythonidae.html>

put together by Ed Colijn the distribution for *Broghammerus* is listed as including:

India (including Nicobar Islands north of Sumatra), Bangladesh, Myanmar, Cambodia, Laos, Vietnam, Thailand, Peninsular Malaysia, Singapore, Weh, Simeulue, Babi, Nias, Banyak, Mentawai, Riau, Natuna and Anambas Islands, Sumatra, Enggano, Bangka, Belitung, Krakatau Islands, Kalimantan, Sarawak, Sabah, Brunei, Java, Nusa Barung, Lombok, Sumbawa, Flores, Alor, Pantar, Lomblen, Sumba, Timor, Wetar, Leti, Romang, Banda and Tanimbar Islands, Selayar, Kayadi, Tanah Jamepa, Sulawesi, Buton, Sula Islands, Bacan, Ternate, Halmahera, Obi, Buru, Seram, Ambon, Boano, Haruku, Saparua and Philippines

This information cited here as Colijn (2002) is believed to be accurate, although obviously many of the islands within this general ambit that have this genus are inadvertently omitted.

Similar information appears in regional herpetology guides (e.g. David and Vogel 1996) and is reflected in the databases of 26 Museums in North America and several others in Europe and South-east Asia.

The subgenus is currently monotypic for the species *Broghammerus reticulatus* (Schneider, 1801).

#### BROGHAMMERUS RETICULATUS DALEGIBBONSI SUBSP. NOV.

##### HOLOTYPE

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 142320 is from Ambon Island in the Moluccas in Indonesia, Lat. 3° S, Long. 128° E. It was collected in 1963 by A.M.R. Wegner.

The Field Museum of Natural History is a publicly accessible collection that makes specimens available to researchers.

##### PARATYPE

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 142093 is from Ambon Island in the Moluccas in Indonesia, Lat. 3° S, Long. 128° E. It was collected in 1963 by A.M.R. Wegner.

The Field Museum of Natural History is a publicly accessible collection that makes specimens available to researchers.

##### DIAGNOSIS

It appears that this is a generally smaller race of *Broghammerus* than the typical race from further west in South-east Asia. Size and colouration as a trend separate this form from the nominate race *reticulatus*.

Their colouration is also often darker than those from further west typically with very sharp and contrasting body markings, even when the specimen is aged. It rarely has a head lighter

than the body as in some other variants of *Broghammerus*, such as those from Bali or parts of Thailand (see *Broghammerus reticulatus euanedwardsi* subsp. nov. below). This race generally has a pugnacious disposition in captive settings.

*Broghammerus reticulatus dalegibbonsi* subsp. nov. is definitively separated from all other *Broghammerus* by colouration of the head. In *Broghammerus reticulatus dalegibbonsi* subsp. nov. there is a distinct midline stripe on the head and neck, black in colour that is approximately 2/3 of a scale width, and the rest of the dorsal surface of the head is brownish in colour, with a darkening of the region of scales towards the snout. At the rear of the skull and dorsally are two well-spaced black dots about one scale wide, the first about one scale from the mid-dorsal line and the second about 4 scales further across the head. There are dark markings on the side of the head in the form of a stripe from the rear of the eye to the lower part of the head.

In this subspecies and the Timor subspecies, this stripe is noticeably irregular in thickness.

This subspecies is only definitively known from Ambon at this stage, although it is safe to say that the *Broghammerus reticulatus* from nearby Ceram are probably assignable to this subspecies.

This subspecies is also able to be separated from all other *Broghammerus* by DNA analysis and/or accurate distribution information.

The subspecies co-exists with *Australiasis clastolepis*.

#### ETYMOLOGY

Named after Australian herpetologist Dale Gibbons, formerly of Bendigo, Victoria, Australia, now of Thailand for various contributions to wildlife conservation in the Australian state of Victoria.

#### ***BROGHAMMERUS RETICULATUS EUANEDWARDSI* SUBSP. NOV.**

#### HOLOTYPE

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 180232 is from Nakhon Ratchasima, Central Thailand. Lat. 14° 58' N, Long. 102° 07' E. It was collected on 10 August 1969 by W. Ronald Heyer.

The Field Museum of Natural History is a publicly accessible collection that makes specimens available to researchers.

#### PARATYPE

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 178660 is from Khorat, Central Thailand. Lat. 14° 58' N, Long. 102° 7' E. It was collected in October 1957.

The Field Museum of Natural History is a publicly accessible collection that makes specimens available to researchers.

#### DIAGNOSIS

This is a large race of *Broghammerus reticulatus*, with specimens known to exceed 6 metres. Although it is touted as a yellow-headed and docile variant, not all specimens of this subspecies have this trait. However as general trends, these factors separate this subspecies from the nominate race.

This subspecies is separated from all other *Broghammerus* by the following suite of characters: The mid-dorsal line running from the snout to the rear of the head does not commence on the rostral. It has a break at the rear of the frontal shield and again at the back of the head. The lines running from the back of the eye, downwards to the back of the head are one third as thick as the eye.

Colouration of this subspecies taxon is distinct in that there are large white or creamish blotches along the mid-line of each side of the snake's body, bounded completely by black, in an irregular pattern, being thickest above and below the blotches and minimal at the ends (when viewed side on to the snake).

Additionally, specimens are often docile in temperament, especially as adults and make good pets, provided one makes sure that they don't handle them after cleaning out rat or rabbit cages.

This subspecies is known only from parts of Thailand, but probably occurs elsewhere including the westernmost parts of the *Broghammerus reticulatus* range.

It is also separated from other *Broghammerus reticulatus* by either good locality information and/or DNA analysis.

#### ETYMOLOGY

Named in honour of Australian herpetologist Euan Edwards, currently living on the Gold Coast, Queensland and having spent considerable time in the United States, Madagascar and other parts of the world.

#### ***BROGHAMMERUS RETICULATUS HAYDNMACPHIEI* SUBSP. NOV.**

#### HOLOTYPE

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 148968 is from, the Kapit District, Sarawak, (Borneo), Malaysia. It was collected by F. Wayne King on 9 August 1963.

The Field Museum of Natural History is a publicly accessible collection that makes specimens available to researchers.

#### PARATYPE

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 67265 is from Sarawak, (Borneo), Malaysia.

It was collected by Tom Harrisson on 16 Jun 1951.

The Field Museum of Natural History is a publicly accessible collection that makes specimens available to researchers.

#### DIAGNOSIS

This is a large race of *Broghammerus reticulatus*, with specimens known to exceed 6 metres. It is restricted to the Island of Borneo, although similar specimens have been seen from parts of Sulawesi and may ultimately be referable to this taxa.

Specimens are often snappy in temperament, even as adults and do not necessarily make good captives.

As a generalization, larger average adult size is typical for this subspecies. Yellow-headed specimens do occur, but are not generally common.

The subspecies *haydnmacphiei* is separated from all other *Broghammerus reticulatus* by the following suite of characters: the mid-dorsal line on the head is distinct and of even thickness from the tip of the snout to the top of the neck, where it terminates in a rectangular shaped blotch. White (or occasionally light cream) markings are located on the mid-flanks (when viewed from side on) and noticeably triangular in shape as opposed to more-or-less rectangular (with slight bumps top and bottom) in all other subspecies.

Furthermore, in the subspecies *haydnmacphiei* specimens commonly lack a line running from the back of the eye to the lower part of the rear of the head, although this particular trait is not universal for the subspecies.

It may also be separated from other *Broghammerus reticulatus* by either good locality information and/or DNA analysis.

#### ETYMOLOGY

Named in honour of Victorian (Australia) herpetologist Hayden McPhie, of Mirboo North, Victoria for various contributions to wildlife conservation.

#### ***BROGHAMMERUS RETICULATUS NEILSONNEMANI* SUBSP. NOV.**

#### HOLOTYPE

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen,

number: 53272 is from Davao Province, Mindanao Island, the Phillipine Islands. Lat. 7°04' N, Long. 125° 40' E. It was collected by Donald Heyneman on 27 September 1946.

The Field Museum of Natural History is a publicly accessible collection that makes specimens available to researchers.

#### PARATYPES

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 53281 is from Davao Province, Mindanao Island, the Phillipine Islands. Lat. 7°04' N, Long. 125° 40' E. It was collected by a local Philippine native on 14 January 1947.

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 53287 is from Davao Province, Mindanao Island, the Phillipine Islands. Lat. 7°04' N, Long. 125° 40' E. It was collected by a local Philippine native on 24 November 1946.

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 53273 is from Davao Province, Mindanao Island, the Phillipine Islands. Lat. 7°04' N, Long. 125° 40' E. It was collected by a local Philippine native on 9 October 1946.

A specimen at the Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605-2496. The specimen, number: 53283 is from Davao Province, Mindanao Island, the Phillipine Islands. Lat. 7°04' N, Long. 125° 40' E. It was collected by Harry Hoogstraal on 17 January 1947.

The Field Museum of Natural History is a publicly accessible collection that makes specimens available to researchers.

#### DIAGNOSIS

It appears that this is a large and generally aggressive race *Brogammerus*. Quiet and easily tamed specimens are relatively unusual.

It rarely has a head lighter than the body as in some other variants of *Brogammerus*, such as those from Bali or parts of Thailand, although light-headed specimens are known.

The subspecies is separated from all other *Brogammerus* by the combination of a complete absence of white markings on the dorsal surface and a dorsal pattern of large mid dorsal light blotches, often ovoid anteriorly and noticeably small and irregular posteriorly, bounded by a continuous black zone. On the anterior half of the body, the lower flanks have irregular, but more or less rectangular, dark creamish blotches. These blotches are well below the midline on either side of the body if viewed side-on from the ground, in contrast to all other *Brogammerus reticulatus*. In the subspecies *Brogammerus reticulatus euanedwardsi* subsp. nov. from Thailand, the same blotches are located slightly dorsal to the midline on either side if viewed side on from the ground.

This subspecies is only definitively known from Mindanao and adjacent Philippine Islands.

They can also be separated from all other *Brogammerus* by comparative DNA analysis and/or accurate distribution information.

#### ETYMOLOGY

Named in honour of the long-term reptile breeder, Neil Sonneman, from Murrumbidgee, in Northern Victoria, Australia, also noted for his many publications on successfully breeding what were previously little-bred Australian species of pythons.

#### ***BROGHAMMERUS RETICULATUS PATRICKCOUPERI* SUBSP. NOV.**

#### HOLOTYPE

A specimen at the Museum of Comparative Zoology at Harvard, Cambridge, Massachusetts, USA, MCZ number: R-25266. It was collected in 1924 at "Djamplong", South Timor, Lat. 4° S, 125° E. The person who collected the specimen in 1924 was M. Smith.

The Museum of Comparative Zoology at Harvard, Cambridge,

Massachusetts, USA, is a publicly accessible collection that makes specimens available to researchers.

#### DIAGNOSIS

This is believed to be the only *Brogammerus* found on Timor.

It is a smaller than average race (believed to attain an average size of under 3 meters at maturity) and is of variable temperament.

*Brogammerus reticulatus patrickcouperi* subsp. nov. is readily separated from all other *Brogammerus* by the following traits: the mid-dorsal stripe on the head is relatively thick, unbroken and starts just anterior of the eyes, and the lighter oval blotches on the body running more-or-less along the mid-dorsal line of the body remain of this nature to the rear end of the snake, which is not the case in other *Brogammerus*. While the shape of the blotches does tend towards irregular as in other *Brogammerus*, these blotches remain large and of similar size throughout the length of the snake, as opposed to noticeably reducing in size at the posterior end of the snake.

The subspecies is also distinguished by the stripe running from the rear of the eye to the back of the head being noticeably irregular in thickness, in contrast to other *Brogammerus*, except for the Ambon subspecies (*Brogammerus reticulatus dalegibbonsi* subsp. nov.), with which it shares this trait in terms of this stripe.

*Brogammerus reticulatus patrickcouperi* subsp. nov. is usually a brightly coloured subspecies, with relatively sharp markings and a reduced thickness of black markings (black pigment) on the dorsal surface.

The subspecies can also be separated from other *Brogammerus reticulatus* subspecies by DNA properties and/or accurate locality information.

It is a little-known and rarely kept subspecies.

It had been thought that the taxon co-exists on Timor with *Brogammerus timoriensis*, but this may not in fact be the case. No *B. timoriensis* have been reported from Timor in recent years and old records may in fact have erroneous locality data.

#### ETYMOLOGY

Named after Queensland-based herpetologist Patrick Couper for his contribution to herpetology, mainly through his time working at the Brisbane, Queensland Museum.

#### ***BROGHAMMERUS RETICULATUS STUARTBIGMOREI* SUBSP. NOV.**

#### HOLOTYPE

A specimen at the Museum of Comparative Zoology at Harvard, Cambridge, Massachusetts, USA, MCZ number: R-8003. It was collected in 1906 from Buitenzore, Java, Indonesia, Lat. 3°4'S, Long. 128°12'E. It was collected by T. Barbour in December 1906.

The Museum of Comparative Zoology at Harvard, Cambridge, Massachusetts, USA, is a publicly accessible collection that makes specimens available to researchers.

#### DIAGNOSIS

This is a subspecies which usually has an exaggerated yellowish hue all over its dorsal surface as compared to other *Brogammerus reticulatus*.

It is of variable size (but generally largish) and within the constraints of being yellowish all over has several distinct colour variations, even in a single group of young.

The subspecies *Brogammerus reticulatus stuartbigmorei* subsp. nov. is differentiated from all other *Brogammerus reticulatus* by the dark black pigment on the dorsal surface. Lighter parts of the body often have individual black scales, giving a distinctive flecked appearance, not seen in any other subspecies.

Furthermore, it is separated from other *Brogammerus reticulatus* by the following suite of characteristics: white blotches along the sides of the body, a relative lack of head

markings on a light brown or yellowish head, however the head does invariably have a thin mid-dorsal line (unbroken) commencing beyond the rostral and is distinct in that it terminates in a triangle on the neck.

Additionally, the black line seen in most *Broghammerus reticulatus* that usually runs from the temple to the eye, usually fails to reach the eye in this subspecies and is thinner than seen in other *Broghammerus reticulatus*. They also usually have a relatively light coloured eye.

*Broghammerus reticulatus stuartbigmorei* is readily distinguished from *Broghammerus reticulatus* from Sumatra and Borneo, indicating that the population has been separated for quite some time.

This same subspecies is believed to occur on the island of Bali. The subspecies *stuartbigmorei* is also able to be separated from others by distribution and/or DNA properties.

#### ETYMOLOGY

Named after Stuart Bigmore of Victoria, Australia for his contributions to herpetology over two or more decades, in particular varanid taxonomy as well as his role in reptile education through the Victorian Association of Amateur Herpetologists (VAAH) in Geelong, where as an active committee member he performed many valuable tasks over many years.

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#### CONFLICT OF INTEREST

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

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