

Two hitherto overlooked subspecies of Papuan Python *Liasis* (*Apodora*) *papuana* Peters and Doria, 1878 from New Guinea.

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ABSTRACT

A reassessment of Papuan Olive Pythons, *Liasis* (*Apodora*) *papuana* Peters and Doria, 1878, finds that a sensible reclassification is needed.

The genus *Apodora* Kluge, 1993, rejected by Hoser 2000 (and all later papers by myself) and others (e.g. Reynolds *et al.* 2013a, 2013b and 2014) is herein resurrected, but as a subgenus only.

While regional variation has been known for some years (e.g. McDowell, 1973), until now no one has considered affording taxonomic recognition to these forms.

This paper for the first time formally names two morphologically distinct regional races as subspecies.

Notwithstanding this, further studies may require the elevation of one or both forms to full species status.

It is likely that these may be the last large python taxa to be named for the first time from island New Guinea.

Keywords: Taxonomy; snake; python; *Apodora*; *Liasis*; *papuana*; Olive Python; new subgenus; Papua New Guinea; Irian Jaya; new subspecies; *sharonhoserae*; *cyrilhoseri*.

INTRODUCTION

Since 2000, there have been a number of papers reassessing the taxonomy and nomenclature of pythons from New Guinea.

Hoser (2000, 2003, 2004, 2009 and 2012a), in combination provided revisions of all genera and species from New Guinea (including Irian Jaya), with the exception of the New Guinea Olive Python, originally described as *Liasis papuanus* Peters and Doria.

That species was effectively left untouched.

Harvey *et al.* (2000) provided a revision of the Scrub Pythons (*Australiasis*), naming taxa that I had also named in a paper written in 1999, but with the relevant taxonomic acts removed in the final publication (Hoser 2000) on request from co-author of Harvey *et al.* (David G. Barker).

Two papers by Schleich dated 2008 and 2014 can be effectively disregarded from a taxonomic and nomenclatural point of view. They represent holotype examples of taxonomic and nomenclatural vandalism of the worst kind, published in a PRINO (peer reviewed in name only) journal, namely the *Journal of Herpetology*. In both papers, he has created a raft of junior synonyms for *Leiopython* species previously described according to the *International Code of Zoological Nomenclature* as detailed by Hoser (2015).

In passing, I mention that there is now a significant amount of molecular evidence to support the transfer of the New Guinea python species *Liasis boeleni* Brongersma, 1953 to the genus *Lenhoserus* Hoser, 2000 including for example that of Rawlings *et al.* (2008) and Reynolds *et al.* (2013a, 2013b and 2014).

Therefore the name *Lenhoserus boeleni* (Brongersma, 1953) should be used for that taxon.

The species *Liasis papuanus* Peters and Doria as generally defined and recognized, was more recently placed by Kluge in a new monotypic genus *Apodora* in 1993.

While a number of later authors have continued to recognize this genus and use the name *Apodora* (e.g. Rawlings *et al.* 2008, Schleich and O'Shea 2010, Barker *et al.* 2015), I have never done so, instead preferring to treat the taxon as within the established genus *Liasis*.

This remains my position.

However with regards to the sensible arguments presented by authors in both the pro *Apodora* camp (best exemplified by Barker *et al.* 2015) and those in the anti *Apodora* camp (e.g. Reynolds *et al.* 2013a, 2013b and 2014), I have decided to take an action that addresses the arguments of both sides and best reflects the taxonomic reality of the relevant entity.

That is, I herein continue to recognize *Liasis* as the genus encompassing the relevant taxa, that being Australian and New Guinea Olive Pythons, while recognizing the differences between the populations of each major landmass by affording each subgeneric status.

This is effect means recognition of *Apodora* Kluge, 1993 as a subgenus. Hence we have a *comb. nov.* of *Liasis* (*Apodora*) *papuana*. In summary I am astounded that this logical action has not been done before.

Because *Apodora* was well defined by Kluge 1993, there is no need for me to formally redefine the subgenus here.

However *Apodora* is readily separated from *Liasis olivaceus* from Australia and all *Katrinus* Hoser, 2000 by the following suite of characters: *Apodora* has a low neural spine on the vertebrae

of the neck and body relative to the other subgenus and genus species, which is believed to be a primitive condition (Scanlon and Mackness, 2002).

Apodora has darkly pigmented skin, including the lining of the mouth and cloaca, and has an extremely long and deeply forked tongue. *Apodora* has thermoreceptive pits in the rostral while this is not the case in other *Liasis*, and such a condition is otherwise only known from some specimens of *K. mackloti*, which may show shallow rostral pits. *Apodora* has 14-17 maxillary teeth, versus 19-20 in *Liasis olivaceus* and higher numbers in *Katrinus*. *Apodora* has 82-88 subcaudals (all divided) versus 100-114 in *Liasis olivaceus*.

Divisions of other python species / genera from New Guinea by Hoser in the post year 2000 period, based on morphological grounds have invariably been confirmed as valid on molecular data.

This includes for example the division of the White-lipped Pythons, formerly known as *Leiopython albertisi* Peters and Doria, 1878 into two species by Hoser (2000), the newly described one being *Leiopython hoseriae* Hoser, 2000.

While this division was based on morphology (the two taxa are obviously quite different) (see Hoser 2000), supported by DNA (see for example Schleich 2008, or the publicly available data at Genbank), the obvious geological barrier is the central cordillera of New Guinea.

Leiopython hoseriae Hoser, 2000 came from the south while *Leiopython albertisi* Peters and Doria, 1878 is from the north.

This same barrier was clearly the feature that divided populations of Death Adders (*Acanthophis*) as first identified by Hoser (1998) who divided taxa on purely morphological grounds and without consideration of the (in hindsight obvious) natural barrier.

Hoser 2009, became the first herpetologist to resurrect *Chondropython azureus* Meyer, 1874 from the synonymy of *C. viridis* (Schlegel, 1872), two taxa similarly separated by the geological/geographical barrier of the central cordillera.

Harvey *et al.* (2000) and Hoser (2012) provided evidence to show that the Scrub Pythons (*Australiasis*) from north of the Cordillera were a different species level taxon to the specimens found to the south.

Hoser (2012b) found that the species formerly known as *Dendrelaphis lorentzi* (Lidth De Juede, 1911), now of the genus *Charlespiersonserpens* Hoser, 2012, in fact consisted of two morphologically different species level taxa, separated again by the central cordillera.

Revisiting the taxon *Liasis (Apodora) papuana* with a view to assessing the known regional differences, it is self-evident that they deserve taxonomic recognition. Three major populations appear to be separated by the better known barriers in New Guinea, these being the Huon Peninsula in the north-east and more significantly the central cordillera across the middle of the main island.

Hence the nominate form of *L. papuana* is therefore more-or-less confined to the north of the Island of New Guinea, in the general region west of the Huon Peninsula (Upper Morobe District), while the other two forms are found in the far east and south of the main cordillera on the island of New Guinea.

Other than the type population (which includes the synonyms *Liasis tornieri* Werner, 1897 and *Liasis maximus* Werner, 1936) all from the same general area west of the Huon Peninsula on the north of island New Guinea, neither of the other two major populations have available names. So both are formally named herein according to the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

While the likely divergences between the populations are liable to be much the same as for the other python genera referred to above, due to the fact that they have been affected by the same

separation factors, I have chosen to take a conservative position and describe both herein as subspecies.

However if later molecular data is in line with that for other genera such as *Australiasis*, *Leiopython* or *Chondropython* (for which we have available data), at least one of the subspecies named herein will have to be elevated to full species status.

This would of course make *Apodora* a two or more species subgenus.

LIASIS (APODORA) PAPUANA SHARONHOSERAE SUBSP. NOV.

Holotype: Specimen number AMNH 57501 at the American Museum of Natural History, collected in 1935 from 5 miles below Palmer Junction on the Fly River, Western Province, Papua New Guinea.

The American Museum of Natural History, New York, USA, is a facility that allows public access to its holdings.

Paratype: Specimen number: CAS 133803 at the California Academy of Science, an adult specimen collected by Fred Parker on 5 Oct 1969 at Oriomo Station, Oriomo River, PNG. Lat: 8.86, Long, 143.18, Western Province, Papua New Guinea.

Diagnosis: The subspecies *Liasis (Apodora) papuana sharonhoserae subsp. nov.* is readily separated from all other subspecies by the presence of 14 maxillary teeth on either side, versus 15 or more (usually 16) in the others.

The subspecies *Liasis (Apodora) papuana cyrilhoserae subsp. nov.* is readily separated from the other two subspecies by having 11 supralabials, sixth or seventh entering the eye, versus 10 supralabials with the fifth and sixth entering the eye in the other two subspecies. It is further separated from the other two subspecies by the presence of a shallow pit in the third supralabial, which is absent in the others. The subspecies is further separated from the other subspecies by pits in supralabial 1 in all, versus 1 and 2 in most of the rest, and 3 postoculars versus 2 in the other forms.

Etymology: Named in honour of Sharon Menzies (formerly Sharon Hoser), formerly of New Guinea in recognition of her contributions to herpetology.

Distribution: Western Province of Papua New Guinea and nearby parts of Irian Jaya, south of the central cordillera and most common in savannah-type habitats.

LIASIS (APODORA) PAPUANA CYRILHOSERI SUBSP. NOV.

Holotype: Specimen number AMNH 73989 at the American Museum of Natural History, collected on 10 August 1935 by G. M. Tate from Biniguni Village, between Mount Dayman and Collingwood Bay, Milne Bay District, Papua New Guinea. The American Museum of Natural History, New York, USA, is a facility that allows public access to its holdings.

Paratypes: Specimen numbers AMNH 73991, 73992, 73993 at the American Museum of Natural History collected on in August 1935 by G. M. Tate from Biniguni Village or immediately adjacent to it, between Mount Dayman and Collingwood Bay, Milne Bay District, Papua New Guinea.

Diagnosis: The subspecies *Liasis (Apodora) papuana cyrilhoserae subsp. nov.* is readily separated from the other two subspecies by having 11 supralabials, sixth or seventh entering the eye, versus 10 supralabials with the fifth and sixth entering the eye in the other two subspecies. It is further separated from the other two subspecies by the presence of a shallow pit in the third supralabial, which is absent in the others. The subspecies is further separated from the other subspecies by pits in supralabial 1 in all, versus 1 and 2 in most of the rest, and 3 postoculars versus 2 in the other forms.

The subspecies *Liasis (Apodora) papuana sharonhoserae subsp. nov.* is readily separated from all other subspecies by the presence of 14 maxillary teeth on either side, versus 15 or more (usually 16) in the others.

Etymology: Named in honour of Cyril Hoser, of Thanet, UK in recognition of his contributions to herpetology, including

important logistical support for this author when in the UK.

Distribution: Milne Bay along the northern coast to the lower Morobe District in Papua New Guinea.

SUMMARY

These are not the last python or boa taxa in need of formal taxonomic recognition. By ways of examples, the Spotted Pythons (*Antaresia maculosa*) from southern New Guinea are clearly different from those of North Queensland, Australia, meaning that at least subspecies level taxa are within the species. Suarez-Atilano *et al.* (2014) identified what they said was an undescribed species, formerly treated as *Boa constrictor* from the Pacific Coast region of Mexico. However the authors created taxonomic and nomenclatural uncertainty and instability by overlooking the fact that it had in fact been described by Smith (1943). He named it as "*Constrictor constrictor sigma*", thereby meaning the taxon should now be properly identified as *Boa sigma* (Smith, 1943).

FIRST REVISOR'S INSTRUCTIONS

Unless mandatory under the Zoological Rules of the time, no new scientific names are to have spellings altered in any way. In the event of a name conflict (that is a later worker decides both taxa named herein are the same at either subspecies or species level), the name used should be that which comes first by line or page order. That is *sharonhoserae* should take precedence over *cyrilhoseri*.

CONFLICT OF INTEREST

This author reports no conflict of interest in terms of any material within this paper.

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