

***Smythkukri hunneangorum* a new species of Kukri Snake from Cambodia (Serpentes: Oligodonini: *Smythkukri*; *Geddykukrius*).**

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**ABSTRACT**

In 2012 this author (Hoser) divided the genus *Oligodon* Fitzinger, 1826 into 12 genera and 4 subgenera on the basis of divergent morphological traits and limited genetic analysis. This was derided as an act of "Taxonomic vandalism" by Kaiser (2012a and 2012b) and Kaiser *et al.* (2013), even though co-authors of the latter paper admitted that they had not in fact read the paper they were condemning (Schleip 2013a, Schleip 2013b, Schleip 2013c, Wüster 2013a, Wüster 2013b, Wüster 2013c), further noting that Kaiser (2012a) identified Wüster as author of the paper widely known and cited as Kaiser *et al.* (2013).

The divisions of *Oligodon sensu lato* as proposed by Hoser (2012) have in fact been validated by the molecular results of Pyron *et al.* (2013a, 2013b) in terms of the taxa for which they had results. These results effectively rebutted the false and baseless claims of taxonomic vandalism by Kaiser *et al.*

The taxon, *Smythkukri annamensis* (Leviton, 1953), (better known to date as *Oligodon annamensis* Leviton, 1953), was sufficiently divergent from the rest of the genus to be placed in a then monotypic subgenus *Geddykukrius* Hoser, 2012.

Therefore it is with great pleasure that I am able to formally name a second species, morphologically similar to *Smythkukri annamensis* (Leviton, 1953), within the same subgenus.

The new taxon *Smythkukri hunneangorum* described according to the Zoological Code (Ride *et al.* 1999) is from the Cardamom Mountains of southwest Cambodia. It is named in honour the original collectors Thy Neang and Seiha Hun both of Phnom Penh, Cambodia.

**Keywords:** Taxonomy; Snakes; Asia; Colubridae; Oligodonini; *Smythkukri*; *Geddykukrius*; *annamensis*; new species; *hunneangorum*.

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**INTRODUCTION**

Until 2012, the snakes of the genus *Oligodon* Fitzinger, 1826 as then recognized consisted a large and diverse assemblage of morphologically conservative snakes from the south-east and east Asian region.

The so-called Kukri Snakes got their name from a distinctively shaped Nepalese knife, which is similar in shape to the broad, flattened, curved hind teeth these snakes possess.

These teeth are designed to assist in feeding on eggs, a dominant part of the diet of many species. They slit open eggs as they are being swallowed, allowing for easier digestion.

These specialized teeth are in addition to the functional venom glands possessed by the rear-fanged Colubrids. None are believed to be dangerous to humans. Most species are egg eaters, but they also feed on lizards, frogs and small rodents.

They are generally small to medium in size, (usually under 90 cm) innocuous, often move about at night and are most likely to be found on the floor of mature forests. Colour and pattern varies, but is often bright and distinctive.

Hoser (2012a) wrote "There are approximately 70 recognized described species although the exact number isn't certain due to the fact that some described taxa may be synonymous with others and there's no doubt that undescribed forms remain to be named."

Uetz (2013) cited 77 species as of 27 January 2014, with one species "*Oligodon cattienensis* Vassilieva *et al.* 2013" described in 2013. That taxon is most likely properly assigned to the genus *Trileptis* Cope, 1886.

Relying mainly on previously published material as cited in Hoser (2012a), Hoser (2012a) divided the genus *Oligodon* Fitzinger, 1826 into 12 genera and 4 subgenera on the basis of divergent morphological traits and limited genetic analysis.

This was derided as an act of "Taxonomic vandalism" by Kaiser (2012a, 2012b) and Kaiser *et al.* (2013), even though co-authors of the latter paper repeatedly publicly admitted that they had not in fact read the papers they were condemning (Schleip 2013a, Schleip 2013b, Schleip 2013c, Wüster 2013a, Wüster 2013b, Wüster 2013c).

The divisions as proposed by Hoser have in fact been validated by the molecular results of Pyron *et al.* (2013a, 2013b) in terms of the taxa for which they had results. These results effectively rebutted the false and baseless claims of taxonomic vandalism by Kaiser *et al.*

I might also add that Hoser (2012b and Hoser 2013) and sources cited therein also effectively rebutted all the adverse claims against myself and my papers by Kaiser (2012a, 2012b) and Kaiser *et al.* (2013).

The purpose of this paper is not to review the taxonomy of the

Oligodonini or even to provide a summary of the relevant snakes. A detailed list of relevant references was published by Hoser (2012).

The taxon, *Smythkukri annamensis* (Leviton, 1953), (better known to date as *Oligodon annamensis* Leviton, 1953), as defined by Leviton (1953 and 1960), was sufficiently divergent from the rest of the genus to be placed in a then monotypic subgenus *Geddykukrius* Hoser, 2012, which based on comments of Vassilieva *et al.* 2013, was probably too conservative a placement in terms of the phylogenetic position of the taxon. However for the purposes of this paper, I leave the taxon "as is" that being within the genus *Smythkukri* Hoser, 2012, and the subgenus *Geddykukrius* Hoser, 2012.

On 14 June 2013, Thy Neang and Seiha Hun published a paper titled "First record of *Oligodon annamensis* Leviton, 1953 (Squamata: Colubridae) from the Cardamom Mountains of southwest Cambodia" in *Herpetology Notes*, Volume 6, pages 271-273.

Upon reading the paper, it became self-evident that the authors were greatly mistaken in believing that the snake they were describing a distributionally disjunct specimen of the species "*Oligodon annamensis*", better known as *Smythkukri* (*Geddykukrius*) *annamensis* (Leviton, 1953).

The authors had in fact in effect published a very good description of a new species of snake without actually realizing it.

Therefore it is with great pleasure that I am able to formally name a second species, morphologically similar to *Smythkukri annamensis* (Leviton, 1953), within the same subgenus via the description published herein.

The new taxon *Smythkukri hunneangorum* described according to the Zoological Code (Ride *et al.* 1999) is from the Cardamom Mountains of southwest Cambodia. It is named in honour the original collectors Thy Neang and Seiha Hun both of Phnom Penh, Cambodia.

These people have quite evidently done all the materially relevant work on the taxon, both before and after its collection and therefore should be appropriately recognized by having the snake named in their honour.

I might add that in terms of the conservation of global biodiversity, it matters little as to who actually names it, but more importantly that it is named, named correctly and named expediently and before it may become extinct.

Taxonomy and nomenclature is of course the basic infrastructure upon which all other zoological disciplines are based.

#### **SMYTHKUKRI (GEDDYKUKRIUS) HUNNEANGORUM SP. NOV.**

**Holotype:** Specimen number CBC 01899, held at the Centre for Biodiversity Conservation, Room 415, Faculty of Science, Royal University of Phnom Penh, Confederation of Russian Boulevard, Phnom Penh, Cambodia, having been collected in the Phnom Samkos Wildlife Sanctuary of the Cardamom Mountains in southwest Cambodia, Lat. 12.2713° N, Long. 102.9767° E.

The Centre for Biodiversity Conservation is a government funded facility that allows access to specimens by scientists.

**Diagnosis:** This species, *Smythkukri hunneangorum sp. nov.*, has until now been treated as a variant of *S. annamensis* (Leviton, 1953), (better known to date as *Oligodon annamensis* Leviton, 1953), as defined by Leviton (1953 and 1960). However it is separated from that taxon by any of the following suite of characters:

One/ 1+1 temporals (TP), (vs.1+2); Two/ ratio of TL/SVL higher, 0.230 vs. 0.132-0.211; Three/ fewer ventral scales (VS), 148 vs. 159-170; and Four/ slightly more subcaudal scales (SC), 46 vs. 30-44.

The holotype specimen is described in detail by Neang and Hun (2013).

In light of the discovery of the new species *Smythkukri hunneangorum sp. nov.* the subgenus *Geddykukrius* Hoser, 2012 is herein redefined and redescribed as follows: It separated from all other species within the genus *Smythkukri* Hoser, 2012 by the following suite of characters: Dominant dorsal colour brown, sometimes greyish-brown on the sides or flanks, scales often darker edged and with fine dark flecks. Head markings are black-edged white blotches. Instead of ocular and temporal bars, there are whitish marks in front and behind the eye, meeting just above the eye, but not confluent across the top with those from the other side (*S. annamensis*) or alternatively confluent across the top with those from the other side (*S. hunneangorum sp. nov.*). Thin whitish chevron marks extend from the neck to the parietals, but may or may not be confluent with a spot there. Body with approximately 10, more or less distinct, black-edged white crossbars or alternatively with 20 orangeish-coloured crossbands, each second one being indistinct. A white spot on the tip of the tail. Ventral colour white with black quadrangular spots, some confluent across the ventrals. Nasal undivided or partially divided. Two internasals. No loreal. One postocular. Temporals 1+1 or 1+2. Six supralabials, third and fourth in contact with eye. Six infralabials. 13 dorsal midbody rows, 148-170 ventrals, laterally angulate. Anal single. Subcaudals 30-46. Eight maxillary teeth. The hemipenis is deeply forked with thin papillae present, extending half the length of the fork and no spines.

**Distribution:** Currently known only from the Phnom Samkos Wildlife Sanctuary of the Cardamom Mountains in southwest Cambodia. By contrast, *S. annamensis* is only known from the type

locality at "Blaos, Haut Donai", currently Bao Loc, Lam Dong Province, South Vietnam, approximately 607 km east of the Cambodian locality for *S. hunneangorum sp. nov.*

These locations also form the entire distribution for the subgenus *Geddykukrius* Hoser, 2012.

**Comments:** The collection localities of both *S. hunneangorum sp. nov.* and *S. annamensis* (Leviton, 1953) are widely separated by a region of unsuitable alluvial lowland habitat, this being the Mekong and Tonle Sap River valleys and nearby flatlands. Using a measurement of suitable habitat types to allow the populations to meet, including via the more northerly Dang Rek Scarp would more than double the relevant distance and include both relatively well-collected locations and still include shorter areas of unsuitable habitat using the most logical route of connection. The apparent absence of specimens of either taxon (regardless of how they are identified) in any of these areas to date shows quite emphatically that the two populations have been disjunct for an extremely long period of geological time and more than enough to have developed into different species.

The morphological traits relied upon to differentiate the two taxa are also very conservative and as a rule only change over extended periods of geological time. Hence the relevant snakes clearly form two distinct biological entities. Therefore I had no hesitation in describing *S. hunneangorum sp. nov.* as a new species level taxon.

I might also add that both *S. hunneangorum sp. nov.* and *S. annamensis* (Leviton, 1953) are confined to high rainfall pockets of hills and these are broken by a wide region (from all sides) of drier lowlands habitat.

Suitable high rainfall habitat probably only existed in the intervening region more than 2.6 million years ago (see for example Gribbin 1982), meaning that the populations of *S. hunneangorum sp. nov.* and *S. annamensis* (Leviton, 1953) have been divergent for at least that long, and quite possibly considerably longer.

**Etymology:** Named in honour of Thy Neang and Seiha Hun who collected the original type specimen and also then published the details of the fact that alerted me to this unnamed taxon.

## CONFLICT OF INTEREST

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

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