

A new genus and new subgenus of snakes from the South African region (Serpentes: Colubridae).

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ABSTRACT

A review of the taxonomy of the Colubroidea from Southern Africa and Madagascar has found inconsistencies in classification at the genus level in various genera including *Buhoma*, and *Leioheterodon*.

Relying on recent studies of the relevant species level taxa including phylogenies based on mtDNA it's clear that some of the snakes are placed within genera even though at that level, their placement would make the relevant genera paraphyletic.

To rectify the anomaly, a new genus and subgenus are designated, named and diagnosed to accommodate relevant species according to the Zoological Code.

These are as follows: *Swileserpens* gen. nov. for a species level taxon formerly placed in the genus *Buhoma*, namely *depressiceps* and *Michaelnicholsus* subgen. nov. for a species level taxon formerly placed in the genus *Leioheterodon*, namely *geayi*.

Keywords: Taxonomic revision; new genus; new subgenus; *Swileserpens*; *Michaelnicholsus*; *Colineipperus*; *Leioheterodon*; *Buhoma*; *geayi*; *depressiceps*; snakes.

INTRODUCTION

The colubrid snakes of southern Africa and Madagascar have been subject to numerous studies in recent years, the result of which has included the resurrection of old generic names and when needed the creation of new genera to accommodate species that don't readily place within larger, obviously paraphyletic groups.

Several genera from the South African region have been highlighted in a study by Pyron et. al. 2011 as being potentially paraphyletic.

This paper deals with two of them, namely *Buhoma* and *Leioheterodon*, both of which have been found to be paraphyletic as currently recognized by some authors.

The most relevant study on the genus *Buhoma* as currently recognized was the paper of Ziegler, et. al. (1997), which formally named and separated the genus from inclusion within the Malagasy-centered genus *Geodipsas*.

Earlier publications of note about species in that genus include those of Broadley and Howell (1991), Chifundera (1990), Chirio and Lebreton (2007), Menegon et. al. (2008), Rasmussen et. al. (1995), Schmidt (1923), Tornier (1902), Werner (1897) and Werner (1899).

Key publications in terms of the genus *Leioheterodon* as currently understood include, Anonymous (1994), Boulenger

(1893), Desguez (1884), Duméril, Bibron and Duméril (1854), Günther (1863), Labanowski and Lowin (2011) and Mocquard (1905).

Notable and relevant published studies involving the taxonomy and nomenclature of another important regional genus *Psammophis* include those by Boulenger (1902), Broadley (1977), Broadley (2002), Kelly et. al. (2008).

Other relevant studies involving the subject genera in other manner, such as wild habits, captivity and the like, all of which have a bearing on classification issues include: Anonymous (1994), Branch (1992), Broadley (1959), Cadle (1996), Glaw and Vences (1994), Hilgartner and Raolison (2005), Marias (2004), Shine et. al. (2006), Spawls, et. al. 2001 and Wright (1995).

As a result of these studies, it is clear that in each of the two genera and *Psammophis* there are species that are widely divergent of one another.

In the case of the genus *Psammophis*, there are numerous pre-existing names for the several recently identified genus groupings. However in the case of one major group, no names exist, so a new genus name is assigned in another paper published in this same journal.

In the case of each of the genera *Buhoma* and *Leioheterodon*, one species is clearly divergent from the others within the genus and these are herein assigned to new genus and subgenus.

GENUS BUHOMA SENSO LATO

The so-called "Forest Snakes" within the genus *Geodipsas* Boulenger, 1896 have been problematic for taxonomists for some years.

Ziegler et. al. (1997) showed from examination of hemipenial morphology that African snakes assigned to the genus *Geodipsas* should be removed from that genus, due to their different hemipenial morphology, with *Geodipsas* being restricted to taxa from Madagascar. This view was confirmed by another paper's findings at about the same time (just prior), namely Cadle (1996).

As a result, Ziegler et. al. erected the genus *Buhoma* to accommodate the three African species, namely; *vauerocegae* (Tornier, 1902), *procterae* (Loveridge, 1922) and *depressiceps* (Werner, 1897).

More recently Pyron et. al. (2011) published the results of mtDNA analysis of the relevant snakes as part of a global review of snake systematics. This review showed the taxon *depressiceps* to be widely divergent of the others within the genus *Buhoma* as created by Ziegler et. al. in 1997.

Morphologically and biologically the species *depressiceps* is quite divergent from the rest.

These morphological and biological differences between the taxa was also noted by Ziegler et. al. (1997).

As a result, a new genus is erected for this taxon.

GENUS SWILESERPENS GEN. NOV.

Type species: *Tropidonotus depressiceps* Werner, 1897 (Known in most contemporary texts as either *Geodipsas depressiceps* or *Buhoma depressiceps*)

Diagnosis: The forest snakes of the genera *Buhoma* and *Swileserpens* gen. nov. are small robust species, diagnosed by having two grooved maxillary teeth on each side, slightly larger than others, divided subcaudals, single anal and a round pupil. The tail is relatively short, being less than 20 per cent of the total length.

Above the body is usually a dark velvety brown colour with darker longitudinal lines or striations; below the colour is white; broadly porcelain white beneath the tail. Below the head is yellowish, brighter along the lower labials to the ninth ventral. The head above is a deep brown, with a yellowish nuchal collar of 4-5 scale rows.

According to Laurent (1960), the snake is not aggressive when handled and makes no attempt to bite. They may make an unpleasant cloacal discharge.

The species taxon *depressiceps* is herein treated as being monotypic for the genus. However the subspecies taxon *marlieri* Laurent 1956, may in fact be a separate species. In spite of this, the diagnosis that separates *Swileserpens* gen. nov. from *Buhoma*, applies to both these taxa.

Swileserpens gen. nov. is separated from *Buhoma* by the following suite of characters: 19 dorsal mid-body scale rows versus 17 in *Buhoma*; *Swileserpens* has 1+3 temporals versus 1+2 in *Buhoma*; *Swileserpens* gen. nov. has strongly keeled scales whereas *Buhoma* does not.

Ziegler et. al. (1997), found substantial differences in hemipenial morphology between *Swileserpens* gen. nov. and the other taxa within their genus *Buhoma*, the details of which are in the paper. *Buhoma* species (*vauerocegae* and *procterae*) are restricted to mountain ranges in Tanzania (Rasmussen et. al. 1995), whereas *Swileserpens* gen. nov. inhabits forest regions of western central Africa (Guibe 1958).

Both *Buhoma* and *Swileserpens* are separated from *Geodipsas* by having 7 or 8 supralabials, with the third, fourth and fifth entering the eye. In all Malagasy *Geodipsas*, there are 7 supralabials in which only the third and fourth enter the eye.

Both *Buhoma* and *Swileserpens* are further separated from *Geodipsas* by having different sublingual scales. In the African taxa, there are three regular pairs of longish sublingual scales,

behind which the ventrals start. By contrast in the Malagasy taxa only have two pairs of large sublinguals before the commencement of the regular ventrals.

Common Name: Pale-headed forest snake.

Etymology: Named in honour the Swile family of Mitchell's Plain and Athlone in South Africa for their amazing hospitality when my family visited South Africa in 2009. This includes, Ernie, Verona, Benjamin, Keegan, Jade, Robert (now deceased), Felicia, Gareth and Marlene.

Species in genus *Swileserpens* gen. nov.

Swileserpens depressiceps (type species)

Species remaining in the genus *Buhoma*.

Buhoma vauerocegae

Buhoma procterae

GENUS LEIOHETERODON SENSO LATO

The three species of Madagascar Hognose snakes currently placed in the genus *Leioheterodon* have been in herpetoculture in the USA and Europe for some years and are now commonly captive bred (see Anonymous 1994 and Wright 1995).

While superficially similar, the various idiosyncrasies between the species have become apparent. Of particular note has been the differences between the Speckled Hognose Snake (species *geayi*) and the other two species, *modestus* and *madagascariensis*, which appear to be very similar to one another.

Molecular studies, including that of Pyron et. al. (2011) have confirmed this relative position, indicating that the taxon *geayi* should be classified apart from the others.

As a result of this situation and the fact that there is no currently available name, a new subgenus is defined and named below to accommodate the species *geayi*.

SUBGENUS MICHAELNICHOLSUS GEN. NOV.

Type species: *Lioheterodon geayi* Mocquard, 1905

Diagnosis: In common with the other Madagascan Hognosed snakes, *Michaelnicholsus* subgen. nov. is immediately recognizable by it's upturned snout, a feature no other Malagascay snake has.

This subgenus *Michaelnicholsus* subgen. nov. is monotypic for the species *geayi*.

These snakes are similar in appearance to the North American hognosed snakes.

They are native to the island minicontinent of Madagascar and are medium sized to large heavy bodied colubrids.

They feed on vertebrates.

Though rear-fanged, they are not regarded as dangerous to humans.

Michaelnicholsus subgen. nov. can be readily separated from the other two species remaining within the genus *Lioheterodon* most readily by colouration. It is the only species of the trio to have a colouration whereby each dorsal and lateral scale is heavily bordered in black, giving the snake the overall dark and heavily speckled or mottled appearance over a tan, yellowish to reddish brown ground colour, therefore giving it an often "braided" appearance. Colouration often becomes a deeper red to reddish brown at about half to two thirds of the way down the snake's body.

By contrast, the Blond Hognose Snake (*Lioheterodon modestus*) is of uniform light colour, usually tan, light brown or pale yellowish. The lateral and labial scales in this species are usually lighter whitish to cream than the dorsal scales.

The Giant Hognose Snake (*Lioheterodon madagascariensis*) is the largest in the genus *Lioheterodon* and is known to reach about 1.5 metres in length. The colour is yellowish to brownish on top, with large darker brown to black dorsal and lateral blotches. The neck and front third of the body are typically darker than the rest.

Etymology: Named in honor of Michael Nichols for services to

herpetology, having done considerable work assisting Snakebusters, Australia's best reptiles shows, in a "behind the scenes" capacity. Of course Snakebusters and our strong educational messages to the public has been singularly successful in making our home state of Victoria go from being one of the highest "death from snakebite" states in Australia to become the lowest.

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