

A NEW GENUS OF PITVIPER (SERPENTES: VIPERIDAE) FROM SOUTH AMERICA.

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Received 10 February 2012, Accepted 20 March 2012, Published 8 April 2012.

ABSTRACT

The Pitvipers of Central and South America have been the subject of intense scrutiny by taxonomists in recent years.

The so-called *Bothrops* group (*sensu lato*) in particular has been subject of intense study and debate (see Fenwick, et. al. 2009) and sources cited therein.

As a result, what was formerly regarded by many as a single highly speciose genus has been subdivided into several genera, namely, *Bothriopsis* Peters 1861, *Bothrocophias* Cutberlet and Campbell 2001, *Bothropoides* Fenwick, et. al. 2009, *Bothrops* Wagler 1824 and *Rhinocerocephalus* Garman 1881.

There remain obviously ungrouped species that clearly do not fit into any of these genera in terms of a consistent level of definition of the genera and based on results of several studies published by various authors.

To rectify this situation a new genus *Jackyhoserea* gen. nov. has been created to accommodate these species, namely the species formerly identified as *Bothrops andianus*, *B. pictus*, *B. lojanus*, *B. roedingeri* and *B. barnetti*, with *B. pictus* nominated as the type species.

Due to obvious differences in both morphology and habits, *B. andianus* is further placed in a new subgenus *Daraninus* subgen. nov.

Keywords: Taxonomic revision; new genus; new subgenus; Viperidae; Crotalinae, *Jackyhoserea*; *Daraninus*; *Bothrops*; *pictus*; *andianus*; *barnetti*; *lojanus*; *roedingeri*; Hoser; snake; subgenus; genus.

INTRODUCTION

Pitvipers within the genus group *Bothrops sensu lato* have been widely studied, with results published by Carrasco et. al. (2010), Jansen (2008) and others.

Papers by Fenwick, et. al. (2009), Pyron et. al. (2012) and others have greatly clarified the phylogenetic positions of the various species level taxa within this and other Colubroidea.

The excellent monograph by Campbell and Lamar (2004) (volume one) meticulously distills and details a summary of the available information about the relevant taxa in detail.

This paper does not seek to rehash this information, but instead seeks to draw attention to the fact that within the *Bothrops sensu lato* group, the component species have to the present date been placed within various genera, currently recognised as including the following:

Genus: *Bothriopsis* Peters, 1861 (Forest Vipers)

Genus: *Bothrocophias* Campbell and Gutberlet 2001 (Toad-headed Pitvipers)

Genus: *Bothrops* Wagler, 1824 (Lanceheads)

The component species within each group are listed in Campbell and Lamar (2004). A more recent view of the exact composition of the three relevant genera including recently described taxa such as *Bothrops marmoratus* Da Silva and Rodrigues (2008) or *Bothrops ayerbeii* Folleco and Javier (2010) can be found online on the "reptile database" controlled by Peter Uetz at:

<http://reptile-database.org/>

although it should be noted that the content and points of view expressed on this site are somewhat subjective and change regularly.

While snakes within the now reduced genus *Bothrops* tend to be similar in form and habit, five species stand out as exceptional and different.

These species recognised as of early 2012 are: *Bothrops andianus*, *B. barnetti*, *B. lojanus*, *B. pictus*, *B. roedingeri*.

While there had been reluctance by previous herpetologists to recognise these differences taxonomically, a number of recent molecular studies including those by Fenwick, et. al. (2009) (see fig 1. p. 623) and Pyron et. al. (2012) (see Fig 2A p. 334), both with reference to the species taxon, *pictus*, have conclusively shown that continued inclusion of these snakes within the genus *Bothrops* as currently understood is not appropriate.

The molecular results also concur with the quite different habits and ecology of the five taxa subject of this paper, namely *B. andianus*, *B. pictus*, *B. lojanus*, *B. roedingeri* and *B. barnetti*, in that all are distinctive in their preference for high altitude dry habitats (sometimes termed the "arid temperate zone"), strongly terrestrial habits, restricted distributions and local abundance in given locations.

As there is not an available genus name for these snakes, a new genus is created herein and diagnosed according to the ICZN code (Ride et. al. 1999) to accommodate these snakes.

Recognising further obvious differences between the said snakes, a subgenus is also created to split the group further.

BOTHROPS SENSU LATO.

While it is not necessary to rehash the finer detail of these well-known and recognised snakes for the purposes of this paper, it is worth noting that these pitvipers have their centre of distribution in South America.

Pitvipers are defined by the large distinct heat-sensitive loreal pits on the face between the nostril and the eye.

Being venomous snakes, they possess large retractable fangs at the front of their mouth, that becomes erect as the mouth opens. These traits alone separate the pitvipers from all other snakes in the region.

Between the three genera *Bothrops*, *Bothriopsis* and *Bothrocophias* there are in excess of 40 recognised species taxa. Using the definitions of each genus as given in Campbell and Lamar (2004) relied upon herein as well for the purposes of the formal descriptions below (if needed and if as required), it's worth noting that *Bothrops* contains over 30 described species, while each of the other genera has less than ten.

In common, the snakes of these genera range in build from slender to moderately stout and have a relatively long tail spine. None have a supraocular spine or horn, which separates these snakes from sometimes superficially similar species in other genera.

Bothriopsis is separated from the other two genera by the presence of a strongly prehensile tail, with the distal portion curving strongly downward both in life or in preservative.

In turn *Bothriopsis* is separated from the superficially similar pitviper genus *Bothriechis* by having a relatively long tail spine (as opposed to short and blunt) and usually divided subcaudals, (as opposed to undivided in *Bothriechis*).

Bothrops is separated from *Bothrocophias* by lacking a distinct series of pale spots or bars on the infralabials; dorsals often strongly keeled, but not tubercular; intersupraoculars usually keeled; a narrow skull, the distance across the frontal bones is less than the width of the skull at the anterior end of the supratemporals.

By contrast *Bothrocophias* has a series of pale spots or bars

on the infralabials; dorsal keels are tubercular; intersupraoculars are smooth or keeled; the skull is broad and the distance across the frontal bones is equal to the width of the skull at the anterior end of the supratemporals.

GENUS BOTHROPS WAGLER, 1824

The etymology for the genus name is derived from the Greek *bothros*, meaning "pit" and *ops*, meaning either "eye" or "face" with reference to the distinct heat-sensitive loreal pits on the face between the nostril and the eye.

They have the common name "Lancehead" in reference to the distinctive shape of their head.

Snakes within this genus range in adult size from about 50 cm to in excess of 2 metres for largest specimens of a few species.

They are distributed mainly in South America, although two species reach Middle America, one *B. asper*, ranging as far north as northern Mexico.

Most are terrestrial, although all can climb, with one species, *B. insularis* commonly found in trees.

Most species in the genus as currently recognised have a sharply defined canthus rostralis and an unelevated snout, the exceptions being the species *lojanus* and *barnetti*, both of which have a slightly upturned snout (see below) and *ammodytoides* which has a nasal appendage.

The scales on the crown of the head are highly variable and not of taxonomic significance. although the intersupraoculars number from 3 to 14. There are generally 7-9 supralabials, (*cotiara*, *pictus* and *roedingeri* have 11 or more), 9-11 infralabials, 21-29 dorsal mid body rows, 139-240 ventrals and 30-86 usually divided subcaudals.

The everted hemipenes are 8-11 subcaudals long and deeply divided.

GENUS JACKYHOSEREA GEN. NOV.

Type species: *Lachesis picta* Tschudi 1845

(Identified most recently as *Bothrops pictus* (Tschudi 1845)

Diagnosis: All are moderately stocky terrestrial lanceheads averaging 40-140 cm in total length and are found in a variety of situations, but most commonly in high altitude areas of somewhat drier habitats, sometimes best described as the "arid temperate zone" although in driest situations they are usually found in or near the riparian zone.

The dorsum of the body is usually a pale grey tan or reddish brown background colour; that is with a pattern running down the back (occasionally indistinct in old and pre-slough animals), sometimes in a highly broken pattern of blotches, triangles or similar interspersed with lighter pigment; invariably there is a thick dark postorbital line running from the eye to the rear of the head crossing three to four pairs of supralabials and continuing to the rear of the head, sometimes angled slightly downward to the end of the jaw or just past it, below which are whitish supralabials, this colour being maintained to the snout, although the head in front of the eye lacks the dark postorbital stripe; the snout may be slightly elevated or flat.

Jackyhoserea gen. nov. are separated from all species within the genus *Bothrops* (defined above and forming a part of this description), by the following suite of characters: The canthus does not curve upwards, there is a dorsal pattern of small blotches, many of which are located mid-dorsally or fused to form a zig-zag stripe, occasionally trapezoidal or triangular that alternate or meet mid-dorsally; 3-10 intersupraoculars; 8-11 supralabials with the second, third or none fused with the prelacanal; 10-12 infralabials; 21-25 (usually 23) dorsal

mid body rows, 157-186 ventrals in males, 165-186 ventrals in females, 37-63 all divided subcaudals in males and 33-58 all or mostly divided subcaudals in females.

Restricted to South America.

Etymology: Named in honour of my daughter Jacky Hoser. She spent much of the first 10 years of her life educating fellow children about reptiles and by free-handling the world's deadliest snakes on a daily basis, was able to de-demonise these magnificent reptiles.

She was able to handle these snakes in total safety, because they had been made venomoid, as in permanently de-venomized (see Hoser 2004). More significantly however, is that after many years of free handling taxa such as Taipans (*Oxyuranus* and *Parademansia*), Tiger Snakes (*Notechis*), Death Adders (*Acanthophis*), Brown Snakes (*Pseudonaja*) and Black Snakes (*Pseudechis*), she had never been bitten once.

By contrast, many so-called snake handlers in Melbourne attacking their pet elapid snakes with devices like metal tongs had made many trips to the emergency wards of hospitals over the same time period (2002-2012) after their snakes had not surprisingly bitten them as a result of the pain inflicted on them.

Species in genus *Jackyhoserea* gen. nov.

Jackyhoserea pictus

Jackyhoserea andianus

Jackyhoserea barnetti

Jackyhoserea lojanus

Jackyhoserea roedingeri

SUBGENUS *DARANINUS* SUBGEN. NOV.

Type species: *Bothrops andianus* Amaral 1923

Diagnosis: Currently a monotypic subgenus, including only the type species.

Daraninus gen. nov. is separated from all other members of the genus *Jackyhoserea* gen. nov. by the following suite of characters: 7 supralabials, the second usually fused with the prelacunal to form a lacunolabial, versus 9-10 supralabials in all other *Jackyhoserea* gen. nov.; 8-11 infralabials, versus 10-12 infralabials in all other *Jackyhoserea* gen. nov.; unlike other *Jackyhoserea* gen. nov. in this taxon (*Daraninus* gen. nov.) the area occupied by interspaces (of the dorsal or dorsolateral blotches) is considerably and conspicuously less than that occupied by the dorsal or dorsolateral blotches.

This is a relatively large species, recorded as exceeding 1.25 metres in total length (Campbell and Lamar (2004).

The taxon is restricted to the central Andes in Western South America; known from the departments of Cuzco and Puno in southern Peru and the departments of La Paz, Cochamba and Santa Cruz in Bolivia. Most specimens seem to be found at the type locality, Machu Picchu (eastern Andes-Rio Urabamba) and along the Rio Cosireni. The known vertical distribution of this taxon is 1,800 to 3,300 metres. The higher altitude limit for this taxon exceeds all other records for the genera *Jackyhoserea* gen. nov. and *Bothrops*.

Common name: Andean Lancehead.

Species in subgenus *Daraninus* gen. nov.

Jackyhoserea andianus Amaral 1923

Etymology: Named in honour of Dara Nin, of Ringwood, Australia. For some years now, he's had to put up with my terrible jokes as we have travelled Australia educating people about reptiles, under the banner of "Snakebusters, Australia's best reptiles".

Magnificently loyal and impeccably reliable, he's educated countless people about reptiles, shattered countless lies and myths peddled by inexperienced business competitors and their close mates in government and no doubt saved the lives of many reptiles through his excellent work.

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Published by Kotabi Pty Ltd
PO Box 599
Doncaster, Victoria, 3108.
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ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)