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Three new genera of Ground Snakes from Middle and South America (Serpentes: Dipsadidae).

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ABSTRACT

The Ground Snakes of the genus *Atractus* Wagler, 1828 (Dipsadidae) as currently recognized consists of over 130 species.

However the genus has long been recognized as being paraphyletic, with various species groups having been assigned generic names in the past.

Notwithstanding this fact, most publishing authors continue to group all within *Atractus* as a matter of convenience rather than an evidence-based firm belief that all should be placed within a single genus on the basis of accepted genus level affinity.

This paper begins the dismemberment of the genus *Atractus* as known to date and formally removes three divergent species from Colombia (the *wagleri* group) and places them in a newly named genus according to the Zoological Code (Ride *et al.* 1999).

Two other divergent species are each placed into monotypic (at this stage) genera, these being *Atractus clarki* Dunn and Bailey, 1939 and *Atractus zidoki* Gasc and Rodrigues, 1979.

Keywords: Taxonomy; Ground Snake; Colombia; *Atractus*; New Genera; *Shanekingus*; *Carstensus*; *Drewwilliamsus.*

INTRODUCTION

The Colubroid Ground Snakes of the genus *Atractus* Wagler, 1828 (Dipsadidae) as currently recognized consists of over 130 species. Uetz (2013) cites 134 species.

However the genus has long been recognized as being paraphyletic, with various species groups having been assigned generic names in the past. Boulenger (1894) cited seven other potentially available generic names as being synonymous with *Atractus* with most being referrable to distinct species groups within the genus *Atractus sensu lato* and therefore available for use in light of known taxonomic relationships.

Notwithstanding this fact, most publishing authors continue to group all within *Atractus* as a matter of convenience rather than a firm belief that all should be placed within a single genus on the basis of accepted genus level affinity (Pyron *et al.* 2013), noting that in their published phylogeny, Pyron *et al.* made a point of using existing nomenclature even when their results pointed to a significantly different taxonomic picture.

This paper formally removes three divergent species, until now placed within the genus *Atractus* from Colombia (the *wagleri* group) and places them in a newly named genus according to the Zoological Code (Ride *et al.* 1999). This genus is named *Shanekingus gen. nov.*.

There is absolutely no doubt that the creation of this new genus for a group of snakes formerly within *Atractus*, and two others (see below) will be the first step towards the greater dismemberment of the genus *Atractus* as currently recognized in coming years.

The so-called *wagleri* group includes the following three species, *Atractus wagleri*, Prado, 1945, *Atractus sanguineus* Prado, 1944 and *Atractus attenuatus* Myers and Schargel, 2006.

All three species are currently only known from Colombia in South America.

Publications relevant to the taxonomy of the species within the so-called *wagleri* group include the following: Boulenger (1894), Myers and Schargel (2006), Passos and Arredondo (2009), Passos *et al.* (2009a), Pérez-Santos and Moreno (1988), Prado (1944, 1945, 1946), Pyron, Burbrink and Weins (2013) and sources cited therein.

The species currently recognized as *Atractus clarki* Dunn and Bailey, 1939 has long been recognized as being divergent within the genus *Atractus* (Myers 2003) and the current generic placement of the taxon was questioned by Myers in that paper.

Revisiting the data presented by Myers leads to the inescapable conclusion that this species should not be placed within the *Atractus* group at the genus level. As no name is available for the taxon, it is hereby placed in a new genus *Carstensus gen. nov.* diagnosed and defined according to the Zoological Code (Ride *et al.* 1999).

Publications relevant to the taxonomic status of the species currently recognized as *Atractus clarki* Dunn and Bailey, 1939 includes: Dunn and Bailey (1939), Myers (2003), Passos *et al.* (2009b), Pérez-Santos and Moreno (1988) and sources cited therein.

The species *Atractus zidoki* Gasc and Rodrigues, 1979 is known

to be quite divergent from all other *Atractus* including that it is readily separated from all other *Atractus*, the genus it has been placed in to date, by the presence of paired apical pits and tubercles on the dorsal scales (Gasc and Rodrigues, 1979). In my view, these and other obvious differences between this taxon and other *Atractus* warrant it being placed in a monotypic genus. This is formally done according to the Zoological Code (Ride *et al*.1999) below.

Publications relevant to the taxonomic status of the species currently recognized as *Atractus zidoki* Gasc and Rodrigues, 1979 include: Claessen (2003), da Cunha and do Nascimento (1983), Gasc and Rodrigues (1979, 1980), Passos and Fernandes (2008), Passos *et al.* (2007), Pérez-Santos and Moreno (1988), Prudente and Passos (2008), Silva Haad (2004), Starace (1998) and sources cited therein.

GENUS SHANEKINGUS GEN. NOV.

Type species: *Atractus wagleri*, Prado, 1945.

Diagnosis: *Shanekingus gen. nov.* are separated from all other *Atractus* Wagler, 1828, by the following combination of characters: (1) 17/17/17 smooth dorsal scale rows; (2) two postoculars; (3) loreal long; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) seven infralabials, first three contacting chinshields; (7) six or seven maxillary teeth; (8) generally four gular scale rows; (9) four or five preventrals; (10) 174-180 ventrals in females, 157-174 in males; (11) 29-44 subcaudals in females, 46-56 in males; (12) dorsal ground colour being cream-red with an irregular vertebral black stripe connected to lateral black blotches, sometimes constituting complete bands anteriorly (sometimes not) and decreasing in size posteriorly or; alternatively widely spaced crossbars that are distinctly darker than the ground color and that are connected by a vertebral dark line or; an extremely vague pattern of numerous, closely spaced, indistinct crossbars (13) venter black with paraventral region cream; (14) moderate body size, females reaching 437 mm SVL and males 445 mm SVL; (15) moderate tail length in females (13.6-15.3% SVL) and long in male (21.61% SVL); (16) hemipenis moderately bilobed, semicapitate, and semicalyculate.

The genus *Carstensus gen. nov.* is separated from *Shanekingus gen. nov.* by the character suite given within that description (below).

The genus *Drewwilliamsus gen. nov.* is readily separated from all other *Atractus*, the genus it would otherwise be diagnosed as being within (and the genera *Shanekingus gen. nov.* and *Carstensus gen. nov.*), by the presence of paired apical pits and tubercles on the dorsal scales (Gasc and Rodrigues, 1979).

Distribution: The genus *Shanekingus gen. nov.* is known only from Colombia in South America.

Etymology: Named in honour of herpetologist Shane King, formerly of Bendigo, Victoria, Australia, and more recently of Mildura, Victoria, Australia in recognition of his largely unrecognized work assisting other herpetologists over many years during the period of the 1990's to 2013.

Content: *Shanekingus wagleri*, (Prado, 1945) (type species); *S. sanguineus* (Prado, 1944) and *S. attenuatus* (Myers and Schargel, 2006).

GENUS CARSTENSUS GEN. NOV.

Type species: *Atractus clarki* Dunn and Bailey, 1939.

Diagnosis: The genus *Carstensus gen. nov.* is readily separated from other *Atractus* by the following suite of characters: It has a uniformly pale venter, narrow pale dorsal bars, pale dashes on the lower scale rows, and in having a relatively large eye whose length is noticeably greater than its distance to lip and which is contained less than two times in length of the loreal plate; the hemipenis of *Carstensus gen. nov.* is bilobed for a third of its length and the lobes are markedly calyculate. By contrast the hemipenes of *Atractus* are bilobed only at the tips and never fully calyculate.

The genera *Carstensus gen. nov.* and *Atractus* are separated from the morphologically similar genus *Geophis* Wagler, 1830 by having 17 instead of 15 dorsal mid-body rows.

Carstensus gen. nov. is essentially a terrestrial species as opposed to the more fossorial species within the genus *Atractus*, also distinguished by the relatively smaller eye and other morphological traits reflective of their lifestyle.

The genus *Shanekingus gen. nov.* is separated from *Carstensus gen. nov.* by the characters given within that description (above).

The genus *Drewwilliamsus gen. nov.* is readily separated from all other *Atractus*, the genus it would otherwise be diagnosed as being within (and the genera *Shanekingus gen. nov.* and *Carstensus gen. nov.*), by the presence of paired apical pits and tubercles on the dorsal scales (Gasc and Rodrigues, 1979).

Distribution: Known only from two specimens (possibly two different species), from Panama and Colombia.

Etymology: Named in honour of Terry Carstens, a snake catcher of Mildura, Victoria, Australia, for his services to wildlife conservation, namely his removal of threatened snakes from human habitation before they get needlessly killed. Carstens has also been involved in reptile education and awareness for some years and this work should be recognized.

Content: *Carstensus clarki* Dunn and Bailey, 1939 (type species) monotypic for the genus.

GENUS DREWWILLIAMSUS GEN. NOV.

Type species: *Atractus zidoki* Gasc and Rodrigues, 1979.

Diagnosis: The genus *Drewwilliamsus gen. nov.* is readily separated from all other *Atractus*, the genus it would otherwise be diagnosed as being within (and the genera *Shanekingus gen. nov.* and *Carstensus gen. nov.* as defined within this paper), by the presence of paired apical pits and tubercles on the dorsal scales (Gasc and Rodrigues, 1979).

The similar genus *Geophis* Wagler, 1830 is readily separated from *Atractus* and *Drewwilliamsus gen. nov.* by having 15 instead of 17 dorsal mid-body rows.

The genus *Drewwilliamsus gen. nov.* is monotypic for *Atractus zidoki* Gasc and Rodrigues, 1979, the full diagnosis for the species being within Gasc and Rodrigues (1979).

Distribution: Brazil (Pará, Amapá), French Guiana and Colombia (Amazonas).

Etymology: Named in honour of Drew Williams a herpetologist from Bendigo, Victoria, Australia in recognition of his largely unrecognized work assisting other herpetologists in Australia some of whom have subsequently published his material and findings without proper attribution, in the morally reprehensible act of plagiarization.

Content: *Drewwilliamsus zidoki* (Gasc and Rodrigues, 1979).

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