



## A new species of *Chironius* Fitzinger, 1826 from the state of Bahia, Northeastern Brazil (Serpentes: Colubridae)

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### Abstract

We describe a new species of *Chironius* Fitzinger, 1826 from the highlands of Chapada Diamantina, state of Bahia, Brazil. The new species is distinguished from all currently recognized congeners by a unique combination of states of characters on coloration, scale counts, scale ornamentation, and hemipenis. The new species closely resembles *Chironius flavolineatus* (Jan, 1863) in color pattern, but differs from the later taxon by the presence of two to four posterior temporal scales; cloacal shield entire; six to ten rows of keeled dorsal scales at midbody; ventral scales with posterior dark edges forming conspicuous transverse bars along almost the entire venter; conspicuous dark longitudinal stripes (in “zigzag”) in the midventral portion of subcaudals; region of medial constriction of hemipenis slightly covered with spinules separating calyces of apex from spines below region of constriction; and sulcus spermaticus situated on convex face of hemipenis in lateral view. The new species is apparently restricted to Chapada Diamantina, corroborating the biological importance of this region from a conservational perspective.

**Key words:** Plateau of Central Brazil, Chapada Diamantina, Morphology, *Chironius* taxonomy

### Resumo

Descrevemos uma nova espécie de *Chironius* Fitzinger, 1826 das partes altas da Chapada Diamantina, estado da Bahia, Brasil. A nova espécie é distinta das demais congêneres atualmente reconhecidas por apresentar uma combinação única de estados de caracteres relativos à coloração, contagem e ornamentação das escamas e hemipênis. A nova espécie se assemelha a *Chironius flavolineatus* (Jan, 1863) em relação ao padrão de coloração, porém difere desta última por apresentar duas a quatro temporais posteriores; escudo cloacal inteiro; sexta a décima fileiras de escamas dorsais quilhadas no meio do corpo; ventrais com bordas posteriores escuras formando barras transversais conspícuas ao longo de quase toda a extensão do ventre; faixas longitudinais escuras conspícuas (em “zigue zague”) na porção mesoventral das subcaudais; região da constricção medial do hemipênis levemente recoberta por espínulas que separam os cálices da porção apical dos espinhos abaixo da região da constricção; e sulco espermático situado na face convexa do hemipênis em vista lateral. A nova espécie é aparentemente restrita à Chapada Diamantina, corroborando a importância biológica desta região em uma perspectiva conservacionista.

**Palavras-chave:** Platô do Brasil Central, Chapada Diamantina, Morfologia, Taxonomia de *Chironius*

### Introduction

The genus *Chironius* Fitzinger, 1826 comprises a monophyletic assemblage of the family Colubridae, morphologically defined as the only neotropical snakes having 10 or 12 dorsal scale rows at midbody (Dixon *et al.* 1993; Hollis 2006; Kok 2010; Klaczko *et al.* 2010). As presently recognized the genus includes 20 species (Hollis 2006; Kok 2010; Klaczko *et al.* 2010; Hamdan *et al.* 2014; Wallach *et al.* 2014) of diurnal snakes widely distributed from Honduras (Central America) south to Uruguay and northeastern Argentina (Bailey 1955; Dixon *et al.* 1993; Klaczko *et al.* 2014).

## Discussion

*Chironius diamantina* is apparently restricted to the Chapada Diamantina, state of Bahia, Brazil. This region represents the northern portion of Serra do Espinhaço and is considered a hotspot due to the high biological diversity (Silva *et al.* 2003). Furthermore, besides unique geomorphologic formation, Chapada Diamantina is inserted in the morphoclimatic domain of semiarid Caatinga, although different types of vegetation—Campos Rupestres, Cerrado, deciduous, semideciduous, and ombrophilous forests—are present (Giulietti *et al.* 1997). This geomorphologic formation harbors some typical taxa of high elevations and has a high degree of endemism in both fauna (e.g. Heyer 1999; Napoli & Juncá 2006; Rodrigues *et al.* 2006; Rodrigues *et al.* 2009; Napoli *et al.* 2011; Pombal Jr. *et al.* 2012; Teixeira Jr. *et al.* 2012) and flora (e.g. Ribeiro *et al.* 2008; Rapini *et al.* 2012). The occurrence of this new species in Chapada Diamantina reinforces the biological importance of this region from a conservational perspective.

Specimens of *C. diamantina* were identified as *C. flavolineatus* in biological collections revealing that the specific limits of the later taxon have been overestimated, hindering the knowledge of the new species. The recognition and delimitation of species representing unique evolving metapopulation lineages is fundamental in light of the current biodiversity crisis and taxonomic impediment (Wilson 1985; De Queiroz 2007; Carvalho *et al.* 2007; Dubois 2008). However, the recognition of such lineages with available information (e.g. ecological, historical, molecular, morphological, etc.) remains a challenge (Wiens & Servedio 2000; Sites & Marshall 2004). This issue is particularly important considering taxa described based on few specimens and/or with diagnostic characters apparently very conspicuous. Frequently these taxa may actually represent species complexes, weakening the diagnosis of species already described and hindering the recognition of cryptic species (Bickford *et al.* 2006; Franco *et al.* 2007; Henderson *et al.* 2009).

*Chironius flavolineatus* meets these requirements and the description of *C. diamantina* reinforces the need for detailed taxonomic revisions including different sources of characters in order to improve the recognition of distinct evolutionary lineages, especially those involving taxa distributed in poorly sampled regions, such as Chapada Diamantina. Finally, Wheeler & Platnick (2000) argue that hypotheses in several areas (e.g. ecology, physiology, and comparative morphology) should not be proposed if delimitation of species, as the fundamental unity of the study, is not clearly defined. Therefore, efforts must be directed to the production of accurate and fast descriptions of biodiversity, enabling improvement of results in different fields of scientific researches.

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## Appendix

### Specimens examined

***Chironius flavolineatus*. BRAZIL:** ALAGOAS: Camaragibe: MNRJ 3981, Matriz de Camaragibe UFPB 4669, Quebrangulo MZUSP 3169; AMAPÁ: Ferreira Gomes CHUNB 219; AMAZONAS: Humaitá, CHUNB 217, 218, MRNJ 19786; BAHIA: Barreiras, MZUFBA 2131 (hemipenis), MNRJ 3064, 3065, Cachoeira, MZUFBA 1647 (hemipenis), Camaçari, MZUFBA 1199, Candeias, MZUFBA 592, Catú, MZUFBA 610, Cruz das Almas, UEFS 1525, Dias Dávila, UEFS 1469, MZUESC 1759, Itanagra, MZUFBA 401, Salvador, MZUFBA 1668, 1784, 1819, 2278, Santa Rita de Cássia, MZUSP 3602, São Desidério, MZUFBA 2309 (hemipenis), MZUESC 7078, 7079, Saubara, UEFS 686, no specific locality, MZUFBA 2280 (hemipenis), Simões Filho, MZUFBA 1603; CEARÁ: Barbalha, CHUFC 2127, Ubajara, MZUSP 10504; DISTRITO FEDERAL: Brasília, CHUNB 24908; GOIÁS: Alto Paraíso de Goiás, IVB 3291, Aporé, CHUNB 48242, 48241, Buritinópolis, MZUSP 17770, Formosa, CHUNB 19698, Goiânia, CHUNB 56373, Minaçu, CHUNB 29774, 6669, 29778, 29783, 29777, 29769, 49133, 50423, MZUSP 11097, 11098, Uruaçu MNRJ 7495; MARANHÃO: Balsas, CHUNB 52146, Carolina, MZUFBA BH38; MATO GROSSO: Acorizal, MZUSP 7307, Araputanga, UFMT 5918, Barra do Tapirapé, MNRJ 588, 589, Brasnorte, UFMT 8031, Cáceres, UFMT 1529, Chapada dos Guimarães, UFMT 542, 547, CHUNB 55217, MZUSP 5348, 11843, CHUNB 15378, 15380, 15417, 15418, Confresa, MZUSP 3812, Cuiabá, UFMT 8559,