The black snake: a literature review

Ellydberto Amâncio Correia Nunes[1], Adrianne Teixeira Barros[1]

1 Department of Biology, State University of Paraíba; Campina Grande; Paraíba; Brazil.
Corresponding author: ellydbertonunes24@gmail.com

Submetido em 05 de junho de 2025
Aceito em 11 de setembro de 2026.
Publicado em 26 de novembro de 2026.

Abstract - *Boiruna sertaneja* Zaher, 1996, is a snake species endemic to the Caatinga biome, a semi-arid region in northeastern Brazil. Despite its ecological importance, knowledge regarding its biology, ecology, and toxinology remains limited. This literature review aimed to consolidate existing information through searches in scientific databases such as Google Scholar®, ScienceDirect®, Web of Science®, and PubMed®, resulting in 61 relevant publications. *B. sertaneja* (Serpentes: Dipsadidae) is distinguished by its unique hemipenial morphology and subcaudal scale configuration. It is a terrestrial, nocturnal snake of medium to large size, reaching up to 2.24 meters in total length. Its uniformly dark coloration likely serves as a defensive mechanism. The species exhibits marked sexual dimorphism and a specialized ophiophagous diet, primarily preying on other snakes and occasionally small mammals. Although it is not considered aggressive and there are no reported human envenomation cases, *B. sertaneja* is frequently persecuted due to regional myths, highlighting the need for conservation measures and further research to ensure its preservation and enhance ecological understanding.

Keywords: Herpetofauna. Black snake. Muçurana. Northeastern Brazil. Milk-sucking snake.

Resumo - *Boiruna sertaneja* Zaher, 1996, é uma espécie de serpente endêmica do bioma Caatinga, caracterizado por condições semiáridas no Nordeste do Brasil. Apesar da sua importância ecológica, os conhecimentos acerca de sua biologia, ecologia e toxinologia permanecem escassos. Esta revisão bibliográfica teve como objetivo consolidar as informações disponíveis, a partir de buscas em bases de dados científicas como Google Scholar®, ScienceDirect®, Web of Science® e PubMed®, resultando na seleção de 61 publicações relevantes. *B. sertaneja* (Serpentes: Dipsadidae) distingue-se de seus congêneres pela morfologia hemipeniana peculiar e pela configuração das escamas subcaudais. Trata-se de uma serpente terrestre, noturna, de porte médio a grande, podendo alcançar até 2,24 metros de comprimento total. Sua coloração uniforme, predominantemente escura, possivelmente atua como mecanismo de defesa. A espécie apresenta dimorfismo sexual evidente e hábito alimentar ofiófago especializado, alimentando-se majoritariamente de outras serpentes e ocasionalmente de pequenos mamíferos. Embora não considerada agressiva e sem registros de acidentes em humanos, *B. sertaneja* é frequentemente alvo de perseguição motivada por mitos regionais, o que reforça a

necessidade de ações conservacionistas e aprofundamento dos estudos para sua preservação e compreensão ecológica.

Palavras-chave: Herpetofauna. Black snake. Muçurana. Northeastern Brazil. Cobra que mama.

Resumen - *Boiruna sertaneja* Zaher, 1996, es una especie de serpiente endémica del bioma Caatinga, una región semiárida del noreste de Brasil. A pesar de su relevancia ecológica, la información sobre su biología, ecología y toxinología es limitada. Esta revisión bibliográfica tuvo como objetivo consolidar el conocimiento existente, mediante búsquedas en bases de datos científicas como Google Scholar®, ScienceDirect®, Web of Science® y PubMed®, resultando en la selección de 61 publicaciones pertinentes. *B. sertaneja* (Serpentes: Dipsadidae) se distingue por su morfología hemipeniana única y la configuración de sus escamas subcaudales. Es una serpiente terrestre, nocturna, de tamaño medio a grande, que puede alcanzar hasta 2,24 metros de longitud total. Su coloración oscura uniforme probablemente funciona como un mecanismo de defensa. La especie presenta dimorfismo sexual marcado y un hábito alimenticio ofiófago especializado, alimentándose principalmente de otras serpientes y ocasionalmente de pequeños mamíferos. Aunque no se considera agresiva ni existen reportes de accidentes con humanos, *B. sertaneja* es frecuentemente perseguida debido a mitos regionales, lo que subraya la necesidad de implementar medidas de conservación y profundizar en su estudio para garantizar su preservación y comprensión ecológica.

Palabras clave: Herpetofauna. Serpiente negra. Muçurana. Noreste de Brasil. Serpiente que chupa leche.

Introduction

The present study aims to conduct a comprehensive review of *Boiruna sertaneja*, commonly known in its native regions as the "black snake" or the "milk-sucking snake", by compiling and systematizing the available scientific on this species, given its biological relevance and the lack of specific research on the topic.

Throughout the research, six main topics were addressed: taxonomy and natural history, geographical distribution, morphology, reproduction, ethnobiology and additional complementary information. *B. sertaneja* is an endemic species to Brazil, and due to the scarcity of comprehensive studies, a detailed understanding of this species is essential for advancing scientific knowledge and promoting its conservation.

This bibliographic review aims to contribute to a broader understanding of the ecological, toxicological, physiological and ethnobiological aspects of the species, as well as to support conservation strategies. The study is guided by the following research question: What are the biological characteristics that define *B. sertaneja*?

Methodology

This study employed a descriptive qualitative approach through a bibliographical review focusing on the *B. sertaneja*. The review was conducted using digital databases, including Google Scholar, PubMed and SciELO, covering the period from 1996 to 2025. The following keywords were used: *Boiruna*, *Boiruna sertaneja*, *Pseudoboini*, "snake that suckle", "snake of Caatinga" and "snakes of northeastern Brazil".

A total of 171 results were retrieved using these descriptors. The number of results obtained on Google Scholar was as follow: *Boiruna* - 615, *Boiruna sertaneja* - 165, *Pseudoboini* - 462, "cobra que mama" - 34,900, "serpentes da Caatinga" - 4,660, and "serpentes do Nordeste Brasileiro" - 13,500. On PubMed the results were: *Boiruna* – (three), *Boiruna sertaneja* – (one), *Pseudoboini* – (six), snake that suckles – (four), snake of Caatinga - 15 and snakes of northeastern Brazil - 60. On SciELO, the following results were found: *Boiruna* – (four), *Boiruna sertaneja* – (one), *Pseudoboini* – (six), snake that suckles – (zero), snake of Caatinga – (zero) and snakes of northeastern Brazil – (two).

From this, a screening process was carried out to include only articles published in peer-reviewed scientific journals (due to the reliability of their data) and containing specific information related to the species under investigation. The selected studies were classified into four groups: a) studies specifically addressing *B. sertaneja* (six); b) descriptive studies including multiple animal species (22); c) faunal surveys involving collection and identification of species (34); and d) health-related studies (one). In total, 61 articles were analysed: 18 published in Portuguese, 42 in English, and one in Spanish.

Results and Discussion

The most relevant studies for this research were those specifically addressing *B. sertaneja* or those that included descriptions of the species in terms of its anatomy, geographic distribution, feeding habits, reproduction, and ethnobiology. Some studies only provided occasional records of the animal in a specific locality and were therefore considered merely as indicators of the species' geographic distribution.

Taxonomy and Natural History

The snakes commonly referred to as black snakes in Brazil belong to the monophyletic tribe *Pseudoboini* (family Dipsadidae; subfamily Xenodontinae; genus *Boiruna*) (Foerster, Bezerra & Almeida, 2013). This tribe comprises a wide diversity of neotropical snakes, encompassing 11 genera and 47 species (Grazziotin *et al.*, 2012; Gaiarsa; Alencar; Martins, 2013). Most of these species are terrestrial, though some exhibit semi-arboreal or semi-fossorial habits. Pseudoboini species are generally medium-sized snakes, whose primary food sources include small mammals, amphibians, and lizards (Marques; Eterovic; Sazima, 2001; Alencar; Gaiarsa; Martins, 2013). However, some species exhibit dietary specializations, such as *Drepanoides anomalus*, which feeds predominantly on eggs (Alencar *et al.*, 2013).

The evolution of feeding strategies within the Pseudoboini suggests that dietary specialization toward small mammals and snakes appeared independently at least twice during the tribe's diversification (Alencar *et al.*, 2013).

Boiruna sertaneja is a terrestrial species (Alencar *et al.*, 2013), found in xerophytic, herbaceous, arboreal, and shrubby vegetation in the lower regions of northeastern Brazil, with occasional records

from higher regions (Guedes; Nogueira; Marques, 2014; Nogueira *et al.*, 2019). It is considered as a specialist snake, feeding primarily on other snakes (ophiophagous), similar to *Clelia plumbea* (Alencar, 2010) and *Clelia clelia* (Quinteros; Aguayo, 2021), as well as genera like *Bothrops* (lanceheads) (Barbosa, 2007) and *Crotalus* (rattlesnakes) (Scott *et al.*, 2006). However, this feeding behavior differs from that of its congener *Boiruna maculata*, which is recognised as a generalist predator.

Andrade-Oliveira, Ramos e Castro, 2022 related a description of predation of *Boiruna sertaneja* (Bs) on a *Philodryas nattereri*:

"It (Bs) trapped its tail on one of the ceiling boards while part of its body enveloped the prey. During constriction, at least two well-defined spirals were formed; in this case, the right side of the body was in contact with the prey, forming dextrorotatory spirals, creating medial constriction rings with the dorsal region of the body facing the head. While constricting, Bs continuously bit the prey at a static point for several minutes".

Ophiophagy is possible because *B. sertaneja* is immune to the venom of other snakes (Guedes, 2021). However, since it lacks the typical fangs for venom inoculation, it does not disregard smaller animals as food sources. Some organisms are part of *B. sertaneja*'s natural diet, including nine species of snakes, four species of lizards (Sales; Lima; França, 2019; Almeida *et al.*, 2023), including *Tropidurus hispidus* (Sousa *et al.*, 2021), *Salvator merianae* (Almeida *et al.*, 2023), and two species of mammals. In addition to these groups, a recent record from the state of Rio Grande do Norte reported a specimen feeding on the carcass of a bird (*Columbina picui* Temminck, 1813) (Sales *et al.*, 2019), a novel dietary observation for this species.

Boiruna sertaneja is thought to be nocturnal in its foraging habits. When threatened, it employs constriction not only as a feeding mechanism but also as a defensive behavior (Mesquita *et al.*, 2013; Calixto; Morato, 2017).

The Caatinga is a natural region whose boundaries are confined to the Brazilian national territory. It is a unique area in the world, characterized by a dry, arid environment with a predominance of cacti, although it is not a homogeneous phytophysiognomy and can experience long periods of drought (Leal; Tabarelli; Silva, 2003; Costa; Bérnils, 2018; Costa; Guedes; Bérnils, 2021). The climate is hot, but the species in the region adapt well (Costa; Freire, 2018). The Caatinga is home to a wide variety of snakes, some of which stand out due to folklore, while others are notable for their abundance or endemism in the region, with 22 endemic species, representing about 20% of the snake species in the Caatinga. These snakes have a level of danger and are responsible for various snakebites (Guedes, 2012).

The Caatinga spans ten Brazilian states: Paraíba, Pernambuco, Alagoas, Sergipe, Rio Grande do Norte, Piauí, Maranhão, Ceará, Bahia, and the northern part of Minas Gerais - the only Caatinga-containing state outside Brazil's official Northeast region (Ministério do Meio Ambiente e Mudança do Clima, 2022). These states are listed in Table 1.

The species is described as endemic to Brazil and predominates in the Caatinga biome (7). Despite its endemism, *Boiruna sertaneja* can also be found in the Atlantic Forest biome and in highland wetlands, although information on this is still scarce (38,58). There are also records for the state of Tocantins (59), in the northern region of Brazil, and for the state of Minas Gerais, in the southeastern region, where it is considered a non-threatened species according to the criteria of the International Union for Conservation of Nature, as described in the review of the lists of threatened species of flora and fauna in the state of Minas Gerais (60). The species is described as endemic to

Brazil and predominates in the Caatinga biome (Nogueira *et al.*, 2019). Despite its endemism, *B. sertaneja* has also been recorded in the Atlantic Forest biome and in highland wetlands, although information regarding these occurrences remains scarce (Rodrigues *et al.*, 2015; Filho *et al.*, 2020). There are also records for the state of Tocantins (Vitt *et al.*, 2005), in northern Brazil, and from the state of Minas Gerais, in the southeastern region, where it is considered non-threatened according to the criteria of the International Union for Conservation of Nature, as noted in the updated list of threatened flora and fauna of Minas Gerais (Fundação Biodiversitas, 2007).

Therefore, it can be stated that the species occupies almost all northeastern states of Brazil, with the exception of Maranhão.

Anatomy

The genus *Boiruna* exhibits ontogenetic color changes, with *B. sertaneja* undergoing modifications earlier than *B. maculata* (Zaher, 1996; Alves *et al.*, 2012). Juvenile specimens of *B. sertaneja* exhibit an early darkening of the dorsal surface during ontogenesis (Zaher, 1996) when compared to *B. maculata*. This genus has distinct morphological characteristics that set it apart from other groups within the tribe. Adults possess nearly entirely black subcaudal and ventral scale, except for the anterior region of the body. In the vertebral and paravertebral regions, juveniles have a black longitudinal stripe, well-developed bare pockets in the inguinal region, two parallel rows of lobes on the neck, and an absence of sulcate spines (Zaher, 1996). These modifications are not widely known, often leading to mistaken identification with other species, such as coral snakes or "queen snake" (Foerster *et al.*, 2013).

Boiruna sertaneja can be easily distinguished from *Pseudoboa nigra* by the presence of divided subcaudal scales (Alves *et al.*, 2012) and from *B. maculata* by having a greater number of subcaudal scales (68-79 in males and 60-75 in females), as well as by the absence of spine-like structures on the hemipenis (Scanferla; Agnolin; Voglino, 2009). The vertebral centrum of *B. sertaneja* is shorter, and the zygapophyses are strongly divergent (Camolez; Zaher, 2010). However, it is impossible to distinguish the skeletal morphology of the two species, as they only differ externally (Scanferla *et al.*, 2009). They can reach a length of 2.24 meters (Zaher, 1996), classified as medium to large snakes (Alves *et al.*, 2012).

Both sexes exhibit the same color pattern; however, males tend to have longer tails, while females are generally more robust and larger overall (Zaher, 1996; Marques *et al.*, 2001; Freitas, 2003; Andrade-Oliveira *et al.*, 2022). *Boiruna sertaneja* has a head that is clearly distinct from the body (Zaher, 1996), and its dentition is opisthoglyphous (Mumaw; González; Fernández, 2015). Regarding the male sexual organ (hemipenis), species of *Boiruna* and *Clelia* share a very similar morphology (Zaher, 1996; 1999):

"A long basal portion that divides distally into two equal lobes. The single basal portion is 23 times the length of the terminal lobes. The lobes terminate in caliculate caps. The spermatic sulcus, initially singular, divides into two branches in the middle of the organ, each branch ending in a separate lobe. The hemipenes may have large spines or may lack enlarged spines" (Zaher, 1996, 1999).

Reproduction

Boiruna sertaneja is an oviparous snake, with clutches typically containing 13 to 19 eggs and an incubation period of 111 to 120 days (Marques; Silva; Coelho, 2021). However, the reported clutch size can vary more broadly, from 7 to 22 eggs per clutch (Freitas, 2003). In most snake species, females tend to be larger than males due to their capacity to carry eggs or offspring. During the

mating season, females release chemical substances (pheromones) to attract males (Marques *et al.*, 2001).

It has been observed that snakes spend around four hours copulating. In the study referenced, the individuals were separated shortly after mating to avoid interspecific predation. The female had three egg-laying events at different times: the first occurred two months after mating, the second about nine months after the first, and the third about two months after the second (Guedes; Guedes, 2020).

Ethnobiology

Snakes have always been part of human imagination, often symbolizing both good and evil, carrying various meanings across different cultures, whether in religious contexts or artistic representations (Ribeiro, 2017). *Boiruna sertaneja* is widely known due to the myths associated with it (Foerster *et al.*, 2013). As part of brazilian folklore, it is sometimes regarded as a harmful species by certain communities (Alves *et al.*, 2012), and it also suffers from human hunting in some places (Emanuelle *et al.*, 2014).

However, *B. sertaneja*, is often spared by hunters because it is recognized as an ophiophagous species and does not pose a threat to humans. Even so, due to its folkloric associations, it may still be regarded as a dangerous species in some communities (Emanuelle *et al.*, 2011; Alves *et al.*, 2012).

In an ethnobiological study conducted by in the Saco farm community in Serra Talhada, in the Pernambuco state, 28.6% of the 28 interviewed individuals mentioned the "snake that suckles" legend, which is associated with black snakes from the Pseudoboini group, to which *B. sertaneja* belongs. According to the legend "when a woman is breastfeeding, especially at night, the black snake approaches and subtly takes the place of the child at the woman's breast while keeping the tip of its tail in the child's mouth to prevent it from crying" (Foerster *et al.*, 2013).

Interviewees reported that the month with the highest number of encounters with black snakes was May. The authors suggest that these sightings may be related to the increased number of workers in the fields during the rainy season, which is a period of intense agricultural activity in the region. They also propose that the abundance of plant and animal resources near or inside houses may attract these snakes, which are sometimes found on rooftops. The black snake's skin was also mentioned for use in handicrafts and its tail for medicinal purposes (Foerster *et al.*, 2013).

In another study conducted in Serra da Jibóia, in the village of Pedra Branca, municipality of Santa Terezinha, Bahia (BA), 20.3% of the interviewees claimed that *B. sertaneja* is only venomous during the breeding season, which occurs from June to August (Fita *et al.*, 2010).

Additional information

Although not considered as dangerous as snakes from the Viperidae and Elapidae families due to the potency of their toxins and the location of their fangs, *B. sertaneja* is regarded as of medical importance (Silva, 2009). Proteomic analyses reveal the presence of PLA2-IIE as one of the main constituents of the venom of *B. sertaneja*, though other molecules such as SVMPs, CRiSPs, and seMMP-9 have also been observed (Bayona-Serrano *et al.*, 2023).

Other medically important opisthoglyphous snakes are commonly from the *Philodryas* and *Clelia* genera, with accidents involving these animals being extremely rare, as they have fangs located in the back of their mouths, reducing the efficiency of envenomation in case of accidents. However, when these do occur, they can be fatal to humans. The need to classify certain members of the Colubridae and Dipsadidae families as medically significant arose after an incident with *P. olferssi*,

which led to a fatality in the state of Rio Grande do Norte (Ministério da Saúde, 2001; Ministério da Saúde, 2022; Coelho *et al*., 2013; Souza *et al*., 2017).

No accidents with *B. sertaneja* have been recorded to date, though there have been reports involving *B. maculata*. Its venom has a proteolytic action, resembling the envenomation caused by snakes of the *Bothrops* genus (lanceheads), but with less aggressive effects (Santos-Costa *et al*., 2000; Fita *et al*., 2010).

Acknowledgements

We are grateful to the Laboratório do Grupo de Extensão e Pesquisa em Gestão e Educação Ambiental (GGEA/UEPB) for institutional support during the development of this study, and to the Museu Vivo Répteis da Caatinga for logistical support and for providing access to live specimens, which contributed to the reflections developed in this bibliographic review.

Conflict of Interest

The authors declare no conflicts of interest related to this manuscript.

References

Abrantes MR, Abrantes SHF, Carreiro A, Araújo DVF, Souza JG, Lima JPR, Cezar HRA, Leite LS. 2018. Vertebrados silvestres atropelados na rodovia BR-230, Paraíba, Brasil. *Pubvet* 12. https://doi.org/10.22256/pubvet.v12n1a5.1-7

Alencar LRV, Gaiarsa MP, Martins M. 2013. The evolution of diet and microhabitat use in Pseudoboine snakes. *South American Journal of Herpetology* 8(1):60–66. https://doi.org/10.2994/SAJH-D-13-00005.1

Alencar LRV. 2010. Ecomorfologia em serpentes neotropicais: um estudo de caso com a tribo Pseudoboini. Dissertação de Mestrado, Universidade de São Paulo. https://doi.org/10.11606/D.41.2010.tde-23092010-175653

Almeida GVL, Amorim FO, Santos EM. 2016. Anfíbios & "répteis" atropelados em um trecho da BR-232, no Estado de Pernambuco. Rev Ibero-Am Cienc Ambient 7(2):61–69. https://doi.org/10.6008/SPC2179-6858.2016.002.0005

Almeida MEA, Marinho GNA, Ferreira JAA, Azevedo SRV, Rocha ICA, Medeiros MC. 2023. A new prey item of the sertão mussurana, Boiruna sertaneja Zaher, 1996 in northeastern Brazil. Herpetol Notes 16:651–652.

Alves RRN, Pereira Filho GA, Vieira KS, Souto WMS, Mendonça LET, Montenegro PFGP, Almeida W de O, Vieira WLS. 2012. A zoological catalogue of hunted reptiles in the semiarid region of Brazil. J Ethnobiol Ethnomed 8:27. https://doi.org/10.1186/1746-4269-8-27

Andrade LJH, Dias EG, Costa RDL, Silva FJ, Lima ESM, Santos EM, Kokubum MNDC. 2021. Lizards and snakes of Refúgio de Vida Silvestre Matas do Siriji, an Atlantic Forest hotspot of the Pernambuco Endemism Center, Northeastern Brazil. Biota Neotrop 21(1):1–13. https://doi.org/10.1590/1676-0611-BN-2020-1106

Barbosa AR, Nishida AK, Costa ES, Cazé ALR. 2007. Abordagem etnoherpetológica de São José da Mata-Paraíba-Brasil. Rev Biol Cienc Terra 7(2):117–123. http://dx.doi.org/10.13140/RG.2.1.3314.9043

Barbosa VN, Amaral JMSA, Alcantara ENP, Santos EMS. 2018. Trabajo Herpetofauna de uma área de Caatinga em Taquaritinga do Norte, Agreste de Pernambuco, Brasil. Cuad Herpetol 32(1):109–115. https://doi.org/10.31017/CdH.2018.(20187-030)

Bayona-Serrano JD, Grazziotin FG, Salazar-Valenzuela D, Valente RH, Nachtigall PG, Colombini M, Moura-da-Silva A, Junqueira-de-Azevedo ILM. 2023. Independent recruitment of different types of phospholipases A2 to the venoms

of Caenophidian snakes: The rise of PLA2-IIE within Pseudoboini (Dipsadidae). Mol Biol Evo 40(6):1–15. https://doi.org/10.1093/molbev/msad147

Brito PS, Gonçalves U. 2012. Squamata, Dipsadidae, Boiruna sertaneja Zaher, 1996: new records and geographic distribution map. Check List 8(5):968. https://doi.org/10.15560/8.5.968

Caldas FLS, Costa TB, Laranjeiras DO, Mesquita DO, Garda AA. 2016. Herpetofauna of protected areas in the Caatinga V: Seridó Ecological Station (Rio Grande do Norte, Brazil). Check List 12(4):1–14. https://doi.org/10.15560/12.4.1929

Calixto PO, Morato SAA. 2017. Herpetofauna recorded by a fauna rescue program in a Caatinga area of João Câmara, Rio Grande do Norte, Brazil. Check List 13(5):647–657. https://doi.org/10.15560/13.5.647

Camolez T, Zaher H. 2010. Levantamento, identificação e descrição da fauna de Squamata do Quaternário brasileiro (Lepidosauria). Arq Zool 41(1):1–96. https://doi.org/10.11606/issn.2176-7793.v41i1p1-96

Coelho RDF, Tavares APG, Walker FM, Urias IC, Souza K, Menezes LMN, Ramos LFB, Brito MS, Reis PMAG, Evangelista SKC, Ribeiro LB. 2013. Reconhecimento, prevenção e procedimentos em caso de acidentes ofídicos, capacitando moradores de comunidades rurais através de ações de extensão universitária. Rev Ext Univasf 1(2):12–21.

Costa HC, Bérnils RS. 2018. Répteis do Brasil e suas Unidades Federativas: Lista de espécies.

Sociedade Brasileira de Herpetologia, ISSN 2316-4670.

Costa HC, Guedes T, Bérnils RS. 2021. Lista de répteis do Brasil: padrões e tendências. Herpetol

Bras 10(3):110–279. https://doi.org/10.5281/zenodo.5838950.

Costa M, Freire EMX. 2018. Serpentes da Caatinga: Prevenir sim; Matar, não! [scientific outreach

material]. Desenvolvimento de material didático ou instrucional – Divulgação científica

Dal-Vechio F, Teixeira M, Recoder RS, Rodrigues MT, Zaher H. 2016. A herpetofauna do Parque Nacional da Serra das Confusões, Piauí, Brasil, com uma lista regional para uma área ecotonal entre o Cerrado e a Caatinga. Biota Neotrop 16(3):1–19. https://doi.org/10.1590/1676-0611-BN-2015-0105.

Filho GAP, Freitas MA, Vieira WLS, Moura GJB, França FGR. 2020. State of knowledge and conservation of the snake fauna of the "brejos de altitude" in the Pernambuco endemism center, Northeastern Brazil. Ethnobiol Conserv 9:1–15. http://dx.doi.org/10.15451/ec2020-05-9.12-1-15.

Fita DS, Neto EMC, Schiavetti A. 2010. "Offensive" snakes: cultural beliefs and practices related to snakebites in a Brazilian rural settlement. J Ethnobiol Ethnomed 6(13):1–13. https://doi.org/10.1186/1746-4269-6-13.

Foerster SIA, Bezerra PES, Almeida CG. 2013. A cobra-preta na percepção dos moradores da Fazenda Saco, Pernambuco. In: Anais do I Congresso Internacional de Ciências Biológicas / II Congresso Nacional de Ciências Biológicas / VI Simpósio de Ciências Biológicas, Recife, Brasil. v. 1, p. 39–49.

França RC, Germano CES, França FGR. 2012. Composition of a snake assemblage inhabiting an urbanized area in the Atlantic Forest of Paraíba State, Northeast Brazil. Biota Neotrop 12(3). http://dx.doi.org/10.1590/S1676-06032012000300019.

Freitas MA. 2003. Serpentes brasileiras. São Paulo: Proquigel Química, 160 p. ISBN 8586967025.

Freitas MA, Abegg AD, Araújo DS, Coelho HEA, Azevedo WS, Chaves MF, Rosa CM, Moura GJB. 2019. Herpetofauna of three "Brejos de Altitude" in the interior of the state of Pernambuco, northeastern Brazil. Herpetol Notes 12:591–602.

Freitas MA, Dubeux MJM, Chaves MF, Fiorillo BF, Pereira-Filho GA, Vieira WLS, Moura GJB. 2023. Herpetofauna in three highland Atlantic Forest remnants in northeastern Brazil. Herpetol Notes 16:377–390.

Freitas MA, Veríssimo D, Uhlig V. 2012. Squamate reptiles of the central Chapada Diamantina, with a focus on the municipality of Mucugê, state of Bahia, Brazil. Check List 8(1):016–022. https://doi.org/10.15560/8.1.016.

Freitas MA, Entiauspe-Neto OM, Lima TO, Soares JSSN, Araújo DS, Silva JMS. 2016. Snakes of Juazeiro, Bahia, Middle of São Francisco River, Brazil. Bol Mus Biol Mello Leitão (N. Sér.) 38(4):331–345.

Fundação Biodiversitas. 2007. Revisão das listas das espécies da flora e da fauna ameaçadas de extinção do Estado de Minas Gerais. Belo Horizonte: Fundação Biodiversitas.

Gaiarsa MP, Alencar LRV, Martins M. 2013. Natural history of Pseudoboine snakes. Pap Avulsos Zool 53(19):261–283. http://dx.doi.org/10.1590/S0031-10492013001900001.

Grazziotin FG, Zaher H, Murphy RW, Scrocchi G, Benavides MA, Zhang YP, Bonatto SL. 2012. Molecular phylogeny of the new world Dipsadidae (Serpentes: Colubroidea): a reappraisal. Cladistics 28:437–459. https://doi.org/10.1111/j.1096-0031.2012.00393.x.

Guedes T, Guedes A. 2020. Notes on court and copula, fertility, nest, eggs and hatchlings of the Caatinga's black snake *Boiruna sertaneja* Zaher, 1996 (Serpentes: Dipsadidae) from Northeastern Brazil. An Acad Bras Cienc 92:1–11. http://dx.doi.org/10.1590/0001-3765202020190588.

Guedes TB. 2012. *Serpentes da Caatinga: Diversidade, história natural, biogeografia e conservação*. [PhD thesis]. Universidade Estadual Paulista "Júlio de Mesquita Filho", Rio Claro, Brazil.

Guedes TB. 2021. A Matryoshka of scales: a single specimen reveals multiple new aspects of diet and distribution of snakes. Herpetol Notes 14:385–390.

Guedes TB, Nogueira C, Marques OAV. 2014. Diversity, natural history, and geographic distribution of snakes in the Caatinga, Northeastern Brazil. Zootaxa 3863(1):1–93. http://dx.doi.org/10.11646/zootaxa.3863.1.1

Juncá FA, Funch L, Rocha W (eds). 2005. Biodiversidade e Conservação da Chapada Diamantina. UEFS Editora; Brasília: Ministério do Meio Ambiente. (Série Biodiversidade, 13).

Leal IR, Tabarelli M, Silva JMC (eds). 2003. Ecologia e Conservação da Caatinga. Recife: Ed. Universitária da UFPE. 822 p.

Leite AK, Oliveira MLT de, Dias MA, Tinôco MS. 2019. Species composition and richness of the herpetofauna of the semiarid environment of Nordestina, in northeastern Bahia, Brazil. Biotemas 32:63–78.

Lima EMS, Macêdo SS, Silva NCSL da. 2023. Conhecimento popular dos moradores do município de São João do Piauí (Piauí) acerca do papel ecológico das serpentes no bioma caatinga. Rev Ens Biol SBEnBio 16:1434–1451. https://doi.org/10.46667/renbio.v16i2.980

Lima FE, Lima SFB, Souza JWS, Medeiros PR. 2023. Wild fauna as roadkill on a highway in the semiarid region of northeastern Brazil. Ethnobiol Conserv 12:1–25. https://doi.org/10.15451/ec2023-06-12.13-1-25

Lima JO, Andrade H, Silva TL, Dias EJR. 2022. Reptiles of Sergipe: current knowledge and sampling discontinuities. Herpetol Notes 15:69–78.

Lira-da-Silva RM, Mise YF, Casais-e-Silva LL, Ulloa J, Hamdan B, Brazil TK. 2009. Serpentes de importância médica do nordeste do Brasil. Gaz Méd Bahia 79(Supl.1):7–20.

Loebmann D, Haddad CFB. 2010. Amphibians and reptiles from a highly diverse area of the Caatinga domain: composition and conservation implications. Biota Neotrop 10(3):227–256. https://doi.org/10.1590/S1676-06032010000300026

Ministério da Saúde. 2001. Manual de diagnóstico e tratamento de acidentes por animais peçonhentos [online]. Brasília: Fundação Nacional de Saúde.

Marques OAV, Eterovic A, Sazima I. 2001. Serpentes da Mata Atlântica: guia ilustrado para a Serra do Mar. Ribeirão Preto: Holos Editora, 184 p. ISBN 85-86699-23-3.

Marques R, Silva WP, Coelho FEA. 2021. Clutch size, morphology, hatching time and offspring behavior of Pseudoboa nigra (Dipsadidae: Pseudoboini) from Caatinga. North West J Zool 17(1):122–125.

Mendonça LET, Vieira WLS, Alves RRN. 2014. Caatinga Ethnoherpetology: Relationships between herpeto-fauna and people in a semiarid region of northeastern Brazil. Amphib Reptile Conserv 8(1):24–32. https://doi.org/10.5281/zenodo.13711888

Mendonça LET, Souto CM, Andrelino LL, Souto WMS, Vieira WLS, Alves RRN. 2011. Conflitos entre pessoas e animais silvestres no Semiárido paraibano e suas implicações para conservação. Sitientibus Sér Ciênc Biol 11(2):185–199.

Mesquita DO, Alves BCF, Pedro CKB, Laranjeiras DO, Caldas FLS, Pedrosa IMMC, Rodrigues JB, Drummond LO, Cavalcanti LBQ, Wachlevski M, Nogueira-Costa P, França RC, França FGR. 2018. Herpetofauna in two habitat types (tabuleiros and Stational Semidecidual Forest) in the Reserva Biológica Guaribas, northeastern Brazil. Herpetol Notes 11:91–103.

Mesquita PCM, Passos DC, Cechin SZ, Mattos PC, Mesquita D. 2013. Herpetofauna of the Caatinga, northeastern Brazil: diversity and conservation issues. Anais Acad Bras Cienc 85:613–627.

Ministério do Meio Ambiente e Mudança do Clima. 2022. Relatório de impacto ambiental sobre mudanças climáticas no Brasil. Ministério do Meio Ambiente e Mudança do Clima.

Ministério da Saúde. 2022. Acidentes ofídicos [online]. Brasília: Ministério da Saúde.

Mumaw MN, González LFE, Fernández MC. 2015. Atlas serpientes de Venezuela: una visión actual de su diversidad. 1ª ed. Santiago, Chile: Dimacofi Negocios Avanzados S.A.

Nogueira CC, Argôlo AJS, Arzamendia V, Azevedo JA, Barbo FE, Bérnils RS, Bolochio BE, Borges-Martins M, Brasil-Godinho M, Braz H, Buononato MA, Cisneros-Heredia DF, Colli GR, Costa HC, Franco FL, Giraudo A, Gonzalez RC, Guedes T, Hoogmoed MS, Marques OAV, Montingelli GG, Passos P, Prudente ALC, Rivas GA, Sanchez PM, Serrano FC, Silva NJ, Strüssmann C, Vieira-Alencar JPS, Zaher H, Sawaya RJ, Martins M. 2019. Atlas of Brazilian snakes: verified point-locality maps to mitigate the Wallacean shortfall in a megadiverse snake fauna. South Am J Herpetol 14(Suppl. 1):1–274. https://doi.org/10.2994/SAJH-D-19-00120.1

Oitaven LPC, Barreto DS, Assunção MM, Santos JO, Araújo AP, Geraldo JBM. 2021. Herpetofauna of Marechal Newton Cavalcanti Instruction Center, a hotspot Atlantic Forest fragment in Pernambuco, north-eastern Brazil. Amphib Reptile Conserv 15(2):59–71. https://doi.org/10.5281/zenodo.13259107

Oliveira JAA, Ramos ARL, Castro DP. 2022. Climbing and swallowing: new food item in the diet of Boiruna sertaneja Zaher, 1996 (Squamata: Dipsadidae) with note of climbing behavior. Biotemas 35(1):1–4. https://doi.org/10.5007/2175-7925.2021.e84973

Oliveira RF, Vieira LR, Vieira AGT. 2017. Répteis de uma área de Caatinga no Município de Caetés, Agreste Meridional do Estado de Pernambuco, Brasil. Rev Bras Gest Ambient Sustentab 4(7):167–175. https://doi.org/10.21438/rbgas.040717

Pereira EN, Teles MJL, Santos EM. 2015. Herpetofauna em remanescente de Caatinga no Sertão de Pernambuco, Brasil. Bol Mus Biol Mello Leitão 37:37–51.

Pereira Filho GA, França FGR, Vieira WLS, Freitas AFF, Morais ZMB, Xavier GAA, Freitas MA, Alves RRN, Moura GJB. 2024. The snakes of the flooded region of Itaparica hydroeletric dam, Northeastern Brazil: "development" based on the drowning of wildlife. Check List 20(5):1171–1181. https://doi.org/10.15560/20.5.1171

Quinteros O, Aguayo R. 2021. Predation by a Black Mussurana, Clelia clelia (Daudin 1803) (Serpentes: Dipsadidae), on an Andean Lancehead, Bothrocophias andianus (Amaral 1923), in Bolivia. Reptiles Amphibians 28:502–503. https://doi.org/10.17161/randa.v28i3.15843

Ribeiro MG. 2017. Imaginário da Serpente de A a Z. Campina Grande: Editora da Universidade Estadual da Paraíba (EDUEPB). ISBN: 978-85-7879-374-6.

Ribeiro SC, Roberto IJ, Sales DL, Ávila RW. 2012. Amphibians and reptiles from the Araripe bioregion, northeastern Brazil. Salamandra 48(3):133–146.

Roberto IJ, Loebmann D. 2016. Composition, distribution patterns, and conservation priority areas for the herpetofauna of the state of Ceará, northeastern Brazil. Salamandra 52(2):134–152.

Rodrigues JB, Gama SCA, Pereira Filho GA, França FGR. 2015. Composition and ecological aspects of a snake assemblage on the savanna enclave of the Atlantic Forest of the Guaribas Biological Reserve in northeastern Brazil. South Am J Herpetol 10(1):1–8. https://doi.org/10.2994/SAJH-D-15-00016.1

Sales RFD, Lima MLS, França BRA. 2019. Dead but delicious: an unusual feeding event by the Sertão Muçurana snake (Boiruna sertaneja) on a bird carcass. Herpetol Notes 12:941–943.

Santos-Costa M, Outeiral AB, D'Agostini FM, Cappellari LH. 2000. Envenomation by the neotropical colubrid Boiruna maculata (Boulenger, 1896): a case report. Rev Inst Med Trop São Paulo 42(5):313–315. https://doi.org/10.1590/S0036-46652000000500008

Santos FJM, Peña AP, Luz VLF. 2008. Considerações biogeográficas sobre a herpetofauna do submédio e da foz do rio São Francisco, Brasil. Rev Ciênc Ambient Saúde (EVS) 35(1):59–78.

Scanferla CA, Agnolin F, Voglino D. 2009. Boiruna cf. B. maculata (Ophidia: Colubroides) from the Early to Middle Pleistocene of Argentina, and the effects of Pleistocene extinctions on South American reptiles. South Am J Herpetol 4(3):259–267. https://doi.org/10.2994/057.004.0309

Scott NJ Jr, Giraudo AR, Scrocchi G, Aquino AL, Cacciali P, Motte M. 2006. The genera Boiruna and Clelia (Serpentes: Pseudoboini) in Paraguay and Argentina. Pap Avulsos Zool 46(9):77–105. https://doi.org/10.1590/S0031-10492006000900001

Silva JC, Catunda AGV. 2018. Herpetofauna do município de Jaguaribe, Ceará, Brasil. Relatório de pesquisa, Instituto Federal de Educação, Ciência e Tecnologia do Ceará (IFCE), campus Jaguaribe.

Sousa JD, Lima JHA, Almeida MEA, Sousa ÍTF, Almeida JF, Kokubum MNC. 2021. Novel behavioral observations of the lizard *Tropidurus hispidus* (Squamata: Tropiduridae) in Northeastern Brazil. Cuadernos de Herpetología 35(2):305–317. https://doi.org/10.31017/CdH.2021.(2020-070)

Souza RA, Ferreira G, Filho G, Folha DA. 2017. Animais peçonhentos em livros didáticos de ciências do ensino fundamental: adequação das informações para uma comunidade rural da região sul do Piauí. Anais do Congresso Nordestino de Biólogos 7. ISSN 2446-4716.

Vieira WLS, Brito JAM, Morais ER, Vieira DC, Vieira KS, Freire EMX. 2020. Snakes in a seasonally dry tropical forest in northeastern Brazil. Biota Neotrop 20(3):1–17, e20190850. https://doi.org/10.1590/1676-0611-BN-2019-0850

Vitt LJ, Caldwell JP, Colli GR, Garda AA, Mesquita DO, França FGR, Shepard DB, Costa GC, Vasconcelos MM, Novaes e Silva V. 2005. Uma atualização do guia fotográfico dos répteis e anfíbios da região do Jalapão no Cerrado brasileiro. Special Publications in Herpetology, Sam Noble Oklahoma Museum of Natural History 2:1–24.

Zaher H. 1996. A new genus and species of Pseudoboine snake, with a revision of the genus *Clelia* (Serpentes, Xenodontinae). Boll Mus Reg Sci Nat, Torino 14(2):289–337.

Zaher H. 1999. Hemipenial morphology of the South American xenodontine snakes, with a proposal for a monophyletic Xenodontinae and a reappraisal of colubroid hemipenes. Bull Am Mus Nat Hist 240:1–168.

Table 1: Geographical Distribution of *B. sertaneja* in Brazilian states and Municipalities.

STATES	CITIES / MUNICIPALITIES / AREAS AUTHORS
Bahia - BA	Baixa Grande, Barreiras (Zaher, 1996). Bom Jesus da Lapa, Brumado, Caetité (Zaher, 1996). Conquista, Itaparica, Muritiba (Zaher, 1996). Chapada Diamantina (Juncá, Funch & Rocha, 2005; Freitas *et al.*, 2012). Sento-Sé (Santos, Peña & Luz, 2008). Serra da Jibóia (Fita, Neto e Schiavetti, 2010). Municipality of Juazeiro, on the middle São Francisco River (Freitas *et al.*, 2016). Nordestina (Leite *et al.*, 2019).
Piauí – PI	Serra de Ibiapaba Complex (border between Piauí and Ceará - CE) (Loebmann & Haddad, 2010). Serra das confusões National Park (Dal Vechio *et al.*, 2016). Municipality of São João do Piauí (Lima, Macêdo & Silva, 2023).
Rio Grande do Norte – RN	Seridó Ecological Station in Serra Negra (Marques *et al.*, 2001, Caldas *et al.*, 2016). Municipality of João Câmara (Calixto & Morato, 2017).
Paraíba – PB	Municipality of Campina Grande (Zaher, 1996). Municipality of São José da Matam (Barbosa, 2007). Municipality of Rio Tinto (Cândido De França *et al.*, 2012). Municipality of Pocinhos (Emanuelle *et al.*, 2014). Guaribas Reserve (Rodrigues *et al.*, 2015). BR 230, between Campina Grande e Patos municipalities (Abrantes *et al.*, 2017). Fazenda das Almas in São José dos Cordeiros (Vieira *et al.*, 2020). Montane seasonal forest (Andrade *et al.*, 2021). Municipality of Coremas (Almeida *et al.*, 2023). PB-400 highway, which connects the municipalities of Cajazeiras and Monte Horebe (Lima *et al.*, 2023).

STATES	CITIES / MUNICIPALITIES / AREAS AUTHORS
Pernambuco-PE	Municipality of Exú, Carnaubeiras (Zaher, 1996). Timbaúba and Petrolândia (Loebmann & Haddad, 2010, Ribeiro *et al.*, 2012, Mesquita *et al.*, 2013, Mesquita *et al.*, 2018, Pereira, Teles & Santos, 2015). Pernambuco's semi-arid region, northeastern Brazil (Pereira, Teles & Santos, 2015). Serrita (Pereira, Teles & Santos, 2015). BR 232, in the state of Pernambuco, between Serra Talhada and Recife (Almeida, Amorim & Santos, 2016). Municipality of Caetés, of valley of the St Joseph backlands stream southern Pernambuco (Oliveira, Vieira & Vieira, 2017). Municipality of Taquaritinga do Norte (Barbosa *et al.*, 2018). High-altitude humid forests in the interior of the state (Freitas *et al.*, 2019). Negreiros National Forest (Oitaven *et al.*, 2021). Brejo dos Cavalos, Brejo de Taquaritinga do Norte and Serra Negra Biological Reserve (Freitas *et al.*, 2023). Petrolândia (Pereira Filho *et al.*, 2024).
Alagoas – AL	Xingó, in the municipality of Piranhas and the municipality of Traipu (Brito & Gonçalves, 2012)
Sergipe – SE	Porto da Folha (Lima *et al.*, 2022)
Ceará-CE	Icó and Limoeiro do Norte (Zaher, 1996; Silva & Catunda, 2018) Araripe region (Ribeiro *et al.*, 2012). Various Fields (Ribeiro *et al.*, 2012). Municipalities of Pentecoste (Joventino Roberto & Loebmann, 2016).