

Records of predation on *Ophiodes striatus* (Spix, 1824) (Squamata: Diploglossidae) by *Oxyrhopus petolarius* (Linnaeus, 1758) (Squamata: Dipsadidae) in the northern Atlantic Forest, Brazil

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ABSTRACT

Information on basic aspects of the natural history of many snake species based on naturalistic observations is still scarce. Here we report *Oxyrhopus petolarius*, a medium-sized false coral snake with terrestrial habits, feeding on *Ophiodes striatus*, a medium-sized lizard with cylindrical and elongated body, with vestigial posterior limbs and absence of anterior ones. The snake was registered ingesting an individual of *O. striatus* and upon inspecting of its stomach contents, the presence of two other individuals of *O. striatus* in different stages of digestion was found.

Key Words: Diet; Fossorials; Lizard; Predator-prey relationships; Snake.

Encounters with snakes in the natural environment are fortuitous, and consequently, ecological observations, such as reproductive, foraging and predation events are rare (Mushinsky, 1987; Sazima, 1989). Information on basic aspects of snakes natural history based on naturalistic observations is still scarce, and current knowledge of the diet composition of species is mostly based on dissection of digestive tract of collected individuals and/or punctual records (e.g. Prudente *et al.*, 1998; Bernarde *et al.*, 2000; Bovo and Sueiro, 2012; Dorigo *et al.*, 2014). Reports describing feeding events seen occasionally become essential for understanding the species' dietary patterns and assess how this can vary between different regions (Greene, 1984).

Oxyrhopus petolarius (Linnaeus, 1758) is a medium-sized Neotropical snake (Uetz *et al.*, 2020). This false coral is terrestrial and predominantly nocturnal (Lynch, 2009; McCrainie, 2011). Its diet consists of amphibians, lizards, birds and their eggs, bats, small terrestrial mammals and even other snakes (Rodríguez-França and Amorim, 2012; Ga-

iarsa *et al.*, 2013; Nogueira *et al.*, 2013; Caldeira *et al.*, 2014; Marín-Martínez *et al.*, 2017; Botero *et al.*, 2019). *Ophiodes striatus* (Spix, 1824) is a medium-sized lizard known as glass snake. It has a cylindrical and elongated body, with vestigial posterior limbs and anterior ones completely absent (Cunha, 1961). They are mostly fossorials and semi-fossorials, but can occasionally be found on the surface (Vitt and Caldwell, 2013). This species is currently found in the east of South America (Costa and Bérnils, 2018; Uetz *et al.*, 2020). Here we report the first record of *Ophiodes striatus* predation by *Oxyrhopus petolarius*.

On December 21, 2019, at 07:55 PM a female of *O. petolarius* (MUFAL 15968; snout-vent length [SVL]= 265 mm; tail length [TL]= 82 mm; head width [HW]= 6mm; head length [HL]= 9 mm; weight with content = 8.9 g; weight without content= 6.9 g; Fig. 1A–D) was seen on the ground in a flooded pasture during an anuran survey in the municipality of Quebrangulo, state of Alagoas, Brazil (-9.259450° S, -36.440944° W; WGS 84; 537 m a.s.l.). The individual was captured manually by UG and

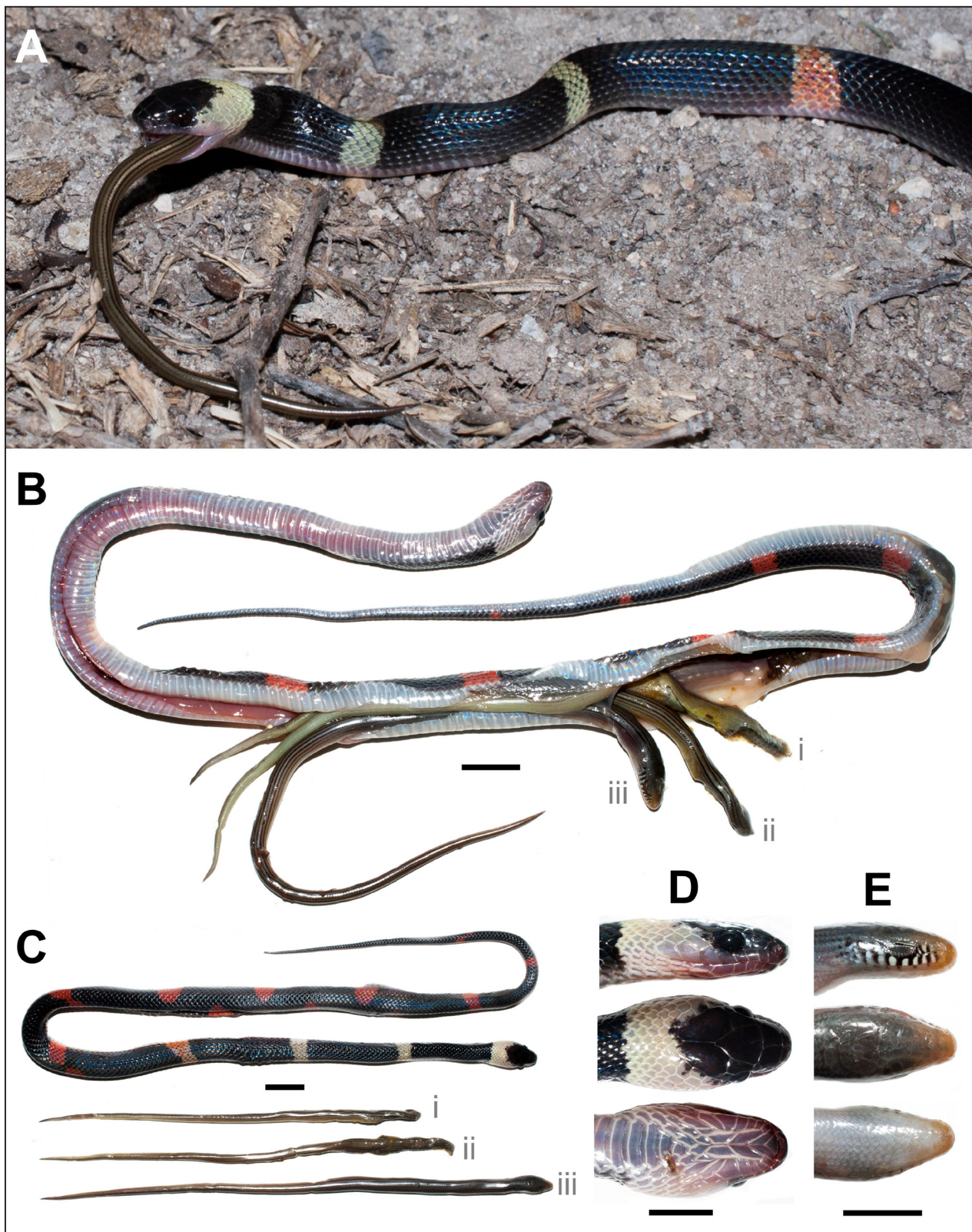


Figure 1. Predation of *Ophiodes striatus* by *Oxyrhopus petolarius* in the northern Atlantic Forest. A = Ingestion process; B = Relative position of the three individuals of *O. striatus* (stomach contents) in the digestive system of *O. petolarius*; C = Photo in dorsal view of individuals outside the stomach. Lateral, dorsal, and ventral views of the head of *O. petolarius* (D) and *O. striatus* (E). Scale bar: B – C= 100 mm, D – E= 50 mm.

only then he realized that the snake was ingesting an individual of the lizard *Ophiodes striatus* (MUFAL 15968 [stomach contents]; SVL= 58 mm; TL= 74 mm; HW= 6 mm; HL= 4 mm; weight= 0.9 g; Fig. 1A, B[iii], C[iii] and E). The snake was then placed back on the ground where it was photographed and concluded the ingestion of its prey (Fig. 1A). The individual was collected (SISBio/ICMBIO 32920-1) and taken to the *Laboratório de Biologia Integrativa* (LABI) of *Universidade Federal de Alagoas* (UFAL). After euthanasia, it was fixed in 10% formalin and preserved in 70% alcohol. Upon inspecting the stomach contents, the presence of two other individuals of *O. striatus* in different stages of digestion was found (weight= 0.4 g each; Fig. 1B[i-ii] and C[i-ii]). All specimens were incorporated into the Coleção Herpetológica do Museu de História Natural da Universidade Federal de Alagoas (MHN-UFAL).

Punctual records of *Oxyrhopus petolarius* feeding events are relatively common and show a wide range of taxonomic groups in its dietary items (see below). Lizards predominate among the dietary items already registered for this species (46% [n= 13]; Gaiarsa *et al.*, 2013; Nogueira *et al.*, 2013; Marín-Martínez *et al.*, 2017; Botero *et al.*, 2019; present study). Most these species already registered as prey for *O. petolarius* generally have aerial, arboreal or semi-arboreal habitats (60% [n= 17]), such as: small non-flying mammals and bats (32% [n= 9]; Rodríguez-França and Amorim, 2012; Gaiarsa *et al.*, 2013; Caldeira *et al.*, 2014), birds and their eggs (21% [n= 6]; Gaiarsa *et al.*, 2013) and arboreal or semi-arboreal lizards (7% [n= 2]; Nogueira *et al.*, 2013; Botero *et al.*, 2019). However, there were no predation record of fossorial or semi-fossorial species such as the lizards *Ophiodes* in the *Oxyrhopus*' diet.

As far as we know, predation records of *Ophiodes striatus* are only known for the snake *Philodryas patagoniensis* (two records in the state of Rio Grande do Sul, Brazil; Entiauspe-Neto *et al.*, 2018; Quintela and Loebmann, 2019). For the *Ophiodes* genus predation records are known by the bird *Guira guira* for *O. fragilis* (Koski *et al.*, 2019).

Predator-prey relationships are important elements for attaining a better understanding of a species' natural history and may shed light what factors are limiting for species distribution and community composition (Greene, 1984).

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Literature cited

- Bernarde, P.S.; Moura-Leite, J.D.; Machado, R.A. & Kokobum, M.N.C. 2000. Diet of the colubrid snake, *Thamnodynastes strigatus* (Günther, 1858) from Paraná State, Brazil, with field notes on anuran predation. *Revista Brasileira de Biologia* 60: 695-699.
- Botero, V.S.; Martínez, M.M.; Guarín, D.V. & Chavez, H.E.R. 2019. Boyacá spiny rat, *Proechimys chrysaolus* (Mammalia: Echimyidae), a new prey item of the banded calico snake, *Oxyrhopus petolarius* (Reptilia: Dipsadidae). *Herpetology Notes* 12: 651-653.
- Bovo, R.P. & Sueiro, L.R. 2012. Records of predation on *Itapotihyla langsdorffii* (Anura: Hylidae) by *Chironius bicarinatus* (Serpentes: Colubridae) with notes on foraging substrate. *Herpetology Notes* 5: 291-292.
- Caldeira, H.; Borges, D. & Feio, R.A. 2014. New prey record for the Banded Calico Snake *Oxyrhopus petolarius* (Serpentes: Dipsadidae). *Herpetology Notes* 7: 115-118.
- Costa, H.C. & Bérnils, R.S. 2018. Répteis do Brasil e suas Unidades Federativas: Lista de espécies. *Herpetologia Brasileira* 7: 11-57.
- Cunha, O.R. 1961. Lacertílios da Amazônia. *Boletim do Museu Paraense Emílio Goeldi* 39: 1-189.
- Dorigo, T.A.; Vrcibradic, D.; Borges-Junior, V.N.T. & Rocha, C.B.D. 2014. New records of anuran predation by snakes of the genus *Thamnodynastes* Wagler, 1830 (Colubridae: Dipsadinae) in the Atlantic rainforest of southeastern Brazil. *Herpetology Notes* 7: 261-264.
- Entiauspe-Neto, O.M.; Quintela, F.M.; Pino, S.R. & Loebmann, D. 2018. *Ophiodes striatus* (Brazilian Glass Lizard). Predation. *Herpetological Review* 49: 331.
- Gaiarsa, M.P.; Alencar, L.R.V. & Martins, M. 2013. Natural history of Pseudoboine snakes. *Papéis Avulsos de Zoologia* 53: 261-283.
- Greene, H.W. 1984. Feeding and the Evolution of Snakes. *BioScience* 34: 41-42.
- Koski, D.A.; Carvalho, D.M.; Koski, A.P.V. & Clemente-Carvalho, R.B.G. 2017. *Ophiodes fragilis* (Cobra-de-vidro; Fragile Worm Lizard). Predation. *Herpetological Review* 48: 654-655.
- Lynch, J.D. 2009. Snakes of the genus *Oxyrhopus* (Colubridae: Squamata) in Colombia: taxonomy and geographic variation. *Papéis Avulsos de Zoologia* 49: 319-337.
- Marín-Martínez, M.; Rojas-Morales, J.A. & Díaz-Ayala, R.F. 2017. A Middle American Ameiva, *Holcosus festivus* (Teiidae), as prey of the Banded Calico Snake, *Oxyrhopus petolarius* (Dipsadidae). *IRCF Reptiles & Amphibians* 24:

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- 55-57.
- McCrainie, J.R. 2011. Snakes of Honduras. Systematics, Distribution, and Conservation. Society for the Study of Amphibians and Reptiles, New York.
- Mushinsky, H.R. 1987. Foraging ecology: 302-334. *In*: Seigel, R.A. Collins, J.T. & Novak, S.S. (eds.), Snakes: Ecology and Evolutionary Biology. MacMillan Publishing Company, New York.
- Nogueira, C.H.; Figueiredo-de-Andrade, C.A. & Freitas, N. 2013. Death of a juvenile snake *Oxyrhopus petolarius* (Linnaeus, 1758) after eating an adult house gecko *Hemidactylus mabouia* (Moreau de Jonnés, 1818). *Herpetology Notes* 6: 39-43.
- Prudente, A.L.C.; Moura-Leite, J.C. & Morato, S.A.A. 1998. Alimentação das espécies de *Siphlophis* Fitzinger (Serpentes, Colubridae, Xenodontinae, Pseudoboini). *Revista Brasileira de Zoologia* 15: 375-383.
- Quintela, F.M. & Loebmann, D. 2019. Diet, sexual dimorphism and reproduction of sympatric racers *Philodryas aestiva* and *Philodryas patagoniensis* from the coastal Brazilian Pampa. *Anais da Academia Brasileira de Ciências* 91: 1-12.
- Rodrigues-França, F.G. & Amorim, R. 2012. First record of predation on the bat *Carollia perspicillata* by the False Coral Snake *Oxyrhopus petolarius* in the Atlantic Rainforest. *Biotemas* 25: 307-309.
- Sazima, I. 1989. Comportamento Alimentar da Jararaca, *Bothrops jararaca*: Encontros provocados na natureza. *Ciência e Cultura* 41: 500-505.
- Uetz, P.; Freed, P. & Hošek, J. (eds.) 2019. The Reptile Database. Available at: <http://www.reptile-database.org>. Last accessed on 13 February 2020.
- Vitt, L.J. & Caldwell, J.P. 2013. Herpetology: An introductory biology of amphibians and reptiles. Academic Press, San Diego.

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