Notas de História Natural & Distribuição Geográfica

Micrurus frontalis (Serpentes: Elapidae): ingestion of a large prey

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The South American snake species *Micrurus frontalis* has a wide geographic range. In Brazil it is widely distributed throughout the Atlantic Forest and Cerrado and associated environments (Nogueira et al., 2019) and can be found both in forests and disturbed areas (Silva Jr. & Sites Jr., 1999). Like most *Micrurus* species, *M. frontalis* inhabits the uppermost layer of soil and litter, and is mainly crepuscular, despite some records of activity during the day (Almeida et al., 2016). The species feeds on snakes, legless lizards, and mostly amphisbaenids (see references in Almeida et al., 2016), with occasional records of ingestion of other lizards (Maffei et al., 2009). In this note, we report a case of predation of a large (heavy) specimen of the fossorial species *Amphisbaena dubia* by a *M. frontalis*.

A male *Micrurus frontalis* (snout-vent length [SVL], 490 mm; tail length [TL], 30 mm; mass, 16 g) was collected on 19 May 2014 in Joanópolis (22°55′51″ S, 46°16′35″ W), state of São Paulo, Brazil. After capture, the snake regurgitated one poorly digested specimen of *Amphisbaena dubia* (female; SVL, 195 mm; TL, 17 mm; total length [ToL], 212 mm; mass, 14.2 g immediately after regurgitation) (Fig. 1). The prey had been ingested headfirst, as often reported in feeding *Micrurus*, although in *M. corallinus*, 41% of ingestions of amphisbaenids are tail first, probably due to underground feeding (Marques & Sazima, 1997). The prey / predator mass ratio was 0.89 and prey ToL / predator SVL ratio was 0.43. At the time of ingestion, the *A. dubia* possibly weighed more than after being regurgitated, which would increase prey / predator mass ratio.

To confirm the identification of the prey, we used a matrix of meristic characters commonly used in the identification of South American Amphisbaena (Van-

zolini, 2002): the number of preanal pores, body annuli, tail annuli, and number of dorsal and ventral segments to a midbody annulus. The specimen of *Amphisbaena dubia* was deposited in the Herpetological Collection of the Instituto Butantan (IBSPCR 1127) and the *M. frontalis* has been kept alive for venom production at the same institution.

Amphisbaenids are frequent prey in the diet of *Micrurus*; however, due to the preservation condition of the prey it is not always possible to identify the species ingested (Sazima & Abe, 1991; Marques & Sazima, 1997; Silva Jr. & Aird, 2001; Marques, 2002; Almeida et al., 2016; Rodríguez et al., 2018). The ingestion of *A. dubia* by *Micrurus* has been reported for *M. altirostris* (Aguiar, 2008), *M. corallinus* (Marques & Sazima, 1997), *M. decoratus* (Terribile & Silva Jr., 2005), *M. lemniscatus* (Sazima & Abe, 1991), as well as *M. frontalis* (Sazima & Abe, 1991).

Micrurus snakes can ingest large prey (Almeida et al., 2016), but generally ingest small and medium sized prey (Greene, 1997; Marques & Sazima, 1997; Aguiar, 2008). For *Micrurus*, most information available show the prey ToL / predator SVL ratio (Marques, 1992; Aguiar, 2008; Ávila et al., 2010; Souza et al., 2011; Arévalo-Páez, et al., 2015; Banci et al., 2017). The prey / predator mass ratio is rarely reported, probably due to the difficulty in obtaining the weight of the prey consumed, often regurgitated semi-digested or analyzed after dissection of the predator in scientific collections.

The ingestion reported here is relevant due to the high prey / predator mass ratio (0.89). The literature reports the prey / predator mass ratio of 0.33 for *M. ancoralis* (Cisneros-Heredia, 2005), and 0.52 for *M. ibiboboca* (ratio calculated from the prey and predator weight information reported by the authors) (Barbosa et al., 2019). For *M. frontalis* the literature reports a prey / predator mass ratio of 0.32 (Marques et al., 2017) and 0.33 (ratio calculated from the prey and predator weight information reported by the authors) (Maffei et al., 2009), while prey / predator ratios obtained from 64 feedings of live prey to a captive specimen ranged from 0.03 to 0.56 (SRTC, unpublished data).

The ingestion of large prey requires more time for ingestion and decreases the defense ability after ingestion, increasing the vulnerability and the risk of predation for the predator (Banci et al., 2017). Moreover, in ophiophagous snakes the attempted ingestion of very long or thick-bodied prey can lead to regurgitation or even death by asphyxiation, as reported for the genus *Micrurus* (Cavalcanti et al., 2012; Marques et al., 2017).

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Figura 1. Amphisbaena dubia (IBSPCR 1127). Poorly digested prey regurgitated by *M. frontalis*.



Girino *Phasmahyla exilis*
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