

## Predator-prey interaction between the snakes *Apostolepis ammodites* and *Psomophis joberti* (Snakes: Dipsadidae)

Weverton dos Santos Azevedo<sup>1</sup>, Arthur Diesel Abegg<sup>1,\*</sup> and Daniella Pereira Fagundes de França<sup>2</sup>

The genus *Apostolepis* Cope, 1862 comprises 33 valid species widely distributed throughout South American, east of the Andes Mountains, with 27 species occurring in Brazil (Costa & Bérnils, 2015; Prudente et al., 2017; Uetz et al., 2017). The snakes belonging to this genus present fossorial and/or psamophilic habits, and both day and night time activities (Ferrarezzi et al., 2005; Guedes et al., 2014). In general, the distribution of *Apostolepis* species is concentrated in open areas, such as the Cerrado, Caatinga, Atlantic Forest and Pampa fields, as well as the ecotones between these regions (Ferrarezzi et al., 2005; Guedes et al., 2014; Marques et al., 2015; Uetz et al., 2017), although forest species also exist, especially in the Amazon region (Lema, 2001; Uetz et al., 2017).

Little is known about the feeding habits of species belonging to the *Apostolepis* genus, and no systematic study evaluating the diet composition of this group has been performed. Thus, knowledge on this issue is restricted to sporadic records indicating that the diet of these snakes is generally composed of small, elongated-bodied reptiles, such as amphisbaenids and snakes, as well as other small vertebrates (Sawaya et al., 2008; Nogueira et al., 2012).

*Apostolepis ammodites* Ferrarezzi, Barbo and Albuquerque, 2005 inhabits the regions comprising the morphoclimatic domain of the Cerrados (Ferrarezzi et al., 2005; Lema & Renner, 2007). It has a medium-sized and thin body, and is characterised by a reddish snout

and ventral region, as well as a black cervical collar, followed by two white necklaces and a black spot in the gular region (Ferrarezzi et al., 2005; Lema & Renner, 2007). The only record on the diet of *A. ammodites* was reported in Ferrarezzi et al. (2005), when the remains of an *Amphisbaena* sp. individual inside a specimen (IBSP 64613) from the “Alphonse Richard Hoge” Herpetological Collection at the Butantan Institute was found. Thus, in this study, we report the first record of a snake as comprising part of the diet of *A. ammodites*, the second food item known for this species.

During data collection for the Ph.D. thesis of author DPF, a fixed *A. ammodites* specimen from the Peixe Angical Hydroelectric Power Plant, in Tocantins state, was found in the Biological Studies and Research Center collection, at the Pontifical Catholic University of Goiás (CEPB / PUC-GO). The young specimen (CEPB 5685), 149 mm long with a cloacal length and 23 mm tail, was killed while swallowing a *Psomophis joberti* (Sauvage, 1884) an individual larger than its total length (280 mm long with a cloacal length and 55 mm tail) and fixed with one part of the prey already ingested and another portion outside its body (Fig. 1). The death of the predator probably occurred due to the large size of the prey. In order to verify the prey's identity, a small incision was done in the anterior region of the cloaca.

Other reports involving ophiophagy are known for other species belonging to the genus *Apostolepis*. Barbo et al. (2011) verified the presence of *Liotyphlops beui* (Amaral, 1924) in the stomach of two *Apostolepis assimilis* (Reinhardt, 1861) individuals and Mesquita et al. (2013) found a *Tantilla melanocephala* (Linnaeus, 1758) individual in the digestive tract of an *Apostolepis cearensis* Gomes, 1915. However, it is interesting to note that *L. beui* and *T. melanocephala* present fossorial activity. Therefore, the meeting of *Apostolepis* specimens with these species in subterranean environments would be expected, provoking predation events. On the other hand, regarding species belonging to the *Psomophis*

<sup>1</sup> Instituto Butantan, Laboratório Especial de Coleções Zoológicas, Avenida Vital Brasil, 1.500, Butantã, CEP 05503-900 São Paulo, SP, Brazil.

<sup>2</sup> Departamento de Zoologia, Instituto de Biociências, Universidade Estadual Paulista “Júlio de Mesquita Filho”, P.B. 199, 13506-900, Rio Claro, SP, Brazil.

\* Corresponding author. E-mail: arthur\_abegg@hotmail.com



**Figure 1.** *Apostolepis ammodites* specimen died while ingesting a *Psomophis joberti* specimen. A) Dorsolateral view; B) Head view of the prey.

(Schneider, 1801) genus, there is no evidence on the use of the underground environment as habitat, which leads us to believe that the record presented herein is unusual and occurred opportunistically, or that *A. ammodites* may, occasionally, forage on the ground. No record is available of how or on what occasion this material was collected, but, because it was during a wildlife rescue work from a hydroelectric plant, there is the possibility that the two specimens may have fallen together in an interception trap bucket and fall (“pitfall”), thus leading to predation. It is not uncommon to observe predation events within traps, even when the predated animal is not, in fact, a preferred food item for the predator (DPFF, pers obs). Under these circumstances, where several animals belonging to different taxonomic groups are trapped in a small space, the scarcity of specific food items, and even the stress caused by capture, can lead to extreme behaviours.

The large size of the snake caught in the present record, in relation to that of the predator, is impressive.

However, Barbo *et al.* (2011) observed a similar event, with one *L. beui* individual consumed by *A. assimilis* presenting 96% of the total length of its predator, and 133% of its mass. Although snakes are known to be capable of ingesting large prey, mainly due to morphological aspects (cranial bone disposition and mobility and glottis positioning), observations on prey with larger or similar mass than predatory snakes are infrequent (Gans, 1961; Arnold, 1983; Cabral *et al.* 2017). Considering the wide representativeness of *A. ammodites* in scientific collections (DPFF pers. obs.), we indicate the need for in-depth studies on the diet composition of this and other species belonging to the *Apostolepis* genus, contributing to knowledge on the natural history of one of the neotropical snake genera that comprising the major number of species, creating subsidies for future measurements on the conservation of these species.

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