

## Diet of *Oloolygon catharinae* (Anura, Hylidae) during the breeding season

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Information on aspects related to the natural history of a species, even basic ones, are relevant to the process of assessing the species' conservation status, as well as conservation strategies (Noss, 1996; Guerra et al., 2018). Among the various components of natural history, description of feeding habits is one of the most fundamental aspect to understand the biology of a species (Duellman and Trueb, 1994; Teixeira and Vrcibradic, 2003). The anuran *Oloolygon catharinae* (Boulenger, 1888) is an arboreal species associated with forest formations in southern Brazil (Silvano et al., 2004). During the breeding season, it is found in streams of slow-running water or swamps of clean water and inhabits the interior of forests during the remaining months of the year (Kwet et al., 2010). It generally exhibits cryptic behaviour and has a relatively low encounter rate during field works compared to other hylid species (Kwet et al., 2010). Consequently, there are few basic data available on its biology (see Faivovich, 2002; Hepp et al., 2017). Here, we present novel data on the diet of *Oloolygon catharinae* based on individuals captured during the breeding season.

The capture of specimens was done in a formation of Mixed Ombrophilous Forest in the municipality of São Francisco de Paula (29°25'22.4"S; 50°23'11.2"W, 907 a. m.), southern Brazil. The region has a subtemperate climate, with an annual rainfall of 2162 mm and a mean annual air temperature of 14.5 °C (Backes, 1999; Maluf,

2000). In the winter, minimum air temperature often reaches 0 °C (Maluf, 2000).

Amphibians were captured by the active search (Crump and Scott, 1994) at night between in September and October 2017. All individuals were captured at river margins with a good level of preservation. The stomach contents of the individuals were obtained through the flushing method, as described by Solé et al. (2005). To confirm the efficacy of the technique, eight individuals were euthanized after the stomach flushing and then dissected to check for residual content in their digestive tract. For euthanasia, we used xylocaine, which was applied to the skin in a lethal dose. Samples were collected under the collecting permit provided by the competent Federal Agency SISBIO #45861-1 and approved by the Committee of Ethics in Animal Experimentation #PPCEUA07.2016.

The stomach contents were preserved in 70% ethanol and examined with the use of a stereomicroscope. Prey items were identified to the taxonomic level of order. For each prey category, its numerical abundance of individuals (N), frequency of occurrence (F) and volume (V) were determined. We calculated volume by using the area (mm<sup>2</sup>) occupied by each item with graph paper support fixed to the bottom of the Petri dish, where we evenly spread each item, maintaining a regular height of 1 mm (Hellawell and Abel, 1971). To calculate the volume (V), we multiplied the value of the area occupied by each item by its height (1 mm). When we found unidentifiable prey fragments, we grouped these under "other items", of which we quantified only volume.

We analysed 19 male individuals of *O. catharinae* in vocalization activity. The evaluation of the euthanized individuals showed that the flushing technique was efficient, leaving no residual material in the individual's stomach. Only nine of the 19 individuals presented some food content. Most of the individuals who presented some food content were those collected and dissected

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(N = 6). However, the food contents were found in the intestine and in an advanced digestion process, making it impossible to identify. The following categories of prey were identified: Araneae, Coleoptera, and Diptera (Table 1), based on individuals whose contents allowed taxonomic identification (N = 4).

**Table 1.** Categories of prey consumed by *Olohygon catharinae* in araucaria forests in southern Brazil. N = Number of individuals; V = Total volume of prey (mm<sup>3</sup>); FO = Frequency of occurrence of each prey category.

Prey Category	N	V (mm <sup>3</sup> )	FO	Stomach V (mm <sup>3</sup> )	Intestine V (mm <sup>3</sup> )
Araneae	3	66	3	54	12
Coleoptera	1	20	1	20	-
Diptera	1	8	1	8	-
Plant material	-	28	5	2	26
Others	-	135	5	16	119

The prey items consumed by *O. catharinae* (Araneae, Diptera and Coleoptera) are common in the diet of other hylids, being recorded for the species *Boana pulchella*, *B. leptolineata* and *Scinax squalirostris*, for example (see Maneyro and Da Rosa, 2004, Barbosa *et al.*, 2014, Kittel and Solé, 2015). However, the high number of individuals with empty stomach or content exclusively in the gut suggests that diet could be potentially more diverse than we observed.

The literature points to a reduction in the ingestion rate of prey by anurans during reproductive activity (Solé and Pelz, 2007). Our results reinforce that pattern and, thus, the prey we recorded may not represent the diet composition of the species in “regular” foraging activity. It is worth mentioning that, despite the intense search effort, we captured only males in vocalization activity and we cannot say whether this feeding pattern is repeated for females. Another possible explanation for the low prey rate in the stomach would be differences between the prey availability between the foraging sites and the breeding sites of this species (Van Sluys and Rocha, 1998). This study presents information relevant to the natural history of this species and reinforces the importance of studying the variation of feeding behaviour in species during and after their reproductive period.

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