



# Pet Food: A New Food Item for *Rhinella diptycha* (Cope, 1862) (Anura: Bufonidae) in Brazil

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## Abstract

*Rhinella diptycha* (Cope, 1862) is a large anuran from the Bufonidae family, widely distributed in Brazil, occurring in open natural areas and urbanized regions. Its diet is mainly composed of insects, but it is known as a generalist species that consumes any available food resources. In this case report, we occasionally recorded individuals of *Rhinella diptycha* (in italics) (juveniles and adults) in two different regions of Brazil feeding on pet food on the ground. After observation, a female *Rhinella diptycha* (in italics) was collected and taken to the Laboratory of Herpetology and Parasitology of Wild Animals for diet analysis. Thirty-two prey items were identified in its stomach, in which “pet food” was the category with the highest volume (V = 55.1%) followed by Caribidae (V = 34.8%) and Formicidae (9.8%). Pet food was also the most representative item (N = 62.5%) followed by Formicidae (N = 34.3%) and Caribidae (3.1%). This is the first record in Brazil of an amphibian eating pet food. The results may be related to the urban environment, where they were recorded, as well as the presence of domestic animals in the environment. Here, we describe the unusual diet of this species, reinforcing its opportunistic nature.

**Keywords:** Diet; *Rhinella diptycha*; Bufonidae; Pet Food; Natural History

Anurans constitute a large group of vertebrate animals that have a diverse diet and variety of prey as Coleoptera, Crustaceans (amphipoda and decapoda), Lamelibranchiata, Heteroptera, fish and other amphibians [1-5]. The diet varies according to the size of the prey in relation to the predator, available resources, and environmental conditions, with anuran Bufonids being foragers and terrestrial predators with a diet consisting of live animals [6-9].

*Rhinella diptycha* (Cope, 1862) is a large anuran from Bufonidae family, widely distributed in Brazil, occurring in open natural areas and urbanized regions [10-12]. Its diet is mainly composed of insects [13,14], but it is known as a generalist species that consumes any available food

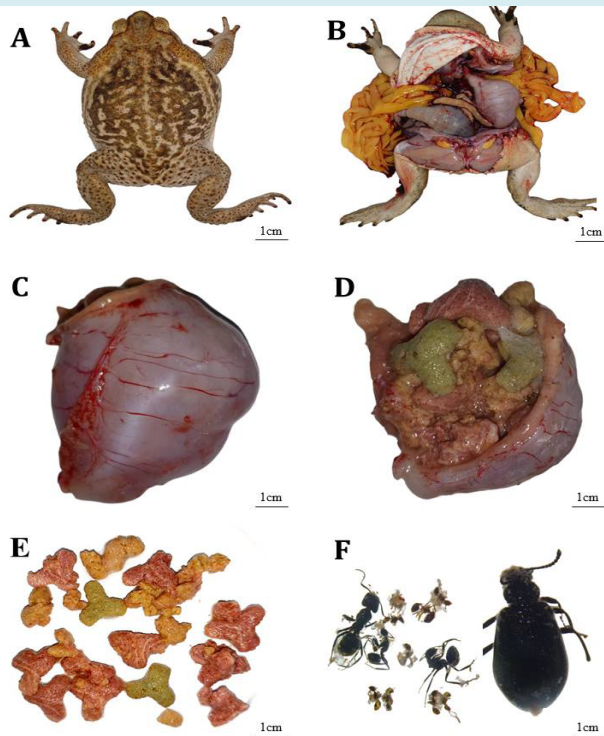
resources.

In this case report, the first record of an amphibian, *Rhinella diptycha*, feeding on pet food is presented. The generalist and opportunistic nature of this species' diet is also discussed, as well as its relationship with domestic animals.

In July 2023, at 5:10 pm, a female *Rhinella diptycha* was occasionally observed feeding on pet food on the ground. Later, other individuals (adults and juveniles) of the same species were also observed feeding on pet food (Figure 1). The work registration was carried out at the Federal University of Piauí, located in the urban area of the Municipality of Picos, State of Piauí, Brazil (07°04'37" S, 41°28'01" W).



**Figure 1:** Individuals of *Rhinella diptycha* feeding on pet food, municipality of Picos, state of Piauí, northeastern Brazil.



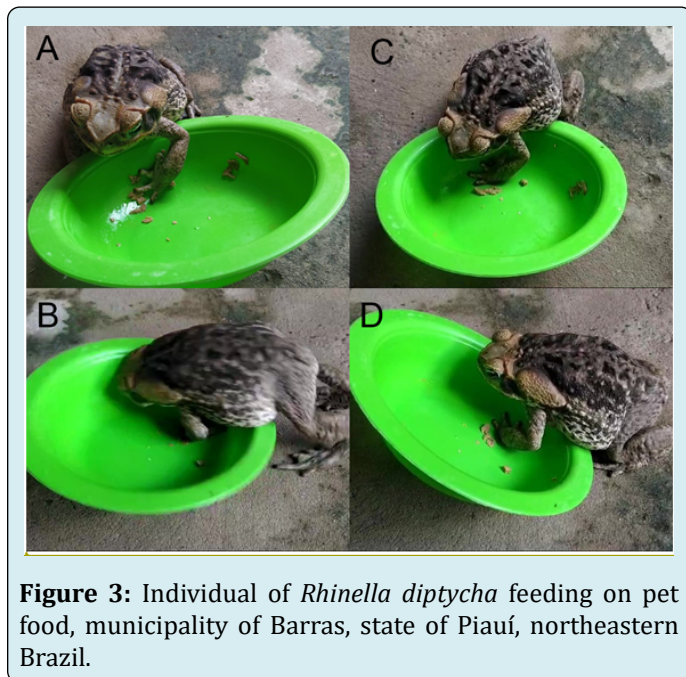
**Figure 2:** *Rhinella diptycha* (A) Dorsal view; (B) Ventral view, Distension of the stomach; (C) Stomach items; (D) overview; (E) Pet food found in the stomach; (F) Other food items from the stomach (Car = Caribidae; For = Formicidae).

One of the specimens was collected and taken for analysis at the Laboratory of Herpetology and Parasitology of Wild Animals at UFPI for analysis of the ingested content (Figure 2). The individual was collected under collection permit from the Instituto Chico Mendes de Conservação da Biodiversidade – ICMBio (SISBIO No. 86665), killed with 5% lidocaine, fixed in 10% formalin and later preserved in 70% alcohol (voucher CHUFPI#750). Each food item was identified at taxonomic level family. After measuring the length and width of each prey, we estimated their volumes using the Ellipsoid formula:  $V=4/3\pi*(C/2)*(L/2)^2$ , where V represents the volume, C is the length and L is the width [15,16].

After the analyses, the thirty-two items found in the stomach of *Rhinella diptycha* were divided into three categories: “pet food”, Carabidae and Formicidae (Figure 2). It was observed that pet food was the category with the highest volume ( $V = 55.1\%$ ) followed by Caribidae ( $V = 34.8\%$ ) and Formicidae (9.8%). Pet food was also the most representative item ( $N = 62.5\%$ ) followed by Formicidae ( $N = 34.3\%$ ) and Caribidae (3.1%) (Table 1).

In general, Bufonidae anurans prefer Formicidae in their diet. In recent literature, we can observe Formicidae, Coleoptera and Isoptera as the most significant prey in their diet [14,17,18]. However, in this study, the Formicidae category was classified as the second highest index of importance among the items found, considering their

numerical proportion. This fact may be associate to the urban environment that limits the availability of prey, which can lead to the incorporation of food items outside of their common diet [3,19-21]. Unusual items in the diet of *Rhinella diptycha* were recorded flowers, fruits, leaves and grasses, and records of attempted predation on domestic cat kittens and bones of chicken thigh to, in addition to presenting records of anurophagy and cannibalism [3-5,17,22-27].



**Figure 3:** Individual of *Rhinella diptycha* feeding on pet food, municipality of Barras, state of Piauí, northeastern Brazil.

More recently, on April 11, 2024, at 12:20 another individual of *Rhinella diptycha* was also observed feeding on pet food, in a different location. This record was observed in a residential area (4°15'13.84"S, 42°17'46.17" W) in the municipality of Barras, state of Piauí, northeastern Brazil. The individual was not collected (Figure 3). In both cases, in the places where the records were made, amphibians often coexist with domestic animals, such as dogs and cats.

Category	V (mm <sup>3</sup> )	V%	N	N%
Pet food	0.5518	55.10%	20	62.50%
Formicidae	0.098	9.80%	11	34.30%
Carabidae	0.3487	34.80%	1	3.10%

**Table 1:** Items found in the stomach of *Rhinella diptycha* and their respective representation. Volume [V (mm<sup>3</sup>)], volumetric proportion (V%), number of prey (N) and numerical proportion (N%).

Although, in general, the availability of ants and, mainly, beetles - due to artificial lighting, is high in urban environments, all indices analyzed here (i.e., volume, volumetric proportion, number of prey and numerical

proportion, Table 1 suggest consumption opportunistic pet food as significant in the diet of this species. Therefore, we believe that, in these situations of coexistence with domestic animals, the consumption of pet food may be more frequent. To date, we do not have information about the impacts of consuming this type of food item on the health of amphibians.

*Rhinella diptycha* can be considered a generalist and opportunist, feeding on what is available in the environment and its mouth captures [14,24,28]. Of the 5,971 anuran species whose diet was compiled in the AmphiBIO database, no species was reported to feed on pet food, as seen in this study. Here, we describe the unusual diet of this species, reinforcing its opportunistic character [22].

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