










## Predation record of *Rhinella marina* (Linnaeus, 1758) (Anura: Bufonidae) by *Cerdocyon thous* (Carnivora: Canidae) using camera trap in Vale do Paraíso, Rondonia, Brazil

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### Resumen

El zorro perro (*Cerdocyon thous*) es una especie de cánido neotropical que tiene una dieta generalista y oportunista, que incluye una amplia variedad de alimentos. En esta nota, reportamos el primer registro de depredación en *Rhinella marina* por parte de *Cerdocyon thous* en el estado de Rondonia, Brasil, basado en imágenes de cámaras trampa. Para el estado de Rondonia, no existe ningún estudio que informe las presas de *C. thous*. Por lo tanto, este informe aborda importantes conocimientos ecológicos del zorro perro, retratando comportamientos y dieta de la especie.

**Palabras clave:** Consumo, Dieta, Amazonia, Sensor remoto, Interacción biótica.

### Abstract

The crab-eating fox (*Cerdocyon thous*) is a Neotropical canid with a generalist and opportunistic diet that includes a wide variety of food items. On this note, we report the first record of predation on *Rhinella marina* by *Cerdocyon thous* in the state of Rondonia, Brazil, based on camera trap footage. For the state of Rondonia, there is no study reporting the prey of *C. thous*. Therefore, this report approaches important ecological knowledge of the crab-eating fox, portraying behaviors and diet of the species.

**Keywords:** Consumption, Diet, Amazonia, Remote sensor, Biotic interaction.

The crab-eating fox, *Cerdocyon thous* (Linnaeus 1766) (Carnivora: Canidae), is a Neotropical canid with wide distribution in South America (Lucherini 2015). This species is monogamous

and commonly lives in couples or extended family groups (Beisiegel et al. 2013). The crab-eating fox occupies forested and open areas, as well as degraded lands (Beisiegel et al. 2013; Lucherini 2015). It has a generalist and opportunistic diet, feeding on fruits, insects, crustaceans, and small vertebrates (Gatti et al. 2006; Rocha et al. 2008; Beisiegel et al. 2013). Studies reveal the importance of this species in maintaining essential ecological functions, such as frugivory and seed dispersal (Goebel et al. 2023; Souza et al. 2021). However, much of the information available on the feeding ecology of *C. thous* is known from fecal analysis (Rocha et al. 2004; Raíces & Bergallo 2010; Rocha-Mendes et al. 2010), limiting information on behavior in events of predation. The use of camera traps can be an efficient methodology to reveal information about behavioral and natural history aspects, including the diet of species such as *C. thous*, and behaviors expressed in predation events. The Cane Toad (*Rhinella marina*) occurs from northwestern Mexico to central Brazil, inhabiting wetlands with adequate cover, but also thrives in degraded habitats and artificial environments (Frank et al. 2023). When threatened, the parotoid glands are triggered which results in the deposition of toxins directly into the predator's mouth (Jared et al. 2011). Herein, we report the first record of predation on *Rhinella marina* by *Cerdocyon thous* in the state of Rondonia, Brazil.

The event took place in a 9-ha forest fragment of Amazon Forest surrounded by pasture, in the municipality of Vale do Paraíso, Rondonia, Brazil (10°21'14.2"S, 62°06'47.1"W). On December 21, 2022, at 19h:02, an individual of *C. thous* was filmed by a camera trap (Browning model) consuming an adult individual of *R. marina*. In the video, *C. thous* handles the prey with its mouth, carrying it by the posterior part. After a minute, another individual of *C. thous* is also recorded by the camera, both sniffing the place where the equipment was installed. Only one crab-eating fox was filmed with the prey item. Confirmation of the identification of *Rhinella marina* was possible due to a survey study of amphibian species carried out in the locality, at the same time as the record.

*C. thous* consumes a wide variety of invertebrates, which make up the main items of animal origin in its diet (Raíces & Bergallo, 2010). Regarding vertebrates, mammals are the main prey, and amphibians are rarely recorded as part of the diet (Rocha et al. 2008; Dutra-Vieira et al. 2021), and, in the rare descriptions, they are identified only at the level of order (Gatti et al. 2006) or are not reported at all (Pedó et al. 2006; Cruz et al. 2022). Specifically, amphibians of the genus *Rhinella* have been reported as prey of *C. thous* in different studies (Rocha et al. 2008; Bossi et al. 2018). Dutra-Vieira et al. (2021), in two protected areas in the Brazilian Amazon, Floresta Nacional do Carajás and Floresta Nacional de Tapirapé-Aquiri, mentioned that the consumption of *R. marina* is punctual in preserved areas. *R. marina* is a large amphibian (Rostrum-cloacal length - CRC  $\cong$  250 mm) and is commonly found in forest edges and disturbed areas (Lima et al. 2006). This species has a highly toxic venom produced in dorsal glands (Barbosa et al. 2009; Gao et al. 2010), and domestic dogs are common victims of it (Gadelha & Soto-Blanco 2012). Therefore, *C. thous* may have some defense mechanism or venom resistance, given that venomous animals have already been detected in its diet, such as amphibians of the genus *Rhinella* and *Chaunus*, as well as snakes of the genus *Bothrops* (Rocha et al. 2008; Bossi et al. 2018). Therefore, further studies may reveal whether *C. thous* is resistant to these toxins. The predation of *R. marina* by *C. thous* is probably related to its generalist habits (Dutra-Vieira et al. 2021), consuming species with different habitat requirements, including those that use disturbed areas, as well as the location of this record (LGA Goebel, Personal communication).

For the state of Rondonia, no dietary studies of *C. thous* are available. Therefore, here we add the first information about the natural and behavioral history of the crab-eating fox in the state. For this reason, we emphasize the need for studies with the species to identify elements of its diet and know their functional role. We suggest the use of camera traps, which help unveil such aspects and are applicable at different scales of time and space.

**FIGURE 1.** Predation of *Rhinella marina* by a crab-eating fox (*Cerdocyon thous*) in Vale do Paraíso, Rondonia, Brazil. A) and B) Crab-eating fox striking and handling the prey; C) and D) individuals of *C. thous* recorded.



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