

Scientific note

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Diet composition of *Ameerega picta* (Tschudi, 1838) from the Serra da Bodoquena region in central Brazil, with a summary of dietary studies on species of the genus *Ameerega* (Anura: Dendrobatidae)

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Abstract. We provide data on the diet composition of *Ameerega picta* from the region of Serra da Bodoquena in the state of Mato Grosso do Sul, central Brazil. We also provide a summary of dietary studies on species of the genus *Ameerega*.

Key words. Cerrado, dendrobatid frog, feeding habits, trophic ecology.

The Neotropical genus *Ameerega* Bauer, 1986 (Anura: Dendrobatidae), currently includes 31 species of frogs distributed in Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Surinam, and Venezuela (Frost 2019). The spot-legged poison frog *Ameerega picta* (Tschudi, 1838) is a small (SVL in males: 24 mm; females: 26 mm), terrestrial, diurnal frog distributed in Bolivia (Departamentos Santa Cruz, Cochabamba, Beni, and La Paz), Brazil (states of Mato Grosso and Mato Grosso do Sul), Peru (Departamentos Ucayali and Madre de Dios), Colombia (Departamentos de Amazonas, Meta, and Putumayo), and Venezuela (state of Bolívar) at altitudes of 200 to 2500 m asl (Duellman 2005; Acosta Galvis 2017; Frost 2019). *Ameerega picta* is characterized as myrmecophagous (Mebs et al. 2010), but studies on diet composition in different populations are scarce. Toft (1980) investigated the diet of *A. picta* (as *Dendrobates pictus*) and 12 syntopic species in Amazonian Peru. Ramon et al. (2010) determined the diet composition of *A. picta* in an area of the Cerrado (Brazilian savanna) in the municipality of Nova Xavantina in Mato Grosso state

in central Brazil. Considering the previous information on the diet composition of *A. picta* throughout its geographic distribution, new studies could contribute to the understanding of its trophic ecology. Here, we provide data on the diet composition of *A. picta* from the region of Serra da Bodoquena in the state of Mato Grosso do Sul, central Brazil. We also provide a summary of dietary studies on species of the genus *Ameerega*.

This study was conducted on the Rancho Branco farm (20°41'S, 56°47'W) located in the municipality of Bodoquena, state of Mato Grosso do Sul, central Brazil (Fig. 1). We conducted six field trips (each lasting four days) between May and October 2001. Specimens of *A. picta* were sampled during the day on the leaf litter near the margins of the Salobrinha stream using visual and auditory search methods (Scott & Woodward 1994). We determined the sex of the specimens collected and measured snout-vent length (SVL) to the nearest 0.01 mm using calipers. The specimens collected were euthanized with 5% lidocaine, fixed in 10% formalin and preserved in 70% ethanol. Voucher specimens were deposited at

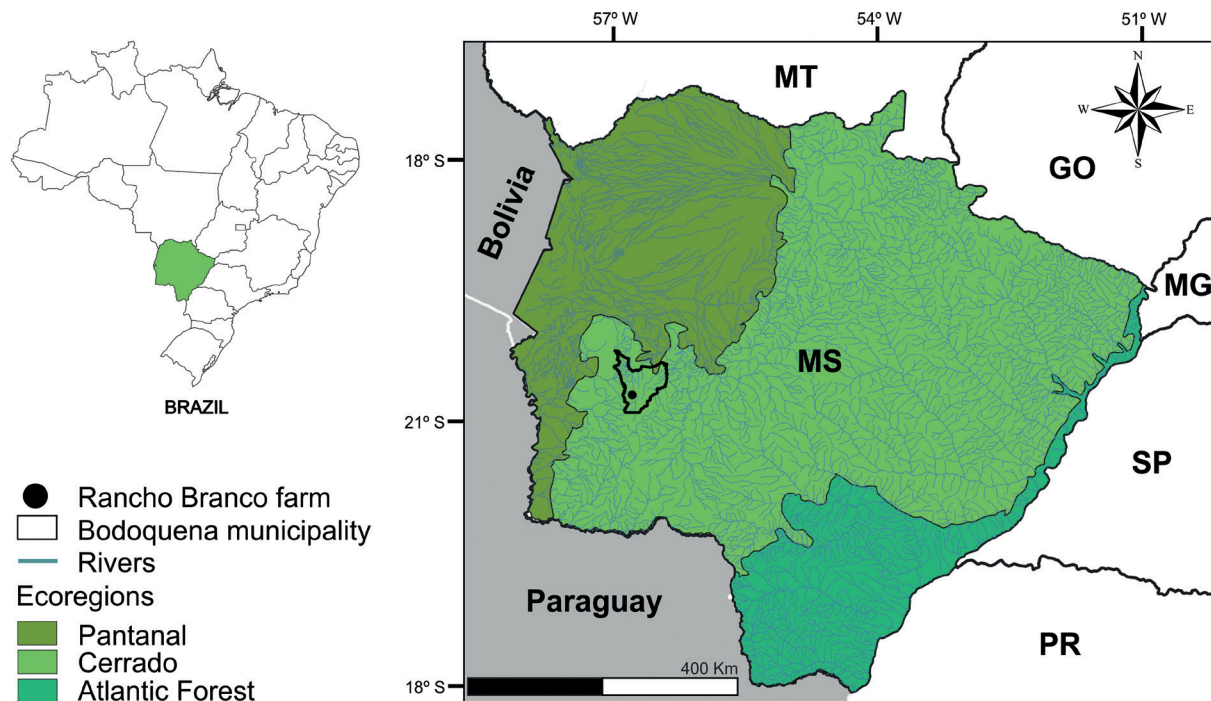


Fig. 1. Map of the study site in the region of Serra da Bodoquena, municipality of Bodoquena, state of Mato Grosso do Sul, central Brazil. Brazilian state abbreviations: GO, Goiás; MG, Minas Gerais; MS, Mato Grosso do Sul; MT, Mato Grosso; PR, Paraná; SP, São Paulo.



Fig. 2. Specimen of *Ameerega picta* from region of Serra da Bodoquena, municipality of Bodoquena, state of Mato Grosso do Sul, central Brazil.

the zoological collection of the Universidade Federal de Mato Grosso do Sul (ZUFMS – AMP, Brazil).

In the laboratory, a longitudinal incision was made in each individual to remove the stomach and determine

Table 1. Relative number (N%) of prey categories consumed by *Ameerega picta* (N = 50) in the region of Serra da Bodoquena in the municipality of Bodoquena, state of Mato Grosso do Sul, central Brazil (percentages shown in parentheses).

Prey categories	N (%)
Insecta	
Formicidae	40 (22.6)
Coleoptera (both larvae and adults)	39 (22.0)
Diptera	29 (16.4)
Homoptera	17 (9.6)
Arachnida	
Araneae	22 (12.4)
Arthropod remains	30 (16.9)
Total	177 (100)

the contents under a stereomicroscope. Food items were identified to the lowest taxonomic category possible. We used the Student's *t*-test (*t*) to determine differences in numeric percentage (N%) per prey category between males and females. As no significant differences between sexes were found ($t = 0.72$, $p > 0.05$), we calculated the numeric percentage per prey category for the pooled stomachs.

Table 2. List of dietary studies on species of *Ameerega* in South America

Species	Locality ^a	Reference
<i>A. bilineatus</i>	Parque Nacional Yasuní, Francisco de Orellana province (ECU) Estación Biológica Jatun Sacha, Napo province (ECU)	Darst et al. (2005)
<i>A. braccata</i>	Chapada dos Guimarães, MT (BRA) Cuiabá, MT (BRA)	Forti et al. (2011)
<i>A. flavopicta</i>	Minaçu, GO (BRA) Alto Paraíso, GO (BRA) Pirenópolis, GO (BRA) Caldas Novas, GO (BRA) Ecological Station of Piratininga, MG (BRA)	Biavati et al. (2004) Lima & Eterovick (2013)
<i>A. hahneli</i>	Parque Nacional Yasuní, Francisco de Orellana province (ECU) Estación Biológica Jatun Sacha, Napo province (ECU)	Darst et al. (2005)
<i>A. parvula</i>	Estación Biológica Jatun Sacha, Napo province (ECU)	Darst et al. (2005)
<i>A. petersi</i>	Biological Station Panguana, Huánuco province (PER)	Toft (1980)
<i>A. picta</i>	Biological Station Panguana, Huánuco province (PER) Remanso farm, Nova Xavantina, MT (BRA) Rancho Branco farm, Bodoquena, MS (BRA)	Toft (1980) Ramon et al. (2010) This study
<i>A. trivittata</i>	Biological Station Panguana, Huánuco province (PER) Juruti, PA (BRA)	Toft (1980) Luiz et al. (2015)

^aBRA, Brazil: PA, Pará; MT, Mato Grosso; MS, Mato Grosso do Sul; GO, Goiás; MG, Minas Gerais; ECU, Ecuador; PER, Peru.

We examined 61 specimens of *Ameerega picta* (Fig. 2), 50 of which (82%) had stomach contents. We identified 177 prey items in five prey categories belonging to the classes Insecta and Arachnida. The most numerous prey items in the diet composition of *A. picta* were Formicidae (23%), Coleoptera (22%) and Diptera (16%) (Tab. 1). A small variety of prey and high abundance of Formicidae have been found in the diet of other populations of *A. picta* (Toft 1980; Ramon et al. 2010) and congeneric species, such as *A. bilineatus*, *A. braccata*, *A. flavopicta*, *A. hahneli*, *A. parvula*, *A. petersi* and *A. trivittata* (Toft 1980; Biavati et al. 2004; Darst et al. 2005; Forti et al. 2011; Luiz et al. 2015). The sequester of chemical defenses from dietary sources is an important adaptation to the anti-predator defense of dendrobatid frogs, as their diurnal habits result in greater exposure to predators (e.g., Luiz et al. 2015). The diet composition pattern of these species of *Ameerega* is related to their dietary specialization on ants, which are the source of the toxic alkaloids secreted through the skin (Saporito et al. 2004; Darst et al. 2005; Mebs et al. 2010). Some dendrobatid species that feeds on ants and/or mites in higher proportions have been considered “ant-mite specialists” (Simon & Toft 1991; Toft 1995; Caldwell 1996). However, mites have been suggested to be more important than ants as dietary sources of alkaloids in poison frogs (Saporito et al. 2007). In the present study, we found high abundance of Formici-

dae, Coleoptera and Diptera and absence of mites in the diet composition of *A. picta* from region of the Serra da Bodoquena, which seems to reflect the availability variation of these prey items in the habitats from which the frogs were sampled.

Although *Ameerega picta* exhibits sexual dimorphism in body size (Uetanabaro et al. 2008), we did not find any significant difference between sexes regarding numeric percentages per prey category. Differences in diet composition between males and females are reported for *A. braccata* and *A. trivittata* (Forti et al. 2011; Luiz et al. 2015), which may be related to behavioral differences that enable the partitioning of feeding resources between sexes.

We found only seven studies on the diet composition of eight species of *Ameerega* (Tab. 2). The eight species of *Ameerega* in the dietary studies analyzed correspond to 26% of the species in this genus, demonstrating that the diet of most species of the genus is unknown. Therefore, further studies should focus on species of *Ameerega* and another dendrobatid species with undetermined diet in order to improve the understanding of the trophic ecology of the poison frogs.

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