

SHORT COMMUNICATION

Register of predation upon species of reptiles by *Guira guira* (Aves: Cuculidae)

Registro de predação de espécies de répteis por *Guira guira* (Aves: Cuculidae)

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Abstract

Although we have a good understanding of how predation can influence community structure, we still have little information about how predation by visually oriented birds can be a significant source of mortality for reptiles. We observed adults of *Guira guira* feeding their offspring with four different species of reptiles, namely *Amphisbaena vermicularis*, *Copeoglossum nigropunctatum*, *Iguana iguana* and *Tropidurus torquatus*. It is the first report of *G. guira* predation on *A. vermicularis* and *C. nigropunctatum*. Although *G. guira* has been recognized as insectivorous, we believe that predation of small cryptozoic reptiles is a common event during bird breeding season.

Keywords: *Amphisbaena vermicularis*, *Copeoglossum nigropunctatum*, cryptozoic reptiles, predation strategy, Pantanal.

Resumo

Embora tenhamos um bom entendimento de como a predação pode influenciar a estrutura de uma comunidade, ainda há carência de informações sobre como a predação por aves pode ser uma causa significativa de mortalidade de répteis. Observamos adultos da espécie *Guira guira* alimentando seus filhotes com quatro espécies de répteis (*Amphisbaena vermicularis*, *Copeoglossum nigropunctatum*, *Iguana iguana* e *Tropidurus torquatus*). Este é o primeiro registro de *G. guira* predando *A. vermicularis* e *C. nigropunctatum*. Apesar de *G. guira* ser reconhecido como insetívoro, acreditamos que a predação de pequenos répteis criptozóicos seja um evento frequente durante a época de reprodução da espécie.

Palavras-chave: *Amphisbaena vermicularis*, *Copeoglossum nigropunctatum*, répteis criptozóicos, estratégia de predação, Pantanal.

Information on the natural history of cryptozoic and fossorial reptile species are meagre, mainly in the Neotropics. The literature about reptile's behaviour and their predators is surprisingly large, although much attention has been paid to arboreal or terrestrial-heliotherm species (e.g. Vitt *et al.*, 2008). Because of secretive behavior, amphisbaenids and skinks are seldom observed and little is known about their distribution, behavior and predators associated (Coli and Zamboni, 1999; Vitt, 1991). However, birds seem to constantly prey on reptiles (Poulin *et al.*, 2001), and secretive behaviour should not be a problem for feeding habit of many bird species. Predation is frequently invoked as potential driver for the evolution of reproductive modes and behaviour associated with

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basking, for amphibians and reptiles (Downes and Hoefer, 2004; Haddad and Prado, 2005). Furthermore, information about predator–prey is important for understanding of community dynamics and structure (Werner and Peacor 2003). In floodplains, reptiles are a group of remarkable abundance, despite the low detection rates (Junk *et al.*, 2006; Willson *et al.*, 2010). Pantanal ecoregion is a large lowland alluvial plain in the centre of South America (Junk *et al.*, 2006), with more than 130 species of reptiles currently known (Strüßmann *et al.*, 2011). Unfortunately, information about predators is lacking for many species of Pantanal herpetofauna.

Guira guira (GMELIN 1788) is widely distributed in South America, occurring in several biomes (Gwynne *et al.*, 2010). Although this species has been recognized as primarily insectivorous (Soave *et al.*, 2008), records of predation on small vertebrates, such as frogs and lizards, are not uncommon (Coutinho *et al.*, 2014; Koski and Merçon, 2015). Here we report on a predation on four rep-

tile species, namely *Amphisbaena vermicularis* (WAGLER 1824) (Amphisbaenidae), *Copeoglossum nigropunctatum* (SPIX 1825) (Mabuyidae), *Iguana iguana* (LINNAEUS 1758) (Iguanidae) and *Tropidurus torquatus* (WIED 1820) (Tropiduridae), by *G. guira*.

Amphisbaena vermicularis is a fossorial species found in most of South America, including lowland rainforest, Cerrado, Caatinga, and seasonally flooded areas of the Pantanal (Gans, 2005). *Copeoglossum nigropunctatum* is a small skink that lives on tree trunks and large limbs as well as in leaf litter. This species is widely distributed in the Amazon forest, Pantanal, Cerrado, and parts of the Atlantic forest of Brazil (Vitt *et al.*, 2008). *Iguana iguana* is a primarily arboreal species, distributed from Mexico to Central Brazil and Paraguay (Vitt *et al.*, 2008), while *T. torquatus* is a scansorial species, occurring in open areas of South America, east of Andes (Rodrigues, 1987).

All observations presented in this paper were made in the SESC-Pantanal Natural Heritage Private Reserve, lo-



Figure 1. Predation on an adult of *Copeoglossum nigropunctatum* by an adult of *Guira guira*, in the floodplain of the Cuiabá River, Mato Grosso, Brazil.



Figure 2. Dead *Copeoglossum nigropunctatum*, prey item of an offspring of *Guira guira*.



Figure 3. Predation on *Amphisbaena vermicularis* by an adult of *Guira guira*, in the floodplain of the Cuiabá River, Mato Grosso, Brazil.



Figure 4. Offspring of *Guira guira* swallowing a juvenile of *Iguana iguana*.

Table 1. Reptile species registered as food items of *Guira guira* in South American biomes.

Biome	Prey	Microhabitat	Reference
Amazon	<i>Cnemidophorus lemniscatus</i>	Terrestrial	Carvalho-Filho (2008)
	<i>Tropidurus oreadicus</i>	Scansorial	Carvalho-Filho (2008)
Atlantic Forest	<i>Liolaemus lutzae</i>	Terrestrial	Rocha (1993)
	<i>Tropidurus torquatus</i>	Scansorial	Koski and Merçon (2015)
	<i>Ameivula ocellifera</i>	Terrestrial	Gogliath <i>et al.</i> (2010)
Caatinga	<i>Hemidactylus mabouia</i>	Scansorial	Andrade <i>et al.</i> (2015)
	<i>Iguana iguana</i>	Arboreal	Coutinho <i>et al.</i> (2014)
	<i>Erythrolamprus poecilogyrus</i>	Terrestrial	Soave <i>et al.</i> (2008); Abegg <i>et al.</i> (2015)
Pampa	<i>Ophiodon vertebralis</i>	Subterranean	Soave <i>et al.</i> (2008)
	<i>Amphisbaena vermicularis</i>	Subterranean	This work
	<i>Copeoglossum nigropunctatum</i>	Scansorial	This work
Pantanal	<i>Iguana iguana</i>	Arboreal	This work
	<i>Tropidurus torquatus</i>	Scansorial	This work

cated in the floodplain of the Cuiabá River, Mato Grosso, Brazil (16°42'25"S, 56°28'48"W, WSG 84, 121 m above sea level). All events observed here correspond to individuals of the same flock feeding their offspring with reptiles of different behaviours and habitat use.

On 7 December 2015, at around 9h40 a.m., we observed an adult of *G. guira* holding a recently killed *C. nigropunctatum* (Figure 1). Then, the specimen of *G. guira* flew towards a bamboo tree and feed an offspring with the skink. The offspring cocked its head back and swallowed all but the tip of tail. A few moments after, the bird finished swallowing the skink. When we were observing feeding adults, an offspring dropped another dead *C. nigropunctatum*. Closer inspection revealed puncture marks, one each through the right shoulder region and through the nape (Figure 2). During the same morning, another predation event was registered at 10:40 a.m. that was practically identical to the previous event. An adult of *G. guira* was holding an individual of *A. vermicularis* in its beak (Figure 3). Small motions of the body of amphisbaenian indicated that it was still alive. The specimen of *G. guira* dropped the amphisbaenian at its feet and picked at it several times before flying towards the same bamboo tree. Again, an offspring swallowed the reptile whole.

Besides these registered events, we also observed *G. guira* preying on two other lizard species on the afternoon of the same day, around 2h00 p.m., namely a juvenile of *I. iguana* (Figure 4) and a juvenile of *T. torquatus*. Both lizards were caught by head and carried to the offspring. It is already known that *G. guira* feeds on these both lizard species (Koski and Merçon, 2015; Coutinho *et al.*, 2014), but to our knowledge, this is the first report of predation on *A. vermicularis* and *C. nigropunctatum* by *G. guira*. Moreover, reports of *G. guira* offspring feeding on reptiles are uncommon (Macedo, 1994).

Although small vertebrates are occasional preys of *G. guira*, breeding birds are known to feed larger prey items

to their offspring than those that they consume themselves (Arbeiter *et al.*, 2014). In this sense, we posit that small reptiles may constitute an important food item to *G. guira* offspring. An interesting feature of these events was that lizards suffered injuries mainly in the head and without tail loss. We were able to find registers of nine reptile species as preys of *G. guira* (Table 1). When the predation event was observed, most of the authors stated that prey's tail was intact and bird's behaviour was similar to observed here (prey held sideways by its neck, bird pecked repeatedly at prey's head).

Many lizard species, including species in the genera *Tropidurus* and *Copeoglossum*, avoid predation by doing a caudal autotomy strategy (Bateman and Fleming, 2009). However, such strategy could be ineffective against *G. guira*, because the bird seems to attack preys more frequently on the head than on other body parts. On prey's perspective, attempt predation exerts a pressure on natural selection, being killed or being forced to modify some behaviours to survive (Peacor and Werner, 2001). Predation by *G. guira* on reptiles seems not be related to prey's microhabitat or biome (Table 1). However, a survey on prey's availability is necessary to enlighten such view. Birds and reptiles species seems to occur in great abundance in the Pantanal (Junk *et al.*, 2006), and there is overlap between *G. guira* distribution and many species of reptiles. Thus, we believe that these events are common in flooded areas of Pantanal, although they were not recorded.

Acknowledgements

We are grateful to managers of the SESC-Pantanal Natural Heritage Private Reserve, for the support during the field work. We are thankful to two anonymous referees for improvements on the manuscript. We also thank the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES) for postdoctoral (PNDP 2013816), master, and doctoral fellowships.

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Submitted on April 25, 2016

Accepted on December 8, 2016