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 criptozoicos seja um evento frequente durante a época de reprodução da espécie.


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

<table>
<thead>
<tr>
<th>Biome</th>
<th>Prey</th>
<th>Microhabitat</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon</td>
<td>Cnemidophorus lemniscatus</td>
<td>Terrestrial</td>
<td>Carvalho-Filho (2008)</td>
</tr>
<tr>
<td></td>
<td>Tropidurus oreicus</td>
<td>Terrestrial</td>
<td>Carvalho-Filho (2008)</td>
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<td></td>
<td>Liolemus nitidae</td>
<td>Terrestrial</td>
<td>Rocha (1993)</td>
</tr>
<tr>
<td>Atlantic Forest</td>
<td>Tropidurus torquatus</td>
<td>Scansorial</td>
<td>Koski and Merçon (2015)</td>
</tr>
<tr>
<td></td>
<td>Ameiva ocellifera</td>
<td>Terrestrial</td>
<td>Gogliath et al. (2010)</td>
</tr>
<tr>
<td>Caatinga</td>
<td>Hemidactylus mabouia</td>
<td>Scansorial</td>
<td>Andrade et al. (2015)</td>
</tr>
<tr>
<td></td>
<td>Iguana iguana</td>
<td>Arboreal</td>
<td>Coutinho et al. (2014)</td>
</tr>
<tr>
<td>Pampa</td>
<td>Erythrolampus poecilogyrus</td>
<td>Terrestrial</td>
<td>Soave et al. (2008); Abegg et al. (2015)</td>
</tr>
<tr>
<td></td>
<td>Ophiodes vertebralis</td>
<td>Subterranean</td>
<td>Soave et al. (2008)</td>
</tr>
<tr>
<td></td>
<td>Amphisbaena vermicularis</td>
<td>Subterranean</td>
<td>This work</td>
</tr>
<tr>
<td>Pantanal</td>
<td>Copeoglossum nigropunctatum</td>
<td>Scansorial</td>
<td>This work</td>
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<td></td>
<td>Iguana iguana</td>
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<td></td>
<td>Tropidurus torquatus</td>
<td>Scansorial</td>
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</table>

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 amphibian indicated that it was still alive. The specimen of G. guira dropped the amphibiaenian 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 to 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.

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