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Predation of the invasive *Hemidactylus mabouia* (Squamata: Gekkonidae) by *Xiphocolaptes albicollis* (Passeriformes: Dendrocolaptidae) in southern Brazil

Guilherme Willrich¹ & André Ambrozio-Assis²

¹ Caipora Cooperativa para Conservação da Natureza. Avenida Desembargador Vitor Lima, 260/908. 88.040-400 Florianópolis. Santa Catarina. Brazil. C.e.: guigawillrich@hotmail.com

² Freelance Consultant. SHIN QL 14, conjunto 03, casa 11. 71530-035 Brasília Distrito Federal. Brazil.

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RESUMEN: En el estudio presente se informa por vez primera de la depredación de un gecko casero tropical (*Hemidactylus mabouia*) por trepatroncos gorgiblanco (*Xiphocolaptes albicollis*), especie de pájaro forestal neotropical. Puesto que los informes sobre depredación son escasos y dispersos, presentamos igualmente una breve revisión de las aves depredadoras de *H. mabouia*.

The Tropical House Gecko, *Hemidactylus mabouia* (Moreau de Jonnés, 1818), is an exotic species introduced into the New World from Africa (Kluge, 1969; Carranza & Arnold, 2006), having successfully established itself in many countries across South and Central America (Vanzolini, 1968; Anjos & Rocha, 2008; Rocha *et al.*, 2011) and parts of North America and the Caribbean (Carranza & Arnold, 2006). This gecko presents nocturnal activity and can be found mainly in anthropic and periurban environments (Vanzolini, 1978; Anjos & Rocha, 2008; Rocha *et al.*, 2011). In Brazil, *H. mabouia* occurs in

several ecosystems, and, although it has been commonly considered an exotic species restricted to anthropic environments, evidence suggests that this gecko has indeed invaded natural habitats, in which case it should be treated as an invasive exotic (alien) species (Anjos & Rocha, 2008; Rocha *et al.*, 2011).

Alien species have the potential to cause several impacts on native species, for example, by affecting predator-prey systems (Nelson *et al.*, 2010; Castorani & Hovel, 2015) or transmitting diseases to native taxa (Pinto *et al.*, 2015; Young *et al.*, 2017). Therefore, documenting



Figure 1: Predation of *Hemidactylus mabouia* by an adult of *Xiphocolaptes albicollis* in the municipality of Brusque, Santa Catarina state, southern Brazil. a) General view, b) detail of capture and c) detail of ingestion.

Figura 1: Depredación de *Hemidactylus mabouia* por un adulto de *Xiphocolaptes albicollis* en el municipio de Brusque, estado de Santa Catarina, sur de Brasil. a) Vista general, b) detalle de la captura y c) detalle de la ingestión.

potential predators of invasive species is of uttermost importance to start understanding their impacts on natural ecosystems. Here, we report for the first time the predation of the Tropical House Gecko, *Hemidactylus mabouia*, by the White-throated Woodcreeper, *Xiphocolaptes albicollis* (Vieillot, 1818).

The White-throated Woodcreeper is a Neotropical bird species that occurs in Brazil (from Bahia to Rio Grande do Sul states), Paraguay and Argentina (Sick, 1997). This species inhabits preferably the forests interior, but also sites with tangled vegetation such as forest edges (Poletto *et al.*, 2004). Like most other Woodcreepers, its foraging behaviour consists in the search of potential preys while climbing tree trunks and branches (Brooke, 1983; Sick, 1997). Its diet is composed mainly by arthropods, but also small vertebrates (e.g. snakes and frogs) and bird eggs (Moojen *et al.*, 1941; Hayes & Argaña, 1990; Sick, 1997; Manhães *et al.*, 2010; Cockle & Bodrati, 2013).

On 05 May 2020 at around 15:50 h, an adult individual of *X. albicollis* was observed foraging in a wooded yard of approximately 0.2 ha. Some minutes later, the bird removed a Tropical House Gecko from the trunk of a tree at approximately 4 m height and immediately ingested it. The gecko lost its tail when captured. The observation lasted less than a minute, but, even then, the event was photographed (Figure 1). The observation took place in the municipality of Brusque, Santa Catarina state, southern Brazil (27°08'44.1"S / 48°55'16.6"W; 47 masl). The place is 200 m far from a 400 ha secondary/old growth forest area.

Based on the photographs taken in the occasion, and comparing them with scientific literature (Vanzolini, 1968; Kluge, 1969; Vitt *et al.*, 2008), it is possible to identify the following features attributed to *H. mabouia*:

Table 1: List of bird species reported as predators of the Tropical House Gecko (*Hemidactylus mabouia*).
Tabla 1: Lista de las especies de pájaros depredadoras del gecko casero tropical (*Hemidactylus mabouia*).

Family/Species	Literature
Accipitridae	
<i>Rupornis magnirostris</i> (Gmelin, 1788)	De Macêdo & Freire (2010)
Cuculidae	
<i>Guira guira</i> (Gmelin, 1788)	Andrade <i>et al.</i> (2015); Rodrigues <i>et al.</i> (2019); Sazima (2015)
<i>Crotophaga ani</i> Linnaeus 1758	Figueiredo-de-Andrade & Silveira (2012)
Strigidae	
<i>Athene cunicularia</i> (Molina, 1782)	Silveira-Porto & Cerqueira (1990); Vieira & Teixeira (2008)
Dendrocolaptidae	
<i>Campyloramphus falcularius</i> (Vieillot, 1822)	Vecchi & Harding (2016)
<i>Xiphocolaptes albicollis</i> (Vieillot, 1818)	Present study
Tyrannidae	
<i>Pitangus sulphuratus</i> (Linnaeus, 1766)	Argel-de-Oliveira <i>et al.</i> (1998); Pereira & Melo (2012); Sazima (2015)
<i>Empidonomus varius</i> (Vieillot, 1818)	Sazima (2015)
<i>Megarynchus pitangua</i> (Linnaeus, 1766)	Sazima (2015)
<i>Myiodynastes maculatus</i> (Statius Müller, 1776)	Sazima (2015)
Turdidae	
<i>Turdus leucomelas</i> (Vieillot, 1818)	Sazima & D'Angelo (2011); Sazima (2015)
Mimidae	
<i>Margarops fuscatus</i> (Vieillot, 1808)	Powell & Henderson (2008)

large eyes, flat body, dorsal surface of the body and tail with enlarged tubercles, claws on the digits' tips. This series of characteristics is not found in any other lizard of the region (see Costa & Bérnils, 2018).

Predation of Tropical House Gecko by birds is poorly documented in literature. In a recent review Pedroso-Santos *et al.* (2019) mentioned only three bird species as predators of the house gecko. However, consulting some other studies we found a total of 11 bird species reported preying *H. mabouia* (Table 1). Almost all previously mentioned birds are tolerant to human disturbances and can be easily found in urban and periurban areas (Sick, 1997), which could justify their predations on a typically urban lizard. However, *X. albicollis*, as *Campyloramphus falcularius*, is a forest dependent species considered vulnerable to habitat fragmentation (Poletto *et al.*,

2004), which makes the observed predation quite unexpected despite the bird's diet. Probably, the vicinity forest area of 400 ha acts as a potential source of dispersing individuals that eventually could reach periurban areas and capture unusual preys. Moreover, as reported by Figueiredo-de-Andrade & Silveira (2012), this predation event should be considered opportunistic, since the gecko is nocturnal and the woodcreeper, diurnal.

The present report enriches not only the knowledge of *X. albicollis* diet, but also data of *H. mabouia* potential predators in non native areas. Moreover, the study of alien species' natural history is essential for comprehending the extent of its impacts and, consequently, its effective management and control.

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