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SHORT NOTE

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BLACK-CHEEKED GNATEATER (*CONOPOPHAGA MELANOPS*, CONOPOPHAGIDAE): A PREDATOR OF SMALL FROGS AND LIZARDS OF THE ATLANTIC FOREST OF BRAZIL

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Abstract · There is only one report of predation of small vertebrates by species of the Neotropical family Conopophagidae: the capture of an anuran by a Rufous Gnateater (*Conopophaga lineata*). Here, we present three records of predation on small vertebrates by Black-cheeked Gnateaters (*Conopophaga melanops*). On December 2008 in southeastern Brazil, we found a recently dead frog (*Fritziana mitus*, Hemiphractidae) with lesions on its body next to an adult female Black-cheeked Gnateater captured in a mist net. Additionally, searching in two digital birding platforms we found two records of predation on an anuran and a lizard by Black-cheeked Gnateaters. All three records occurred during their reproductive period, suggesting that the prey may serve as a food resource for the young. This behavior should be better investigated in the Atlantic Forest, a region with high bird and frog diversity.

Resumo · **Predação de pequenos vertebrados por *Conopophaga melanops***
A família Conopophagidae só possui um relato de predação de pequenos vertebrados, sendo um anuro observado para o gênero *Conopophaga*. Apresentamos aqui um registro de predação de um pequeno anuro por *C. melanops*. Em dezembro de 2008 no Sudeste do Brasil, nós observamos um indivíduo recém morto de *Fritziana mitus*, com várias lesões pelo corpo, próximo de um adulto de *C. melanops* capturado em uma rede-de-neblina. Encontramos apenas dois registros de predação de pequenos vertebrados por *C. melanops*, sendo um anuro e um lagarto. Os três registros disponíveis ocorreram no período reprodutivo de *C. melanops*, indicando ser possivelmente um tipo de recurso utilizado para alimentar os filhotes. Este tipo de comportamento, assim como a relação presa-predador, deve ser melhor investigado em campo, especialmente na Mata Atlântica, região com alta diversidade de aves e anuros.

Key words: Anuran amphibians · Curucutu · Diet · Natural History · São Paulo · Serra do Mar

Small vertebrates, such as amphibians and lizards, are part of the diet of many Neotropical forest understory birds (Zug 1993, Sick 1997). A study carried out in Panama recorded 31 species of understory birds preying on small vertebrates, 16 of which consumed anurans (~70% of the former genus *Eleutherodactylus*) and 15 of which consumed lizards (92% *Anolis*) (Poulin et al. 2001). In addition, 9 of the 31 species consumed both groups of vertebrates (Poulin et al. 2001). A compilation by Toledo *et al*. (2007) recorded 27 bird species known to predate on anurans, but few of them were understory species. Others (e.g., Heredia et al. 2010, Salvador & Bodrati 2013) studied the presence of small vertebrates in the diet of small Neotropical birds, but basic information is still scarce.

One of the Neotropical families for which there is the least known vertebrate predation is Conopophagidae, small birds that dwell close to the ground in the understory of tropical forests (Sick 1997, Whitney 2003). The diet of Conopophagidae species is better known for the Rufous Gnateater (*Conopophaga lineata*) and the Black-cheeked Gnateater (*Conopophaga melanops*). Rufous Gnateaters feed basically on several groups of arthropods (Diptera, Hemiptera, Lepidoptera, Hymenoptera, Diplopoda, Formicidae, and Opiliones; Durães & Marini 2005, Lopes et al. 2005, Manhães et al. 2010, Lima et al. 2011), in addition to seeds and fruits (e.g., Lopes et al. 2003). Moreover, there is one report of predation on a small anuran (Willis et al. 1983). Black-cheeked Gnateaters occur in a narrow strip of Atlantic Forest in eastern Brazil, making them endemic to both the biome and the country (Sick 1997, Vale et al. 2018), and are reported to feed exclusively on arthropods (Alves & Duarte 1996, Whitney 2003, Studer et al. 2019).

We made a record of interest while conducting an ornithological inventory at Núcleo Curucutu of Parque Estadual da Serra

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Figure 1. Adult female *Conopophaga melanops* captured in a mist net. Photo: Fabio Schunck

Figure 2. Adult female *Fritziana mitus* presumably carried by a *Conopophaga melanops* captured in a mist-net, dorsal (a) and ventral (b) views. Red arrows indicate cutaneous lesions presumably caused by the beak of the Gnateater. Photos: Fabio Schunck

do Mar (PESM), in the state of São Paulo, southeastern Brazil. The site of the record was the municipality of Itanhaém (24°02'27.2"S, 46°46'35.6"W, 15 to 75 m a.s.l.), on the lower part of the Atlantic slope. The region possesses lowland dense ombrophilous forests, with trees ranging 35–40 m in height. At around 8:00 h on 30 December 2008, we captured an adult female Black-cheeked Gnateater (weight: 19 g, wing: 63 mm, tail: 28 mm, exposed culmen: 13.3, tarsus: 28.8 mm; Figure 1) in a mist net. When removing the bird from the net (second shelf, about 1 m above the ground), we found a recently dead adult female *Fritziana mitus* (Anura: Hemiphractidae) next to the bird. The tree frog had injuries on the head and body (Figure 2). In addition, the bird's beak had traces of the mucus that coats the skin of frogs. These observations indicate that the bird was carrying the frog when it was captured by the net. The frog was deposited in

the Célio F. B. Haddad anuran collection (CFBH 22143), Universidade Estadual Paulista, São Paulo, Brazil. This small tree frog (specimen length: 23.5 mm) is endemic to the Atlantic Forest, occurring from the state of São Paulo to the state of Rio Grande do Sul (Walker et al. 2018). These frogs are frequent in bromeliads, but can also be found in the understory on shrubs, small palm trees (*Geonoma* spp.), and the leaves of Marantaceae species (L.R. Malagoli pers. observ.).

After our observation, we searched for predation records by Conopophagidae in the online data platforms Wikiaves - WA (https://www.wikiaves.com.br/) and eBird - ML (https://ebird.org/home) until 20 May 2020. We found two images of *Conopophaga* feeding on small vertebrates, specifically Black-cheeked Gnateaters. The first record, a female with a small anuran (Leptodactylidae) in its beak (WA 1787788), was made on 6 August 2015 in Rio de Janeiro state, southeastern Brazil. The frog was unidentifiable to genus level. The second picture, a male holding a small lizard (possibly Leiosauridae) in its beak (WA 3165039), was made on 23 October 2018 in the state of Alagoas, northeastern Brazil.

The *F. mitus* predation record at Núcleo Curucutu of PESM occurred within the known reproductive period of Black-cheeked Gnateaters in Brazil (August to December; Stenzel & Souza 2014, Studer et al. 2019). The captured female had an intermediate incubation patch (stage 2), indicating that she possibly had eggs or small chicks in the nest, which may suggest that the tree frog was to serve as food for the chick(s). The other records obtained from Wikiaves of a frog and a lizard, both predated by Black-cheeked Gnateaters, were also during the reproductive season of the species, and thus the prey may have served the same purpose. This behavior was also documented for the Rufous Gnateater, with an adult capturing a small anuran close to the nest and taking it to its young, which then swallowed it (Willis et al. 1983). The data presented here is the first on the predation of frogs and lizards by Black-cheeked Gnateaters, and the first on predation of *F. mitus*. The incipient knowledge about the presence of small vertebrates in the diet of birds of the genus *Conopophaga* may reflect the low number of studies on the diet of this elusive group of Neotropical birds (Lopes et al. 2005, Manhães et al. 2010). The Atlantic Forest, especially the Serra do Mar mountain range, has high bird and anuran species richness (Haddad et al. 2013, Vale et al. 2018); however, the predator-prey relationships between these groups are still scarcely reported and hold great potential for future studies.

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