

Two new records of avian predation on species of wormlizards, genus *Ophiodes*, in southeastern Brazil

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Neotropical wormlizards of the genus *Ophiodes* currently comprise six species (Oliveira et al., 2021), including *Ophiodes enso* Entiauspe-Neto et al., 2017, *O. fragilis* (Raddi, 1820), *O. intermedius* Boulenger, 1894, *O. luciae* Cacciali & Scott, 2015, *O. striatus* (Spix, 1825), and *O. vertebralis* Bocourt, 1881. They are found in several South American countries, such as Argentina, Brazil, Bolivia, Paraguay, and Uruguay (Pizzatto, 2005; Schools and Hedges, 2021). These species tend to be cryptic in morphology and behaviour, and they are characterised by a small, pointed head, cylindrical body, long tail (which can be twice the length of the body), absence of forelimbs, and reduced hindlimbs (Ortiz et al., 2017; Oliveira et al., 2021).

There is still some taxonomic uncertainty in the genus *Ophiodes*, with *O. striatus* considered a species complex (Costa et al., 2009; Montechiaro et al., 2011). While the occurrence of this species has been validated for southeastern and southern Brazil, extending into Uruguay and Argentina, some populations in the Brazilian states of Bahia, Mato Grosso do Sul, and Minas Gerais may be considered *O. fragilis* (Borges-Martins, 1998; Barros and Teixeira, 2007; Trindade et al., 2013; Entiauspe-Neto et al., 2017; Costa et al., 2021). These lizards play a relevant role in their

ecosystem, where they participate in the food chain both as predators (Ribeiro and Freire, 2011; Kasperoviczus et al., 2015; Hipolito and Sazima, 2018; Quah et al., 2022) and as prey (Cubas-Rodríguez et al., 2023; Tran et al., 2024). In particular, they serve as prey for a wide variety of bird species (Poulin et al., 2001; Sousa et al., 2021; Akresh et al., 2022; Oliveira et al., 2022).

The White-eared Puffbird (*Nystalus chacuru*) occurs in tropical deciduous forests and gallery forests from eastern Peru and central Brazil to southern Paraguay and northeastern Argentina (Rasmussen et al., 2020). It has a varied diet (vertebrates, invertebrates, and seeds) and is considered an opportunistic species (Crozariol and Gomes, 2010; Ramos et al., 2011; Gurgel and Filho, 2014). Similarly, the Crested Caracara (*Caracara plancus*) is a raptor with a wide range from the United States to the southern tip of South America, where it inhabits a variety of open and semi-open environments (Morrison and Dwyer, 2023). It has a highly diversified diet and uses different foraging strategies, consuming, for example, dead animals, amphibians, lizards, and snakes, and it may even plunder nests (Sick, 1997; Sazima, 2007).

As *Ophiodes* has a semifossorial habit, little is known about the ecology of its groups and how their ecological interactions are shaped, with predation being the main known form of interaction for these animals (Palacio, 2024). We here document two new prey–predator interactions for *O. fragilis* and *O. striatus*, expanding our knowledge about the trophic ecology and natural history of these species for southeastern Brazil.

The first observation was made on 8 August 2021 in Lima Duarte Municipality, Minas Gerais (21.8430°S, 43.8178°W; SIRGAS2000; elevation 700 m) during a birdwatching event on the outskirts of the city. Upon hearing vocalisations of different birds, multiple calls were played back in the hope of attracting the birds. After a few minutes, a puffbird appeared and landed on a power line (Fig. 1). In its beak was a prey item resembling a snake, which it was trying to swallow.

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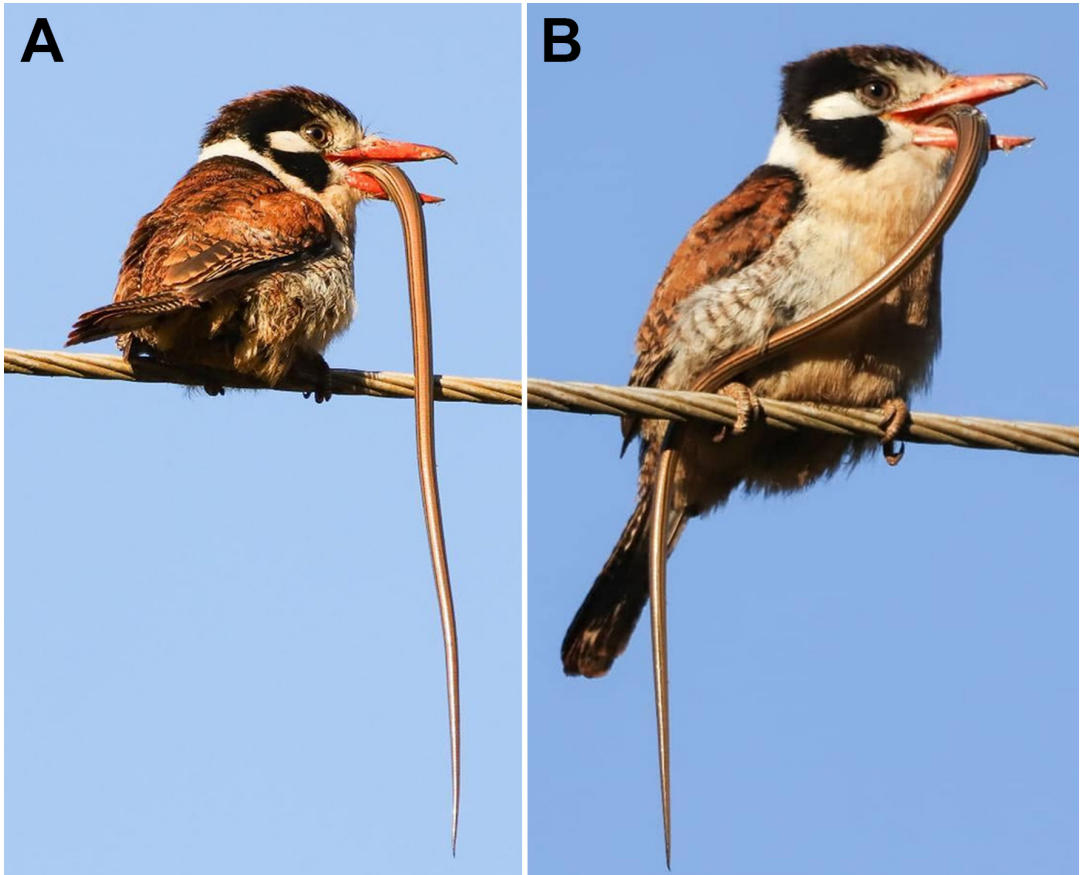


Figure 1. A White-eared Puffbird (*Nystalus chacuri*) preying on a Fragile Wormlizard (*Ophiodes fragilis*) in Lima Duarte Municipality, Minas Gerais, Brazil. The two photographs show different, complementary views of the specimen, highlighting important morphological features for identification. Photos by Edelson Fonseca.

Based on the prey's morphological characteristics we were able to recognize it as a wormlizard. Based on the location and the ranges of *Ophiodes* in Brazil (Borges-Martins, 1998; Costa et al., 2009, 2021; Dias et al., 2023), we identified it as *O. fragilis*. After obtaining photographic evidence, the observers left the site in order not to interfere with the predation process.

The second event occurred on 23 July 2023 during an excursion in the upper part of the Serra da Canastra, in São Roque Municipality, Minas Gerais (20.2440°S, 46.6189°W, elevation 1300 m). An adult Crested Caracara was observed manipulating an *O. striatus* with its beak (Fig. 2). The event lasted about 5 min, during which the bird consumed the lizard's autotomized tail. It was interrupted by the passage of a car, which drove it away, leaving part of its prey temporarily. It quickly

returned to retrieve the remains of the lizard and flew away.

Mapping food relationships among species through serendipitous encounters is of paramount importance for understanding how these interactions' structure biological communities. Our study reveals new predators for *O. fragilis* and *O. striatus*, in addition to demonstrating how lizards may comprise an important part of bird diets. White-eared Puffbirds were previously reported as lizard predators by Crozariol and Gomes (2010), Gurgel and Filho (2014), and Sousa et al. (2023). We also corroborate the hypothesis proposed by Dias et al. (2023) that caudal autotomy in these lizards may be ineffective as a defence mechanism against birds, since, in both records, this behaviour did not prevent predation.



Figure 2. A Crested Caracara (*Caracara plancus*) preying on a Striped Wormlizard (*Ophiodes striatus*) at Serra da Canastra, São Roque Municipality, Minas Gerais, Brazil. Photo by Leandro Rezende.

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