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Bright marks, dark fate: records of predation on *Coleodactylus meridionalis* Boulenger, 1888 from a movement ecology study in a forest area in southern Bahia, Brazil

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Predation on vertebrates by invertebrates is not uncommon and, despite being poorly studied (Valdez, 2020), can result in significant impacts on the dynamics of populations and communities (McCormick and Polis, 1982). Due to the smaller body size of juvenile reptiles, these individuals tend to be more vulnerable to predation by invertebrates, and this vulnerability decreases as the reptiles grow and become adults (Vitt and Caldwell, 2014). In this context, small lizards such as neotropical geckos, which have a size range very close to medium-sized insects (~20 mm), are very susceptible to predation by the latter (Bauer, 1990).

A member of the Sphaerodactylidae (Lacertilia) family, which includes the smallest lizards in Brazil (Gamble et al., 2011; Gonçalves et al., 2012), *Coleodactylus meridionalis* Boulenger, 1888 is known as a leaf litter lizard, and has short limbs and tail, reaching a maximum size of ~30.8 mm (Vanzolini, 1957; Moretti, 2009). This terrestrial species lives in the leaf litter layer in different environments and is distributed in the Atlantic Forest from Bahia to Ceará (Vanzolini, 1957), in the Cerrado and Caatinga (Vanzolini, 1980; Ribeiro et al., 2012), Brejos de altitude (Borges-Nojosa and Caramaschi, 2003) and Restinga (Dias et al., 2003; Dias and Rocha, 2014). Although cited as a diurnal species (Silva et al., 2015; Moura-Filho et al., 2021; Teixeira et al., 2021; Feitosa et al., 2022), *C. meridionalis* has been observed active during the night in the Atlantic Rainforest, between 17:00 and 00:30 hrs, when temperatures are mild (see Roseno et al., 2024).

Here, we report four events of *C. meridionalis* predation by arthropods, including two cases of predation by Ctenidae and two new records by Orthoptera and Formicidae. These events were recorded in a forest area of the Reserva Ecológica Michelin (REM; -13.82136, -39.17082), located in the municipality of Igrapiúna, Bahia, Brazil. Notably, all predated individuals were covered with a mixture of fluorescent powder and mineral oil as part of an ongoing movement ecology research project. These substances were applied to facilitate individual tracking (Roseno et al., 2024). Detailed descriptions of the interactions are provided below.

On 28 January 2022, at 19:56 h, a group of ants was spotted preying on a specimen of *C. meridionalis* on the leaf litter. The ants killed the lizard, which was active and covered in a mixture of fluorescent orange powder and mineral oil, and then carried it away, possibly towards their nest. On the same day, 28 January 2022, at 20:03 h, a cricket of the genus *Lutosa* was observed killing and feeding on another individual of *C. meridionalis*, which was covered in yellow fluorescent powder and mineral oil (Fig. 1).

On 23 April 2022, at 19:29 h, a third lizard was preyed upon by a spider from the genus *Ctenus*. Covered in orange powder, the lizard was observed being active approximately 1 hour before being captured and killed by the spider, as documented by RSR (Fig. 2). The final predation event was recorded on 25 April 2022 at 19:45 h, when another active individual, covered in the yellow mixture, was seized by a *Ctenus* spider and subsequently

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Figure 1. A *C. meridionalis* being preyed upon by a cricket of the *Lutosa* genus. Photo by Rafaella Roseno.

consumed inside the spider's burrow.

The potential impact of fluorescent powder and mineral oil on the behaviour and survival of small vertebrates has not yet been thoroughly examined. The use of fluorescent powder for marking and tracking arthropods in both forest environments and laboratory settings is well-established and appears to have no adverse effects on the behaviour or resilience of tested individuals (Pardo et al., 1996; Sandidge and Brandt, 2003; Rojas-Araya et al., 2020). However, it remains unclear whether the application of fluorescent powder—regardless of its colour or the addition of mineral oil—affects the susceptibility of small vertebrates to predation by arthropods. Investigating this possibility and understanding whether prey detection processes are linked to vision or smell are planned future endeavour for our research group. Nonetheless, our findings add *Lutosa* sp. and individuals of Formicidae to the list of predators of *C. meridionalis* alongside *Ctenus* sp.

Figure 2. A *C. meridionalis* being preyed upon by spider of the *Ctenus* genus. Photo by Rafaella Roseno.

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