

SHORT COMMUNICATION

Death-feigning behaviour in *Iphisa elegans*: the second reported case in the Family Gymnophthalmidae (Reptilia: Squamata)

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ABSTRACT

Death-feigning behaviour occurs when the animal simulates a state of immobility. This behaviour is described for some lizard families, among them the family Gymnophthalmidae with only one record. *Iphisa elegans* is a diurnal and terrestrial Amazonian gymnophthalmid lizard. It has cryptic behavior and moves rapidly on the ground, hindering observations of its behavior. We report a case at the Comodoro Municipality, Mato Grosso State, Brazil. An adult male of *I. elegans*, when manipulated, turned its venter up and put itself in a death-feigning posture. This species is preyed upon by birds, snakes and other lizards, possibly behaving this way when the cryptic behaviour or escape attempt fails. More studies are necessary to evaluate the efficiency of this behaviour, as well as its frequency of occurrence, using individuals of both sexes. We also suggest to evaluate if the orange venter of males could have any antipredation advantage.

KEYWORDS: reptiles, Ethology, antipredator display, lizard, thanatosis

Comportamento de tanatose em *Iphisa elegans*: o segundo caso na Família Gymnophthalmidae (Reptilia: Squamata)

RESUMO

Fingir-se de morto é um comportamento no qual o animal simula um estado de imobilidade. Esse comportamento é descrito em algumas famílias de lagartos, dentre as quais, a família Gymnophthalmidae com apenas um registro. *Iphisa elegans* é um lagarto gymnophthalmídeo amazônico diurno e terrestre. Possui comportamento críptico e move-se rapidamente pelo solo, dificultando observações de seu comportamento. Reportamos um caso no município de Comodoro, Estado do Mato Grosso, Brasil: um macho adulto de *I. elegans*, quando manipulado, virou seu ventre para cima e fingiu-se de morto. Esta espécie é predada por pássaros, serpentes e outros lagartos, possivelmente portando-se dessa forma quando o comportamento críptico ou tentativa de fuga falham. São necessários mais estudos para observar a eficiência desse comportamento, assim como sua frequência de ocorrência, usando indivíduos de ambos os sexos. Também sugerimos que deve ser avaliado se a coloração alaranjada no ventre dos machos poderia fornecer alguma vantagem antipredação.

PALAVRAS-CHAVE: répteis, Etologia, comportamento antipredação, lagarto, tanatose

Death-feigning behaviour (thanatosis) occurs when the animal simulates a state of immobility (i.e. pretending to be dead) in response to external stimuli (Santos *et al.* 2010). This behaviour could be effective against predators that do not feed on carrion or dead prey, and against those which need movement cues to find and handle further their prey (Toledo *et al.* 2011). For lizards, this behaviour is described for the families Crotaphytidae (Gluesing 1983), Dibamidae (Torres-Cervantes *et al.* 2004), Gymnophthalmidae (Muscat *et al.* 2016), Liolaemidae (Rocha 1993; Santos *et al.* 2010), Scincidae (Langkilde *et al.* 2003; Patel *et al.* 2016) and Tropiduridae (Galdino and Pereira 2002; Gomes *et al.* 2004; Kosloldorf *et al.* 2004; Bertoluci *et al.* 2006).

The family Gymnophthalmidae is widely distributed from southern Mexico to Argentina, comprising more than 40 genera and 235 species, with 32 genera and 92 species being found in Brazil (Costa and Bérnils 2015; Uetz *et al.* 2017). *Iphisa elegans* is a small Amazonian gymnophthalmid with mainly diurnal habits, found in leaf litter of Brazil, Bolivia, Colombia, Ecuador, Peru and the Guiana Shield (Guyana and Surinam) (Avila-Pires 1995; Andrade *et al.* 2013).

According to recent studies, the name *Iphisa elegans* includes a complex of cryptic species (Nunes *et al.* 2012). Adults of this species exhibit an antique-brown to dark yellowish dorsal surface, venter creamy grey in females and orange in males (Beebe 1945; Avila-Pires 1995), which is characterized as sexual dichromatism (Rodrigues *et al.* 2007). These lizards have cryptic behavior, running into the leaf litter in response to any disturbance in their surroundings (Hoogmoed 1973; Vitt *et al.* 2008). Due to the difficulty of observing specimens of *I. elegans* in nature, their natural history and defensive repertoire are largely unknown. In order to enrich this knowledge for the family, we report the first case of death-feigning behaviour for this species and the second report for the whole family Gymnophthalmidae.

On September 16th, 2015, three individuals of *Iphisa elegans* were captured in pitfall traps during a fauna monitoring program at Comodoro Municipality, Mato Grosso State, Brazil (13°42'00.63"S 60°25'01.69"W). When manipulated, an adult male (snout-vent length, SVL = 48 mm, Figure 1) turned venter up, putting itself in a death-feigning posture for 50 seconds. The same behaviour was repeated three times by the same individual, which held the position for about two minutes each time. In all situations, the lizard kept its eyes closed, and only returned to the normal position when it was put back onto the ground. The specimen was deposited in the Zoological Collection of the Universidade Federal de Goiás, municipality of Goiânia, Goiás State, Brazil (ZUFG 1221).

The first record for this behaviour in the family was for *Placosoma glabellum*, and the behaviour was similar to the case reported here. The lizard turned its venter up and

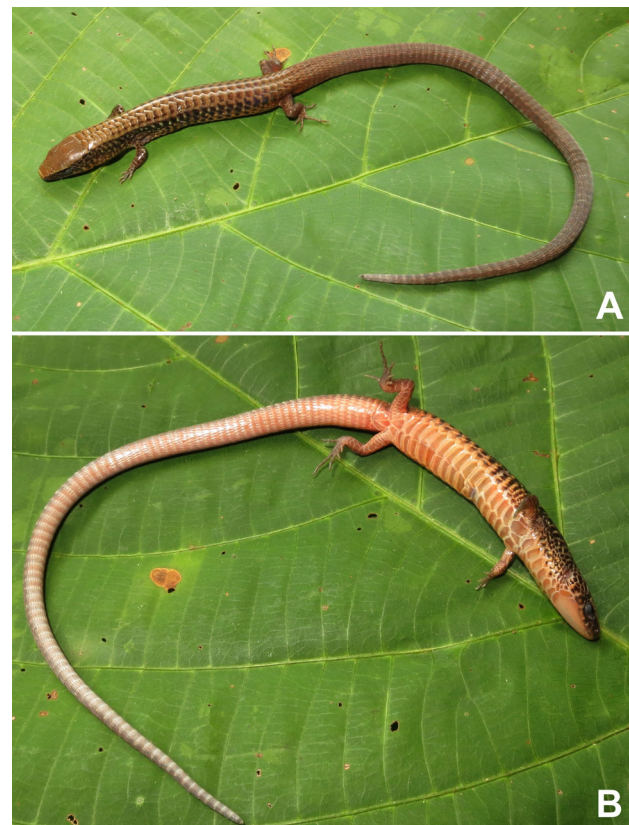


Figure 1. Individual of *Iphisa elegans* (ZUFG 1221, adult male): (A) In normal posture; (B) With exhibition of the orange venter. This figure is in color only in the electronic version.

remained still, with closed eyelids, maintaining this posture for approximately 60 seconds (Muscat *et al.* 2016).

Until now, all records of death-feigning behavior previously observed in lizards (with exception of an individual of *Liolaemus lutzae* and other of *Lygosoma punctata*), occurred after the specimens had been stimulated, including our record (Gluesing 1983; Rocha 1993; Galdino and Pereira 2002; Langkilde *et al.* 2003; Gomes *et al.* 2004; Kosloldorf *et al.* 2004; Torres-Cervantes *et al.* 2004; Bertoluci *et al.* 2006; Santos *et al.* 2010; Muscat *et al.* 2016; Patel *et al.* 2016).

Iphisa elegans is preyed upon by birds, lizards and snakes (Cunha 1961; Hoogmoed 1973; Duellman 1978; Prudente *et al.* 1998). It is possible that *I. elegans* uses the death-feigning posture when the cryptic behaviour or scape attempt fails. Besides, it is suggested that this behaviour could be used to confuse visually oriented predators, such as birds. However, more studies are necessary to observe the efficiency of this behaviour, as well as its frequency of occurrence, using individuals of both sexes. In some species of lizards, the orange belly may be related to hormonal cycles in breeding males (Cox *et al.* 2005). We also suggest to evaluate if the orange venter in males could have any antipredation advantage.

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