

SHORT COMMUNICATION

Defensive behavior of *Odontophrynus americanus* (DUMÉRIL & BIBRON, 1841) (Amphibia, Anura, Odontophrynidae)

Comportamento defensivo de *Odontophrynus americanus* (DUMÉRIL & BIBRON, 1841) (Amphibia, Anura, Odontophrynidae)

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Abstract

Anurans are a common prey of various animals and some species have developed defense mechanisms against predators. One of these mechanisms is the stiff-legged, in which individuals change their posture to a flat body with stiff and stretched members. Here we report the first record of this behavior in *Odontophrynus americanus*, a small toad widespread in the southern portion of South America. We believe that this behavior aims to reduce the chances of being seen by the predator.

Keywords: Brazil, Neotropical, frog, camouflage, defensive strategy, stiff-legged.

Resumo

Anuros são presas de diversos animais e algumas espécies desenvolveram mecanismos de defesa contra predadores. Um dos mecanismos de defesa é o *stiff-legged*, onde os indivíduos mudam sua postura ficando com o seu corpo achatado, membros rígidos e esticados. Aqui reportamos o primeiro registro desse comportamento em *Odontophrynus americanus*, um sapo de pequeno porte comum na porção sul da América do Sul. Acreditamos que esse comportamento tenha como objetivo reduzir as chances de ser visualizado pelo predador.

Palavras-chave: Brasil, neotropical, sapo, camuflagem, estratégia defensiva.

Anurans have an important role in the trophic chain, as a predator or prey of different species. They usually form aggregates during the rainy period, and can be found in great abundance throughout the breeding season. Once they present certain vulnerability, some species have developed numerous anti-predatory mechanisms (Toledo *et al.*, 2011). One of these mechanisms is known as stiff-legged. In this peculiar behavior, the individual changes its posture to a flat body and backward stretched limbs (Sazima, 1978). This behavior was reported in Neotropical terrestrial frogs, especially in species with cryptic coloration (Toledo *et al.*, 2011).

Odontophrynus americanus (DUMÉRIL & BIBRON, 1841) is a small toad (SVL up to 50 mm) that vocalizes in the summer after heavy rain periods during the summer (Eterovick and Sazima, 2000; Maffei *et al.*, 2011). It occurs in open areas of the southern portion of South America from central to northern Argentina, southern Paraguay, central and southern Brazil, and Uruguay (Frost,

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2016). When disturbed, this species performs a defensive behavior of burying itself by digging the ground with its hind limbs (Toledo *et al.*, 2011).

On 29 May of 2008 at 7:00 pm a male of *Odontophrynus americanus* was found on the edge of a pond in open Cerrado area. The record was made in the Rio Pardo Farm, located in the southern city of Borebi (22°48'S; 49°00'W), Midwest region of state of São Paulo, southeastern Brazil. The toad immediately took the stiff-legged posture when the observer started approaching and it remained so for four minutes (Figure 1). This species presents brown coloration with several spots on the dorsum, getting quite camouflaged in waterlogged grounds (Figure 2).

A recent review of species that exhibit the stiff-legged behavior was made by Mira-Mendes *et al.* (2016). These authors reported this behavior in 23 species of six families: Odontophrynidae (n=6), Microhylidae (n=6), Bufonidae (n=5), Leptodactylidae (n=4), Craugastoridae (n=1), and Cycloramphidae (n= 1) (Mira-Mendes *et al.*, 2016). The Odontophrynidae species registered with this defense mechanism were: *Macrogenioglottus alipioi* CARVALHO, 1946; *Proceratophrys appendiculata* (GÜNTHER, 1873); *P. boiei* (WIED-NEUWIED, 1824); *P. melanopogon* HEYER,

RAND, CRUZ, PEIXOTO & NELSON, 1990; *P. moehringi* WEYGOLDT & PEIXOTO, 1985; and *P. renalis* (MIRANDA-RIBEIRO, 1920). All these species probably leave their body and legs rigid and outstretched combined with their cryptic coloration in order to camouflage themselves (Toledo *et al.*, 2011), as observed in *O. americanus*.

Defensive behaviors have already been registered in other *Odontophrynus* species. Bezerra *et al.* (2010) and Borges-Nojosa *et al.* (2016) reported *Odontophrynus carvalhoi* SAVAGE & CEI, 1965 inflating their body, raising all limbs, and turning their belly up, remaining in thanatosis. Similar behavior was reported in *Odontophrynus cultripipes* REINHARDT & LÜTKEN, 1862 (Borges-Nojosa *et al.*, 2016). The behavior described above (inflate and dead-like body and stiff-legged) combined with its cryptic coloration may reduce the chances of being preyed, especially by visually oriented predators.

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Figure 1. Individual of *Odontophrynus americanus* displaying stiff-legged defensive behavior.



Figure 2. Individual of *Odontophrynus americanus* camouflaged in waterlogged ground.

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