



# **Predation of tadpoles and eggs of *Leptodactylus fuscus* (Schneider, 1799) (Anura, Leptodactylidae) by *Erythrolamprus poecilogyrus* (Wied-Neuwied, 1825) (Serpentes, Dipsadidae) in the savannic Lavrado of Roraima State, northern Brazil**

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## **RESUMO**

Aqui nós relatamos um evento de predação de uma desova de *Leptodactylus fuscus* pela serpente *Erythrolamprus poecilogyrus* no Lavrado de Roraima, norte do Brasil. Em maio de 2012 nós observamos 17 desovas de *L. fuscus*, uma delas estava sendo predada por um indivíduo de *E. poecilogyrus*. O conteúdo estomacal da serpente foi analisado para confirmar a predação. Nós também comparamos o número de girinos entre este ninho predado e outro não predado (14 e 163, respectivamente). Este evento de predação, e a presença de outras serpentes na mesma área, sugerem que *E. poecilogyrus* pode ser um importante predador de desovas de *L. fuscus*.

**PALAVRAS CHAVE:** desovas de anuros, dieta, predação por serpentes, savana.

## **ABSTRACT**

**Predation of tadpoles and eggs of *Leptodactylus fuscus* (Schneider, 1799) (Anura, Leptodactylidae) by *Erythrolamprus poecilogyrus* (Wied-Neuwied, 1825) (Serpentes, Dipsadidae) in the savannic Lavrado of Roraima State, northern Brazil.** Here we report a predation on a spawning of *Leptodactylus fuscus* by the snake *Erythrolamprus poecilogyrus* in the savannic Lavrado of Roraima, northern Brazil. On May 2012, we observed 17 spawnings of *L. fuscus*. An *E. poecilogyrus* was preying upon a spawning. The snake stomach contents was analysed to confirm the predation. We also compared the number of tadpoles among this predated nest and other not predated one (14 and 163, respectively). The predation and the presence of other snakes in the area suggest that *E. poecilogyrus* could be an important predator of *L. fuscus* spawning.

**KEY WORDS:** anuran spawning, diet, snake predation, savanna.

## INTRODUCTION

Spawning of anurans are preyed by several groups of invertebrates (e.g. ants, wasps, fly maggots and adults and larvae of beetles) and vertebrates (as monkeys and snakes) (Solé & Kwet 2003; Menin & Giaretta 2003; Lima *et al.* 2006; Lingnau & Di-Bernardo 2006; Menin *et al.* 2007; Bernarde & Abe 2010; Carvalho *et al.* 2012). However, due to the low number of field observations, data about predation on anuran eggs by snakes are uncommon and incipient (Lingnau & Di-Bernardo 2006; Lima & Colombo 2008). Nevertheless, it is known that the Dipsadidae family contains dietary specialist species and dietary generalist ones, which its diet includes a wide variety of prey, including adults, eggs and tadpoles of anurans (Michaud & Dixon 1989; Castanho 1996; Silva Jr. *et al.* 2003; Figueiredo de Andrade & Kindlovits 2012; Bellini *et al.* 2015).

The dipsadid *Erythrolamprus poecilogyrus* (Wied-Neuwied 1825) has a diet based mainly on anurans (bufonids, hylids, and leptodactylids in most cases) (Vitt 1983; Pinto & Fernandes 2004; Pombal Jr. 2007; Santos *et al.* 2010; Prieto *et al.* 2012), including *Leptodactylus bufonius* tadpoles (Schalk & Montaña 2012). *Erythrolamprus poecilogyrus* is widely distributed in South America (Dixon & Markezich 1992). The species has diurnal and nocturnal activities, terrestrial habit and is commonly found surrounding water bodies (Pinto & Fernandes 2004).

*Leptodactylus fuscus* (Schneider 1799) is also widely distributed in South America, from Panama, and across South America east of the Andes to Argentina (Heyer 1978). It is associated with terrestrial habitats in open areas (Martins 1988; Arzabe & Prado 2006). Species in *L. fuscus* group had an evolutionary step towards terrestrial environments by constructing underground chambers. Couples lay eggs by beating foam nests inside the excavated chambers (Heyer 1969; Freitas *et al.* 2001; Oliveira Filho *et al.* 2005; Arzabe & Prado 2006). The terrestrial reproductive mode in the *L. fuscus* group has been though as an adaptative change while it renders this group protection from aquatic predators (Heyer 1969). On the other hand, it seems that terrestrial breeding might also render eggs and larvae susceptible to predation by terrestrial organisms (Menin *et al.* 2007). Herein we report an event of predation on *Leptodactylus*

*fuscus* eggs and tadpoles by *Erythrolamprus poecilogyrus* near temporary ponds in a Lavrado area, typical Amazonian savanna of Roraima State, northern Brazil.

## METHODS

On 15 May 2012 at 1750 h, during a study about natural history of *L. fuscus* in a Lavrado area (2°50'30" N, 60°40'48" W) of 40 m<sup>2</sup>, we observed 17 spawnings of *L. fuscus* with eggs and tadpoles in early stage of development. We observed an *E. poecilogyrus* foraging on a nest. We also observed another two individuals of the *E. poecilogyrus* close to a spawnings of *L. fuscus*. The foraging snake had foam residues on the head. The predadet nest (hereafter nest 1) was completely exposed (i.e. open chamber).

To verify if the snakes were predated the spawning, we collected the foraging snake and nest 1. We also collected another nest (hereafter nest 2) that was with the upper part damaged (as well as the first one) and a third one (hereafter nest 3) intact (this spawning occurred in the previous day). We housed nests in the Lab of the Núcleo de Pesquisas do Instituto Nacional de Pesquisas da Amazônia (INPA), Municipality of Boa Vista, Roraima State. The stomach contents were analysed. Nest 3 was kept until tadpoles hatching.

The identification of *E. poecilogyrus* and *L. fuscus* followed Dixon & Markezich (1992) and Heyer (1978), respectively. Vouchers are deposited at the herpetological section of the zoological collection of the Instituto Nacional de Pesquisas da Amazônia (INPA-H), Manaus, Brazil, and Coleção Zoológica, Universidade Federal de Roraima (UFRR), Boa Vista, Roraima, Brazil, under the following numbers: INPA-H 34377 and Anura-61 to Anura-74, respectively.

## RESULTS AND DISCUSSION

We found eggs and tadpoles of *L. fuscus* inside the stomach of the foraging snake (Figure 1). Thus, we confirmed the nest was predated. Furthermore, the three nests differed regarding the number of tadpoles. Nest 1 had 14 tadpoles, nest 2 had 17, and nest 3 had 163 tadpoles.

The observations reported here occurred during the rainy season, which is the *L. fuscus* reproductive period. Although the event of predation by *E. poecilogyrus* was observed in a

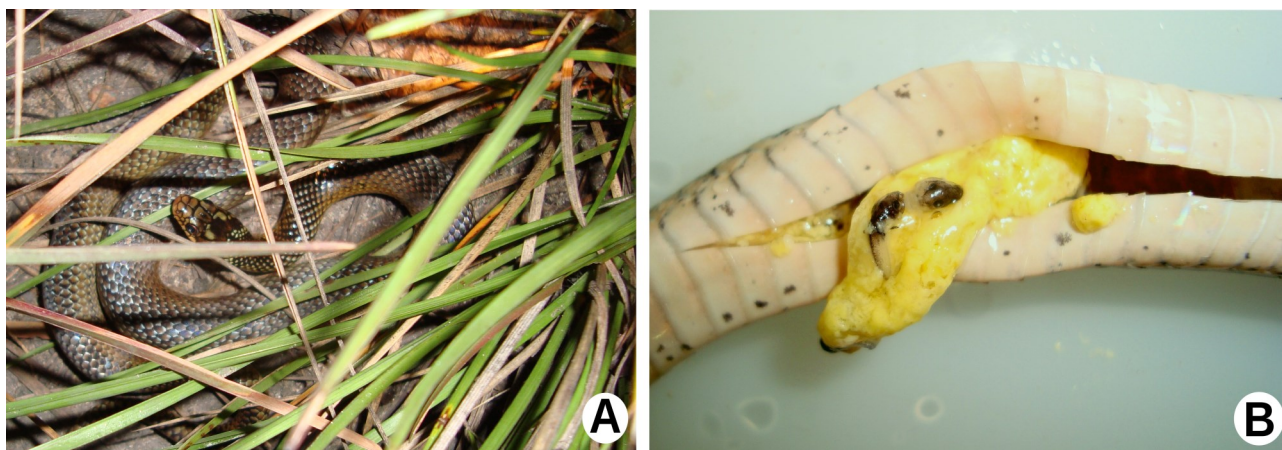


Figure 1. A) *Erythrolamprus poecilogyrus* close to a *Leptodactylus fuscus* spawning. B) Stomach content of *E. poecilogyrus* captured preying on a *L. fuscus* nest spawning. Photos: Priscila Azarak.

single occasion, the presence of other individuals in the same area suggests that this snake may be an important predator of *L. fuscus* spawning.

Martins (1988) had reported some opened chambers containing remains of spawning of *Leptodactylus fuscus* in Lavrado, Roraima State. Nevertheless Martins (1988) observed nest predation by beetle larvae and birds *Gallinago gallinago* (Linnaeus, 1758). It is likely reproductive success of *L. fuscus* may be affected by predation.

The lack of reports of predation on *L. fuscus* tadpoles and eggs by *E. poecilogyrus* may be due to fast digestion of these prey items in comparison to adult vertebrates (Mourthé 2010). We also suggest that the predation on tadpoles and eggs of anurans may be common in Lavrado region due to their high availability in the environment. Due to the importance of field observations, we highlight the need of the continuity of this type of studies about natural history and ecological associations in the Lavrado of northern Brazil.

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