

## Myiasis on *Hypsiboas atlanticus* (Caramaschi and Velosa, 1996) (Anura: Hylidae) from southern Bahia, Brazil

Renan Manoel de Oliveira<sup>1\*</sup>, Caio Vinicius de Mira Mendes<sup>1,2</sup>, Danilo Silva Ruas<sup>1,2</sup>, Mirco Solé<sup>3</sup>,  
Luiz Carlos Pinho<sup>4</sup> and Raoni Rebouças<sup>1</sup>

The infestation by larvae of Diptera in live vertebrates is called myiasis and affects humans and domestic and wild animals (Zumpt, 1965). In anurans, myiasis are usually caused by flies belonging to the Calliphoridae, Chloropidae and Sarcophagidae families (Kraus, 2007). Myiasis cases have been registered in seven families of neotropical anurans, all involving sarcophagid Diptera (Travers and Townsend, 2010; Gómez-Hoyos, Suárez-Joaqui and Marín-Gómez, 2012). Myiasis caused by sarcophagid flies have so far only been reported for two species of tree-frogs (Hylidae) (Eizemberg, Sabagh and Mello, 2008; Mello-Patiu and Luna-Dias, 2010): *Aplastodiscus arildae* (Cruz and Peixoto, 1987) and *Hypsiboas beckeri* (Caramaschi and Cruz, 2004). Herein, we present the first record of parasitism on *Hypsiboas atlanticus* (Caramaschi and Velosa, 1996) caused by sarcophagid flies.

Fieldworks were carried out at Michelin Ecological Reserve (13°49'35" S, 39°08'32" W), localized in the municipality of Igrapiúna, Bahia state, Brazil. On September 10th, 2011 at 09:30 p.m., a moribund individual of *H. atlanticus* (Fig. 1A) (MZUESC 10604) was found at the border of a forest fragment. It was caught, placed in a plastic bag and carried to the laboratory. After two hours the specimen died and was fixed together with the larvae in 10% formalin solution and preserved in 70% ethanol.

Another individual of *H. atlanticus* (Fig. 1B) was found in a permanent pond during a survey on 5 October 2011, at 11:40 p.m. After 12 hours the individual died and one larva (Fig. 2) was removed from the carcass and preserved in 70% ethanol. The carcass was placed in a container in order to obtain flies for species identification, but unfortunately no larvae completed metamorphosis.

In both individuals the larvae were found in wounds above the cloaca. At the moment of capture the specimens appeared to be healthy, except for the hind limb movements. Dissection of the first individual revealed the presence of four sarcophagid larvae and muscular injuries. The identification to lower taxonomic levels in Diptera is only possible rearing larvae to obtain adult flies (for procedures see Bolek and Janovi, 2004 and Eizemberg, Sabagh and Mello, 2008). As other hylids, *H. atlanticus* is a nocturnal species and probably hides within leaves, branches and trunks of vegetation during the day (Nunes and Costa, 2011), in contrast with diurnal habit of most sarcophagid flies (Shewell, 1987). Myiasis in anurans involve unfamiliar mechanisms: in some parasite species, larvae must burrow through frog skin and thus overcome the chemical barriers, some of which are very toxic (Crump and Pounds, 1985; Hagman, Pape and Schulte, 2005). Most sarcophagid species which cause myiasis in humans are reported to be secondary invaders of wounds and sores (Shewell, 1987), a possible, but until now not observed infection mode in anurans.

Host-parasite interactions between dipterans and anurans in the Neotropical region are still poorly known. This is only the third reported case of myiasis involving hylid frogs and sarcophagid flies in South America. Death of anurans by sarcophagid parasites might be a widespread event in Neotropics, and its observation in nature is difficult due to rapid death and consumption of small hosts (snout vent length less than 30 mm) carcass (Hagman, Pape and Schulte, 2005). The identification of fly species is necessary to allow a better understanding

1 Graduate Program in Zoology, Universidade Estadual de Santa Cruz, Rodovia Ilhéus-Itabuna, km 16, 45662-900 Ilhéus, Bahia, Brazil.

2 Graduate Program in Ecology and Biodiversity Conservation, Universidade Estadual de Santa Cruz, Rodovia Ilhéus-Itabuna, km 16, 45662-900 Ilhéus, Bahia, Brazil

3 Department of Biological Sciences, Universidade Estadual de Santa Cruz, Rodovia Ilhéus-Itabuna, km 16, 45662-900 Ilhéus, Bahia, Brazil.

4 Department of Ecology and Zoology, Universidade Federal de Santa Catarina, Campus Trindade, 88040-900, Florianópolis, Santa Catarina, Brazil.

\*Corresponding author;  
e-mail: renan29\_oliveira@yahoo.com.br



**Figure 1.** **A.** First individual of *H. atlanticus* (MZUESC 10604) collected at Michelin Ecological Reserve, Ituberá, Bahia, Brazil showing larvae inside the body. **B.** Second individual found with wound and larvae above cloaca.



**Figure 2.** Sarcophagid larva removed from carcass of the second *H. atlanticus* collected at Michelin Ecological Reserve, Ituberá, Bahia, Brazil.

of this ecological interaction (Mello-Patiu and Luna-Dias, 2010) and the impacts of sarcophagid flies in hylid populations requires further study.

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