

Predation on *Dendropsophus soaresi* (Anura: Hylidae) by a diving beetle (Coleoptera: Dytiscidae) in Raso da Catarina, north-eastern Brazil

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Predation is one of the principal causes of mortality in natural populations of anurans, and may occur throughout their ontogenetic cycle (Wells, 2007). A number of invertebrates have been identified as potential predators of anurans (Toledo, 2005), including hemipterans (Pombal, 2007), spiders (Menin, Rodrigues and Azevedo, 2005), scorpions (Villanueva-Rivera, Joglar and Li-Objio, 2000), and ants (Zuffi, 2001). While published reports of predation on adult anurans are scarce, events involving small-bodied species may be relatively common (McCormick and Polis, 1982; Toledo, Ribeiro and Haddad, 2007).

Dendropsophus soaresi (Caramaschi and Jim, 1983, Picos Treefrog) is a small-bodied hylid (mean SVL = 30.9 mm) endemic to Brazil. The species is part of the *Dendropsophus marmoratus* species group (Faivovich et al., 2005). *Dendropsophus soaresi* is a relatively common species native to the caatinga scrublands of north-eastern Brazil, ranging from the state of Ceará to northern Minas Gerais (Frost, 2011). Vocalizing males can typically be found perched in bushes or herbaceous plants adjacent to temporary pools, in which they reproduce (Vieira, Santana and Arzabe, 2007).

The event reported here was recorded during the rainy season, at the edge of a temporary pool in the caatinga scrub of the Raso da Catarina Ecological Station in Bahia, Brazil (-9.916944°S, -38.698611°W, elevation 444 m, Datum SAD-69). During the collection of tadpoles at 06.54 h on February 26, 2011, a diving beetle (Coleoptera, Dytiscidae) was observed preying on an adult male *D. soaresi* (31.1 mm SVL). When encountered, the beetle was grasping the right thigh of the frog with its mandibles and front legs. While

the frog was motionless when retrieved, involuntary spasms were observed soon after it was taken from the water. Photographs were taken *in situ* (Fig. 1a). Closer examination revealed that the frog was an adult male, with a well-developed vocal sac. The skin and muscle of the thigh had been completely dilacerated (Fig. 1b), exposing the bone, and the tibiofibula and toes of the right foot had a number of bite marks. Both specimens were collected and deposited at the Federal University of Sergipe, Brazil, in the herpetology and entomology collections, under catalogue numbers C1740 and CEUFS 0002, respectively.

This is the first record of the predation of an adult anuran by a diving beetle in the Brazilian Caatinga biome, and the first report for *D. soaresi*. While the exact moment of capture was not observed, it seems likely that the frog was alive when attacked, given that it was still spasming, and in particular that most predatory dytiscids are visually-oriented (Lundkvist et al., 2003). The event reported here occurred following a night of intense reproductive activity when the largest number of *D. soaresi* (n = 26) was vocally active during the study period at this site. This reinforces the idea that these anurans may be more vulnerable to predation during this activity, which is supported by a number of other reports (e.g. Bastos, Oliveira and Pombal, 1994; Haddad and Bastos, 1997; Toledo, 2003). While anurans, especially immature stages, are probably very vulnerable to predation by diving beetles in lotic habitats, there are few published records, and little photographic evidence exists (Pombal, 2007).

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Figure 1. a) Diving beetle (Dytiscidae) preying on an adult male *Dendropsophus soaresi*, Bahia, Brazil, Photo by C. R. Santos-Silva; b) Remains of the adult male *D. soaresi* captured by a diving beetle, Photo by A. S. Ferreira.

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