First record of tail bifurcation in *Tropidurus hygomi* Reinhardt & Lütken, 1862 (Squamata: Tropiduridae) in northeast Brazil

Tainara L. Silva*, Bruno F. Fernandes, Rony P. S. Almeida, Victor Hugo G. Chagas, Eduardo J. R. Dias

Laboratório de Biologia e Ecologia de Vertebrados, Departamento de Biociências, Universidade Federal de Sergipe, Campus Alberto de Carvalho, 49500-000 Itabaiana, SE, Brazil.
* Corresponding author. E-mail: *tainara.lima2@outlook.com*
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Lizard tails play an important role in locomotor performance and energy reserve, related to social aspects (Bateman & Fleming, 2009). Tail condition can affect individual fitness as it is directly involved in basic activities such as foraging, mating (acquiring potential mates) and escaping predators (Arbour & Zanno, 2018). However, lizard caudal malformations have been frequently reported and typically consist of a bifurcation/multifurcation of the tail (Barr et al., 2020), usually developed during the regeneration process following autotomy (Bateman & Fleming, 2009; Barr et al., 2020).

Lizards have an excellent ability to repair various tissues (muscular, osteological and neuronal) and a remarkable ability to regenerate their autotomized tails (Alibardi, 2010). However, some factors can increase the probability of abnormal regeneration, such as incomplete autotomy, where the tail does not fully detach, but breaks enough to stimulate tail regrowth, or through caudal wounds in species that have reduced or lost completely the ability to autotomize their tails (Barr et al., 2020).

Tail bifurcation has been recorded for a variety of lizard families. Barr et al. (2020) in a global meta-analysis on abnormal tail regeneration, found 425 observations in 22 families, 97 genera and 175 species with a bi/trifurcated tail. Among these records, for Tropiduridae, tail bifurcation was recorded only for

Microlophus bivittatus (Peters, 1871) (Colwell, 1992), *M. delanonis* (Baur, 1890) (Barr et al., 2020), species of the *Tropidurus torquatus* group (Martins et al., 2013), *T. semitaeniatus* (Spix, 1825) (Passos et al., 2014), and *T. hispidus* (Spix, 1825) (Brasileiro, 2021).

Tropidurus hygomi Reinhardt & Lütken, 1862 is a diurnal tropidurid lizard. This species is endemic of *restinga* habitats of northeastern Brazil, with geographic distribution from the north coast of the state of Bahia to the north coast of the state of Sergipe (Vanzolini & Gomes, 1979; Xavier & Dias, 2015), with a disjunct population in the Serra de Itabaiana National Park, Sergipe (Carvalho, 2013). It is classified as a vulnerable species in Brazil (MMA, 2022). In this work, we report the first record of *T. hygomi* with abnormal tail regeneration.

We encountered a young female with a bifid tail (Fig. 1) on 18 December 2020, 4:22 p.m., during fieldwork in an area of *restinga* in the village of Aguilhadas (36°50′37″W, 10°41′37″S), Pirambu, Sergipe, Brazil. The bifurcation point was at the end of the tail (Fig. 1), and the right branch of the tail was slightly longer than the left. The regenerated bifurcation region had a different color and shape from the original portion of the tail. The lizard was captured, photographed (SISBIO/ICMBio, n° 76724-1) and released at the capture site.

The discrete bifurcation at the end of the tail, with no complete break of the main structure, suggests an incomplete autotomy, with an additional tail growing from the point of injury (Bateman & Fleming, 2009), and the malformation apparently did not reduce the lizard's mobility. However, tropidurids are territorial and use the tail in intraspecific defensive behavior (Bruinjé et al., 2019), and in reproductive behavior (Siqueira et al., 2019). Thus, it is possible that the individual of *T. hygomi* with caudal malformation has a disadvantage in social status, which may result in a decline of its reproductive fitness (Barr et al., 2020).

Although tail malformations have been recorded for many lizard taxa, these anomalies are rare on a population scale (Hayes et al., 2012), and there is a scarcity of knowledge about their frequency. In our surveys, abnormal tails represented one of 67 individuals of *T. hygomi* observed in approximately nine hours of sampling effort, suggesting the low incidence of tail bifurcation in the species. It is possible that the low incidence is related to the decrease in survival rates of individuals with abnormal tails, possibly because of reduced escape capacity (Gamble et al., 2015).

Despite many species of Tropiduridae being subject of ecological studies, tail bifurcation has been reported less than

10 times within this family (Barr et al., 2020). Therefore, such records are important to fill gaps in the knowledge about the rates of this caudal anomaly.

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Figure 1. Tail bifurcation of *Tropidurus hygomi* in an extension area of Restinga in the village of Aguilhadas, municipality of Pirambu, Sergipe.