

Notes and Comments

Thanatosis behavior during oviposition in *Tropidurus itambere* Rodrigues, 1987

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Feigning death is a well-known behavior, presented by many animal species, being reported for both invertebrates and vertebrates (Humphreys and Ruxton, 2018), including insects (Acheampong and Mitchell, 1997; Cassill et al., 2008), fishes (Howe, 1991; Freret-Meurer et al., 2016), amphibians (Toledo et al. 2010), lizards (Santos et al., 2010; Castro et al., 2017), snakes (Gregory et al., 2007; Muscat et al., 2016), mammals (Francq, 1969), and birds (Sargeant and Eberhardt, 1975). In all these cases, this behavior is linked to an innate anti-predator response that acts reducing predation probability (Endler, 1986, Gomes et al., 2004) or simply discouraging attacks from predators (Greene, 1988; Rogers and Simpson, 2014), ultimately avoiding injuries such as caudal autotomy (Torres-Cervantes et al., 2004).

Tropidurus itambere (Rodrigues, 1987) (See in Figure 1) belongs to the *Tropidurus torquatus* species group (*sensu* Frost et al. 2001), whose representatives are broadly distributed in open-dry landscapes of cis-Andean South America (Carvalho 2013). Individuals of this species group have, in general, small to medium body size and are diurnal ambush hunters, with their peak of activity between 10:00h and 15:00h (Araújo, 1987, Van Sluys, 1993). *Tropidurus itambere* is a cryptic species that inhabits rock outcrops in the Brazilian Cerrado (Carvalho, 2013). This species mainly preys on termites and ants (Van Sluys, 1993, Faria, 2001, Faria and Araújo, 2004), and performs its basking behavior at ground level or above rocks (Nunes et al. 2007). Male *T. itambere* can mate during the entire year, whereas females have their reproductive period restricted to the rainy season, between September and April (Ferreira et al., 2011).

On October 31 2019, at 18:22, during a field trip to the Parque Municipal do Bacaba, Municipality of Nova Xavantina, State of Mato Grosso, Brazil (14° 43' 12.2 "S and 52° 21' 36.7" W), we observed an adult female of *Tropidurus itambere* (Figure 1A) on a path (substrate composed by leaf litter, small rocks and sand) barely exposed to sunlight that leads to the interior of the park. When approached, the female remained still. We manually captured the specimen to check for signs of injuries and then noticed that it was alive and laying an egg, while exhibiting

thanatosis behavior. The female remained completely motionless while being manipulated, exhibiting relaxed muscles and closed eyes, as reported for other tropidurids (Bertoluci et al., 2006). After handling, the individual was released and kept the thanatosis posture when placed on the ground for 17 seconds, without any escape behavior, and only started moving again (slowly) a few seconds after being released on the ground at a distance of 3-4 meters.

Nunes et al. (2012) compiled a list of anti-predator behaviors of *T. itambere* and observed that death feigning (thanatosis) was one of the less used by females, juveniles, and males of the species (about 10% of the studied cases). We observed that, in general, the first attempt to escape after spotted is by locomotory escape. Here, we report a different situation in which the female did not attempt to escape and did not perform any of the listed behaviors except for feigning death. We also report that this female, while feigning death, remained with its eyes closed as did the juveniles reported by Nunes et al. (2012). However, because this was an one-time observation, we cannot assure that this is valid for all other females in the population, in addition to being an observation out of captivity.

As reported by Nunes et al. (2012), non-gravid individuals of *T. itambere* show behavioral differences from their conspecifics but all of them have a cryptic coloration to avoid detection and perform tail waving and biting to discourage predators. According to Bertoluci et al. (2006), feigning death is a primitive characteristic of tropidurids and acts by making the predator lose its interest in the prey, increasing the probability of escape. However, for females that are in the process of laying eggs, it is plausible to think that thanatosis has a lower energetic cost compared to the other behaviors. When carrying the egg attached to your body, even if the female is predated, there was a chance of survival for the offspring. The great number of known defensive behaviors presented by *T. itambere* indicates that the species evolved in a predator-rich environment (Nunes et al., 2012) and developed many strategies to avoid predation. (Retiramos a última sentença conforme solicitação do Avaliador C)

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Figure 1. Specimen of *Tropidurus itambere* (A) and (B) performing of Thanatosis during oviposition. Collected at Parque Municipal do Bacaba, Nova Xavantina, Mato Grosso state, Brazil.

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