

Scientific note**Outdoor enclosure to behavioral observations of lizards****Juliana Vaz e Nunes¹, Thiago Elisei¹ & Bernadete Maria de Sousa¹**

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Lizards provide an excellent model system for studying signal evolution (LANGKILDE *et al.*, 2003). In the lastest years, many studies about the behavior of these animals have been made (e.g., WHITTIER & MARTIN, 1992; HURD, 2004; KOHLSDORF *et al.*, 2006; RADDER *et al.*, 2006; KIEFER *et al.*, 2007; LABRA *et al.*, 2007; MACHADO *et al.*, 2007). Several works were executed in artificial outdoors enclosures as for ethograms elaboration (e.g., BRATTSTROM, 1971; PERRILL, 1980; TORR & SHINE, 1994; JENNINGS & THOMPSON, 1999; LANGKILDE *et al.*, 2003; PANDAV *et al.*, 2007). The results of these works were quite satisfactory, demonstrating the efficiency of the studies accomplished with behaviors of lizards through observations made in artificial outdoors enclosures.

The observations in artificial enclosures create opportunities for closer scrutiny, however, in field there is a larger diversity of alternative actions available (JENSSEN *et al.*, 1995). Ideally, findings in both kinds of studies would inform each other in reciprocal fashion as recommended by GREENBERG (1995). According to GREENBERG (2003), in many specific details, particularly those involving fixed action patterns and social displays, observations in artificial enclosures are much like those seen in the field.

On January 2007 we made an enclosure of transparent plastic canvas (Fig.1), inside of an area of 36m³ walled and covered with wire screen with mesh of 5 cm, external to the dependences of the

Advanced Laboratory of Zoology of the Universidade Federal of Juiz de Fora, in the Campus of UFJF, situated at the Municipality of Juiz de Fora, Minas Gerais State, Brazil (21° 41' 20" S and 43° 20' 40" W), for the observation and description of adult individuals behavioral repertoire of the saxicolous lizard *Tropidurus itambere* RODRIGUES, 1987, from a rocky outcrop area situated at the State Park of Ibitipoca, Minas Gerais State, Brazil (21°40' - 21°44'S and 43°52' - 43°55'W) which measured on the average of 77,7mm SVL (snout – vent length). The external fence provided protection against predators and other animals or persons that could interfere in the experiments.

For the enclosure construction eight wood stakes with about 70 cm of length each were buried 15cm under an earth substrate, forming a rectangle measuring 250 cm length and 150 cm width. Soon after, we involved twine at 5 cm of the top of each stake uniting them, forming a twine rectangle, 50 cm above the soil, that would serve as support for the plastic canvas that would form the walls and the ground of the enclosure. The plastic canvas, material chosen due to its high resistance, durability, low cost and easy manipulation, was placed on the ground, covering it, and it was let to exceed for the four sides, on the twine, about 60 cm of canvas that would form the walls of the enclosure. The plastic canvas was, then, fastened to the stakes through staples. The



Figure 1. Outdoor enclosure, after the nine months of study, located in the Campus of Universidade Federal of Juiz de Fora, Minas Gerais State, Brazil, for description of adult individuals behavioral repertoire of the saxicolous lizard *Tropidurus itambere*.

wood stakes were placed externally to canvas to avoid that the lizards could use it as a support in the escalades and could escape from the enclosure since the individuals slipped in the plastic and they could not go up it. Small holes were made in the plastic that covered the ground of the enclosure, so that the drainage of water in days of rain could be possible.

The enclosure was built in a place that provided sunny and shadowed areas to lizards, with the use of some tiles on the superior screen of the external area. The ground was covered with gravel and pieces of tiles, branches and large blocks of rock were also placed there so that they would function as sites for thermoregulation, exhibition of behaviors and as burrows. Water was available *ad libitum* and lizards were able to feed on insects that frequently entered the enclosure, which was checked by the observations, in several situations, of captures and ingestion mainly of ants and coleoptérons by the individuals.

The structure that was built has shown resistance to the climatic variations (sun, wind and rain), great durability, staying in good conditions during the nine

months of studies (January to September 2007), period in which the outdoor enclosure remains mounted. Its use has facilitated the observations during the behavioral studies with *T. itambere* during this period, having allowed us the elaboration of an ethogram for adult individuals for the species, contends 72 behavioral acts. This result proves the success of this type of outdoor enclosure for elaboration of lizard's ethograms.

Besides, the enclosure has shown advantages due to its easy and fast construction and the possibility to be made in several dimensions, in agreement with the size and the needs of the lizard chosen as study object and for allowing the animals, when necessary, to stay overnight in the place during rainy days, due to the drainage holes that were made in the plastic that covered the ground. The drainage system facilitated also because the enclosure could stay during the whole study period in the same place, without the need of its removal. The materials used for the construction of the enclosure were of low cost and easy to find, which allows, if necessary, the quick repair of its structure.

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