

An endemic lizard of Catimbau National Park, Pernambuco, Brazil, as prey of *Tropidurus cocorobensis* (Squamata, Tropiduridae)

Patricia Marques do A. Oliveira^{1*} and Pedro M. Sales Nunes¹

The 30 species currently recognized in the genus *Tropidurus* occur in cis-Andean South America, occupying open habitats of Venezuela, Guyana, Suriname, and French Guiana in the north, to northern Argentina and Uruguay in the south, covering almost the entire Brazilian territory (Rodrigues, 1988; Uetz, 2010). Considering the neotropical lizards, the species of *Tropidurus* are among the most studied regarding dietary aspects (Cooper and Vitt, 2002; Van Sluys, 2004; Kolodiuk, 2010; Ribeiro, 2011; Ferreira, 2017). Most of these studies have characterized tropidurids as highly generalist taxa, usually with insect predominance in their diet items (Cooper and Vitt, 2002; Kolodiuk, 2010). However, several others fewer common diet items were already recorded, including plants (Cooper and Vitt, 2002; Ribeiro, 2011), mammals (Gasparini and Peloso, 2007) and amphibians (Vitt et al., 1996; Costa et al., 2010). In fact, even others lizards (including cases of cannibalism) are used as alimentary resources (Araujo, 1987; Vitt, 1995; Kiefer and Sazima, 2002; Dias and Rocha, 2004; Kohlsdorf et al., 2004; Van Sluys, 2004; Kiefer et al., 2006; Costa, 2010; Sales, 2011; Zanchi, 2012; Costa-Campos and Souza, 2013; Passos, 2016), this behaviour is known and reported as saurophagy (Passos et al., 2016). The saurophagy behaviour is reported for some species but described as an opportunistic habit of the genus (Passos et al., 2016).

Despite the abundance of studies involving tropidurid lizards, some species have their dietary items poorly

or completely unknown, as *Tropidurus cocorobensis* Rodrigues, 1987. This is a psammophilic, terrestrial and diurnal species distributed in northeastern Brazil, in semi-arid environments of the Caatinga ecosystem (Rodrigues, 1987; 2003). As part of the researches developed in a long term ecological study in the Catimbau National Park – a conservation unit of about 62,000 ha, located in the state of Pernambuco, Brazil (8°24'00"S and 8°36'35"S; 37°09'30"W and 37°14'40"W) (ICMBio, 2018) – the dietary items of three *Tropidurus* sympatric species were analysed: *T. cocorobensis* (37 specimens), *T. hispidus* (Spix, 1825) (26 specimens) and *T. semitaeniatus* (Spix, 1825) (37 specimens). As result we found a partially digested specimen of the gymnophthalmid lizard *Scriptosaura catimbau* Rodrigues and Santos, 2008 (CRC= 56mm) (Fig.1A, C) in the stomach of a male of *Tropidurus cocorobensis* (CRC= 81mm) (Fig.1B, C). The specimens were collected in June 2017 through pitfall traps installed in an open sandy area, with scattered shrubs and little shade. The predator was incorporated in the Herpetological Collection of Federal University of Pernambuco (CHUFPE). *Scriptosaura catimbau* is a microendemic species, with its known distribution restricted to the area of the Catimbau National Park. This species is a sand swimming lizard, characterized by the elongated body, absence of eyelids, absence of anterior limbs, posterior limbs reduced to styloid appendages, and absence of prefrontal, frontal, frontoparietal and supraocular scales (Rodrigues and Santos, 2008), recently included in the official list of threatened species to the Pernambuco state produced by Secretaria de Meio Ambiente e Sustentabilidade de Pernambuco (SEMAS, 2017), with the status "Vulnerable".

Even considering all the tropidurids analysed in this study and the literature, no other cases of saurophagy were recorded for *Tropidurus cocorobensis*, supporting this event as rare and opportunistic, as reported to other

¹ Universidade Federal de Pernambuco, Centro de Biociências,
Departamento de Zoologia, Av. Prof. Moraes Rego 1235.
Cidade Universitária CEP 50670-901, Recife, PE, Brazil.

* Corresponding author. E-mail: pati.marques18@gmail.com

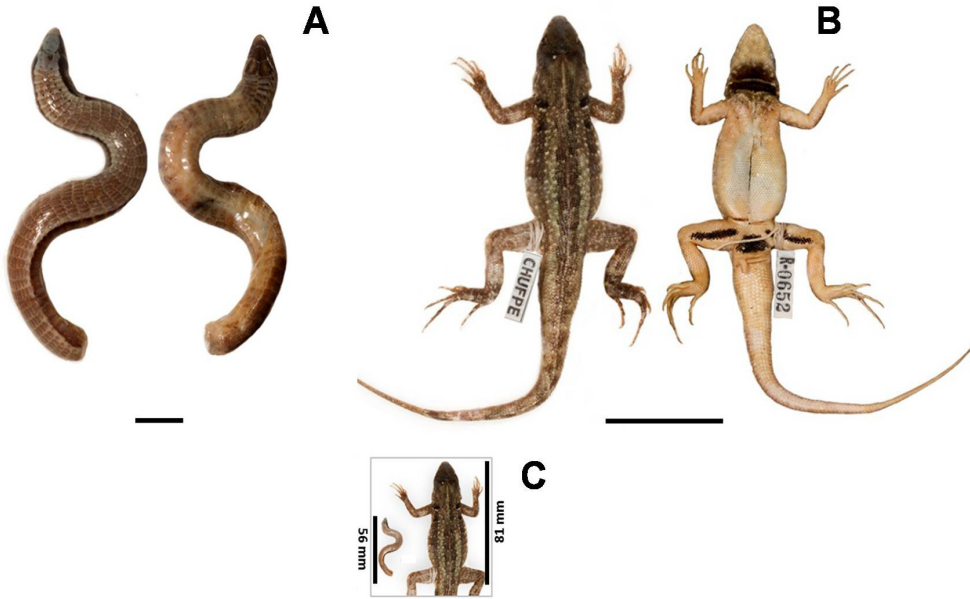


Figure 1. A: Dorsal and ventral views of the ingested *Scriptosaura catimbau* specimen. B: Dorsal and ventral view of the *Tropidurus cocorobensis* (CHUFPE R-0652) specimen. Scale: 1cm. C: Specimens in proportional size to comparison of predator-prey measures.. Photos: Marcos Dubeux.

species in the genus (Passos et al., 2016). Additionally, to our knowledge there are no other reports of saurophagic events involving *Scriptosaura catimbau* as prey. Some factors that may be related to this apparent rarity can be pointed out. First, the very restrict distribution of *S. catimbau* prevents this particular prey as a frequent item of *T. cocorobensis* throughout its distribution, added to its different habits (fossorial and psammophilic). Additionally, the two individuals were trapped in the same bucket, with no other sources of food during the hours between the daily reviews of the traps and the unusual conditions of distress could have led to the predation event reported here.

Thus, this study presents the first report of saurophagy in the species *Tropidurus cocorobensis*, where a micro-endemic and threatened gymnophthalmid lizard was the prey. Records like these are important for a better understanding about both species autoecology, in addition, they are predictors for future studies.

Acknowledgements. We thank ICMBIO (Chico Mendes Institute) for permissions 48805-2, 52060-1, 46368-1 and CEUA-UFPE (Animal Ethics Committee) 0048/2018. We are also grateful for PELD Catimbau-CNPq (Long Term Ecological Project - Catimbau), Fundação de Amparo à Ciência e Tecnologia do Estado de Pernambuco (FACEPE, Proc # APQ-0617-2.04/18),

Conselho Nacional de Desenvolvimento Científico e Tecnológico CNPq (Proc.# 313622/2018-3) for the support and Marcos Dubeux for the photos used in this study.

References

- Araújo, A.F.B. (1987): Comportamento alimentar dos lagartos: o caso dos *Tropidurus* do grupo *torquatus* da Serra dos Carajás, Pará (Sauria: Iguanidae). *An. Etol.* **5**: 203–234.
- Cooper W. E. Jr., Vitt L.J. (2002): Distribution, extent, and evolution of plant consumption by lizards. *J. Zool.* **257**: 487–517.
- Costa-Campos C. E., Souza N.S. (2013): *Tropidurus hispidus* (Peters' Lava Lizard). Saurophagy. *Herpetological Review* **44**: 215–216.
- Costa, J. C. L., Manzani, P. R., MP, D. L. B., & Maciel, A. O. (2010): *Tropidurus hispidus* (Calango). *Prey. Herpetological Review* **41**: 87.
- Dias, E.J.R. & Rocha, C.F.D. (2004): *Tropidurus hygomi* (NCN). Juvenile predation. *Herpetol. Rev.* **35**: 398–399.
- Ferreira, A. S., de Oliveira Silva, A., da Conceição, B. M., & Faria, R. G. (2017): The diet of six species of lizards in an area of Caatinga, Brazil. *British Herpetological Society* **26**: 151–160.
- Gasparini, J.L. & Peloso, P.L. (2007): *Tropidurus torquatus* (Brazilian Collared Lizard). *Diet. Herpetol. Rev.* **38**: 464.
- Kiefer, M.C. & Sazima, I. (2002): *Tropidurus montanus* (NCN). Cannibalism. *Herpetol. Rev.* **33**: 136.
- Kiefer, M.C., Siqueira, C.C., Van Sluys, M. & Rocha, C.F.D. (2006): *Tropidurus torquatus* (Collared Lizard, Calango). *Prey. Herpetol. Rev.* **37**: 475–476.

- Kohlsdorf, T., Godoy, C. & Navas, C.A. (2004): *Tropidurus hygomi* (NCN). Cannibalism. *Herpetol. Rev.* **35**: 398.
- Kolodiuk, M. F., Ribeiro, L. B., & Freire, E. M. (2009): The effects of seasonality on the foraging behavior of *Tropidurus hispidus* and *Tropidurus semitaeniatus* (Squamata: Tropiduridae) living in sympatry in the Caatinga of northeastern Brazil. *Zoologia (Curitiba)* **26**: 581–585.
- Passos D. C., Monteiro F. A. C., Nogueira C. H. O. (2016): Dangerous neighborhood: saurophagy between syntopic *Tropidurus* lizards. *Biota Neotropica* **16**:1–5.
- Pergentino, H.E.S.; Nicola, P.A.; Pereira, L.C.M.; Novelli, I.A.; Ribeiro, L.B. (2017): A new case of predation on a lizard by *Tropidurus hispidus* (Squamata, Tropiduridae), including a list of saurophagy events with lizards from this genus as predators in Brazil. *Herpetology Notes* **10**: 225–228.
- Ribeiro L. B.; Freire E. M. (2011): Trophic ecology and foraging behavior of *Tropidurus hispidus* and *Tropidurus semitaeniatus* (Squamata, Tropiduridae) in a caatinga area of northeastern Brazil. *Iheringia Ser. Zool.* **101**: 225–32.
- Ribeiro, L.B., Brito, M.S., Barbosa, L.F.S., Pereira, L.C.M., Nicola, P.A. (2012): *Tropidurus cocorobensis* Rodrigues, 1987 (Squamata, Tropiduridae): new record and geographic distribution map in northeastern Brazil. *Cuadernos de Herpetología* **26**: 63–65.
- Rodrigues, M.T. (1988): Distribution of lizards of the genus *Tropidurus* in Brazil (Sauria, Iguanidae). In: Vanzolini, P.E. & Heyer, W.R. (Eds.), Proceedings of a workshop on neotropical distribution patterns, p.305–315. Academia Brasileira de Ciências, Rio de Janeiro.
- Rodrigues, M.T. (2003): Herpetofauna da Caatinga. in: Leal, I.R.; Tabarelli, M.; da Silva, J.M.C. (Eds), *Ecologia e conservação da caatinga*, p. 181–235. Editora Universitária UFPE, Pernambuco, Brasil.
- Rodrigues, M.T., Santos, E.M. (2008): A new genus and species of eyelid-less and limb reduced gymnophthalmid lizard from northeastern Brazil (Squamata, Gymnophthalmidae). *Zootaxa, Magnolia Press* **1873**: 50–60.
- Sales, R.F.D., Jorge, J.S., Ribeiro, L.B. & Freire, E.M.X. (2011). A case of cannibalism in the territorial lizard *Tropidurus hispidus* (Squamata: Tropiduridae) in Northeast Brazil. *Herpetol.* **4**: 265–267.
- SEMAS, 2017. Resolução SEMAS nº 1 DE 15/05/2017 - Lista de Espécies de Répteis Ameaçadas para o Estado de Pernambuco. Diário Oficial do Estado de Pernambuco, May 16th 2017.
- Van Sluys, M., Rocha, C. F. D., Vrcibradic, D., Galdino, C. A. B., & Fontes, A. F. (2004). Diet, Activity, and Microhabitat Use of two Syntopic *Tropidurus* Species (Lacertilia: Tropiduridae) in Minas Gerais, Brazil. *Journal of Herpetology* **38**: 606–611.
- Vitt, L.J. (1995). The ecology of tropical lizards in the Caatinga of Northeast Brazil. Occasional papers of the Oklahoma Museum of Natural History, University of Oklahoma, Norman, Oklahoma **1**: 1–29.
- Vitt, L.J., Zani, P.A. & Caldwell, J.P. (1996). Behavioural ecology of *Tropidurus hispidus* on isolated rock outcrops in Amazonia. *J. T. Ecol.* **12**: 81–101.
- Uetz, P. (2010): *Tropidurus*. The Reptile Database. Available at: <http://www.reptile-database.org>. Accessed on 7 August 2019.
- Zanchi D., Passos D.C., Borges-Nojosa D.M. (2012). *Tropidurus hispidus* (Calango). *Saurophagy. Herpetological Review* **43**: 141–142.