PREDATION OF *SCINAX ALTER* (ANURA: HYLIDAE) AND *LEPTODACTYLUS OCELLATUS* (ANURA: LEPTODACTYLIDAE) BY *LIOPHIS MILIARIS* (SERPENTES: COLUBRIDAE)

C.A. Figueiredo de Andrade

1 - Universidade Estadual do Norte Fluminense Darcy Ribeiro, Centro de Biociências e Biotecnologia, Laboratório de Ciências Ambientais. Avenida Alberto Lamego 2000, CEP 28013 - 602, Campos dos Goytacazes, RJ, Brazil. 2 - Corresponding author: caio.herpeto@gmail.com

INTRODUCTION

Anuran amphibians are usually abundant, presenting small to medium size and the gregarious behavior displayed by a big number of species during the reproduction station makes it a potential prey to many classes of animals, since invertebrates until vertebrates (Duellman & Trueb, 1986; Toledo *et al.*, , 2007).

The hylid *Scinax alter* (Lutz, 1973) is widely distributed on the Brazilian coastline, occurring on open areas from the states of Bahia to Rio Grande do Sul, including Minas Gerais state (Silvano & Pimenta, 2001). It can be found calling on the vegetation nearby or above permanent, semi - permanent and temporary waterbodies (Izecksohn & Carvalho - e - Silva, 2001; Carvalho - e - Silva & Kwet, 2004). Although occurring in abundance along its distribution area, we are unaware of any records of predation over *Scinax alter*.

Leptodactylus ocellatus (Linnaeus, 1758) is widespread on South America east of the Andes, occurring since Venezuela until Argentina. It occurs on a big number of habitats, since open habitats in dry areas until humid tropical forests (Heyer *et al.*, , 2004). In addition, this species is well adapted to environmental disturbances and can be found on many secondary habitats and urban areas. It's frequently encountered nearby or inside ponds, lakes and flooded areas, where its reproduction takes place (Izecksohn & Carvalho - e - Silva, 2001).

The water snake *Liophis miliaris* (Linnaeus, 1758) is a medium sized xenodontine with a wide distribution, occuring from the Guianas to northeastern Argentina, being common in southeastern Brazil (Dixon, 1983; Dixon, 1989). This semiaquatic snake has diurnal and nocturnal activity (Sazima & Haddad, 1992), and inhabits moist areas, like swamps, lagoons, streams and even brackish water environments (Sazima & Haddad, 1992; Marques & Souza, 1997; Marques & Sazima, 2004). It is a diet generalist, actively foraging to find potential preys, like fish, amphibians and reptiles (see Lema *et al.*, , 1983; Michaud & Dixon, 1989; Sazima & Haddad, 1992; Machado *et al.*, , 1998; Marques & Sazima, 2004; Bonfiglio & Lema, 2006; Braz *et al.*, , 2006; Lingnau & Di - Bernardo, 2006; Toledo *et al.*, 2007), also showing scavenger habits (Sazima & Strüssmann, 1990).

OBJECTIVES

The aim of this work is to relate a record of predation over *Leptodactylus ocellatus* and *Scinax alter* by *Liophis miliaris*.

MATERIAL AND METHODS

An adult female *Liophis miliaris* (550 mm. snout - vent length; 17 - 17 - 15 dorsal, 151 ventral and 56 subcaudal scales) was collected on 01st February 2009, in a residential condominium located at Campos dos Goytacazes municipality, Rio de Janeiro state, Brazil (21o47'05"S, 41o19'12"W; elev. 13 m). The snake was killed by a condominium inhabitant and consigned to the author on 02nd February 2009. It was collected in an urban area that presents some floodable sites, admitting amphibian reproduction-especially during the raining season-and the occurrence of some snake species (Figueiredo de Andrade, C.A., pers. obs.). The stomach content of the snake was checked up, attempting to know the composition of the last dietary items ingested by it. A surgical scissor and a bistoury were used to do a ventral incision on the second third of the snake's body.

After being removed from the snake's stomach, the gut contents were immediately immersed on 70% alcohol, for posterior identification.

RESULTS AND DISCUSSION

By checking the stomach content up, two anuran species were found: a juvenile *Leptodactylus ocellatus* (ca. 24 mm

snout - vent length, by comparison with collection material), mostly digested, with only the head, one leg and one arm intact and an intact juvenile *Scinax alter* (19.5 mm snout - vent length). The anurans were found with the head appointed to the posterior portion of the snake's body, betokening that both species were ingested head first.

Previous works reported *Leptodactylus ocellatus* (including its nests) as prey of *Liophis miliaris* (Lema *et al.,* , 1983; Michaud & Dixon, 1989; Lingnau & Di - Bernardo, 2006), but the present work presents the first register of predation over *Scinax alter*, a tree frog species that presents arboreal habits, but can be found near to the water surface of waterbodies during the breeding season. Due to its habits, this anuran may be an unusual prey of *Liophis miliaris* even when both species occurs in syntopy. Though, anurans are cited by many authors as an important food resource on snake communities, being a significant dietary supply to these reptiles (Vitt, 1983; Vitt & Vangilder, 1983; Sazima & Haddad, 1992; Strüssmann & Sazima, 1993).

The snake and the frogs are housed in the herpetological collection of Museu de Zoologia João Moojen, Universidade Federal de Viçosa, at Viçosa municipality, Minas Gerais state, Brazil, under the following register numbers: MZUFV 1680 (*Liophis miliaris*); MZUFV 9744 (*Scinax alter*) and MZUFV 9745 (*Leptodactylus ocellatus*).

CONCLUSION

The study of diet and food habits of the Brazilian herpetofauna is important to get a better knowledge of the functioning and conservation status of many ecosystems. This work presents one more register of predation over *Leptodactylus ocellatus* and the first record of predation over *Scinax alter* by the water snake *Liophis miliaris*.

(I thank Kátia Valevski Sales Fernandes for collecting the snake, Diego J. Santana for assistance on the frogs' identification and Henrique C. Costa for suggestions on the manuscript.)

REFERENCES

Bonfiglio, F. & Lema, T. 2006. Ofiofagia em *Liophis miliaris* (Serpentes, Colubridae). Biociências 14(2): 221 - 222.

Braz, H.B.P., Lopes, P.H., Rocha, M.M.T. & Furtado, M.F.D. 2006. *Liophis miliaris* (Common water snake): Cannibalism. Herp. Bull. 97: 36 - 37.

Carvalho - e - Silva, S.P. & Kwet, A. 2004. *Scinax alter*. 2008 IUCN Red List of Threatened Species. In: IUCN 2008. Accessible at http://www.iucnredlist.org/details/55926. Captured on 30 March 2009.

Dixon, J.R. 1983. Taxonomic Status of the South American Snakes *Liophis miliaris*, *L. amazonicus*, *L. chrysostomus*, *L. mossoroensis* and *L. purpurans* (Colubridae: Serpentes). Copeia (3): 791 - 802.

Dixon, J.R. 1989. A key and checklist to the Neotropical snake genus *Liophis* with country lists and maps. Smithson. Herpetol. Info. Serv. 79: 1 - 40.

Duellman, W.E. & Trueb, L. 1986. Biology of amphibians. New York, McGraw - Hill, 670p.

Heyer, R., Langone, J., La Marca, E., Azevedo - Ramos, C., Tada, I., Baldo, D., Lavilla, E., Scott, N., Aquino, L. & Hardy, J. 2004. *Leptodactylus ocellatus*. 2008 IUCN Red List of Threatened Species. In: IUCN 2008. Accessible at http://www.iucnredlist.org/details/57151. Captured on 30 March 2009.

Izeckson, E. & Carvalho - e - Silva, S.P. 2001. Anfíbios do município do Rio de Janeiro. Rio de Janeiro: UFRJ, 148 p.

Lema, T., Araújo, M.L. & Azevedo, A.C.P. 1983. Contribuição ao conhecimento da alimentação e do modo alimentar de serpentes do Brasil. Comum. Mus. Ci. PUC - RS, Porto Alegre 26: 41 - 121.

Lingau, R. & Di - Bernardo, M. 2006. Predation on foam nests of two leptodactylid frogs by *Solenopsis sp.* (Hymenoptera, Formicidae) and *Liophis Miliaris* (Serpentes, Colubridae). Biociências 14(2): 223 - 224.

Machado, R.A., Bernarde, P.S. & Morato, A.A. 1998. *Liophis miliaris* (Common Water Snake). Prey. Herp. Rev. 29(1): 45.

Marques, O.A.V. & Souza, V.C. 1997. Notas sobre a atividade alimentar de *Liophis miliaris* no ambiente marinho (Serpentes, Colubridae). Rev. Bras. Biol. 53(4): 645 - 648.

Marques, O.A.V. & Sazima, I. 2004. História Natural dos Répteis da Estação Ecológica Juréia - Itatins. In: Estação Ecológica Juréia - Itatins: Ambiente Físico, Flora e Fauna. Cap. 22: 257 - 277.

Michaud, E.J. & Dixon, J.R. 1989. Prey items of 20 species of the neotropical colubrid snake genus *Liophis*. Herp. Rev. 20(2): 39 - 41.

Pombal - Jr, J.P. 2007. Notas sobre predação em uma taxocenose de anfíbios anuros no sudeste do Brasil. Revista Brasileira de Zoologia, 24(3): 841 - 843.

Sazima, I. & Haddad, C.F.B. 1992. Répteis da Serra do Japi: notas sobre história natural. In: História Natural da Serra do Japi. Ecologia e preservação de uma área florestal no Sudeste do Brasil. Cap. 10: 212 - 237.

Sazima, I. & Strüssmann, C. 1990. Necrofagia em serpentes brasileiras: exemplos e previsões. Rev. Bras. Biol. 50(2): 463 - 468.

Silvano, D.L. & Pimenta, B.V.S. 2001. Geographic Distribution. *Scinax alterus*. Herpetological. Review 32(4): 272.

Strüssmann, C. & Sazima, I. 1993. The snake assemblage of the pantanal at Poconé, western Brazil: faunal composition and ecological summary. Studies on the Neotropical Fauna and Environmental 28: 157 - 168.

Toledo, L.F., Ribeiro, R.S. & Haddad, C.F.B. 2007. Anurans as prey: an exploratory analysis and size relationships between predators and their prey. Journ. Zool. 271: 170 - 177.

Vitt, L.J. 1983. Ecology of anuran - eating guild of terrestrial tropic snakes. Herpetologica 39: 52 - 66.

Vitt, L.J. & Vangilder, L.D. 1983. Ecology of a snake community in northeastern Brazil. Amphibia - Reptilia 4: 273 - 296.