DIET AND FECUNDITY OF THE GLASS-LIZARD. *OPHIODES STRIATUS* (SAURIA. ANGUIDAE) FROM THE ATLANTIC FOREST IN SOUTHEASTERN BRAZIL

E.H. Barros & R.L. Teixeira

Museu de Biologia prof. Mello Leitão.Av. José Ruschi, no. 04. Santa Teresa ES. eduardohbarros@yahoo.com.br

INTRODUCTION

Lizards of tropical areas show a diversity of feeding habits, including carnivorous and herbivorous species and also a variety of foraging strategies. The same is true for reproductive patterns, even among species co-occurring in the same habitat or among members of the same species geographically separated in different populations. The greatest diversity of reproductive patterns occurs in the higher latitude tropics, which experience highly seasonal rainfall (Clerke & Alford, 1993). Most lizards are oviparous, and the evolution of viviparity is usually associated with reproductive adaptations to high latitute or high altitude habitats where environment temperatures are not conducing to egg development (Blackburn, 1982). Considerable variation exists in the degree of matrotrophy in viviparous reptiles (Blackburn et al., 1984).

Seasonal reproductive activity may be common in tropical lizards, and is often associated to the deterioration of egg deposition sites for oviparous species, or associated to the decline of food availability for adults or juveniles (Colli et al., 1997). Temperature is more likely to influence lizard reproduction in tropical areas that are montainous or hilly, where well defined winter and summer as well as dry and rainy seasons exist.

In the present study, we analyzed the diet and fecundity of the Glass-lizard, *Ophiodes striatus*, occurring in coffee plantations next to fragmented areas of the Atlantic Forest in the hilly region of Espírito Santo State, southeastern Brazil.

MATERIAL AND METHODS

The study was carried out in Alto Rio Saltinho (19º 55' S. 40º 32' W), situated in the municipality of Santa Teresa, Espírito Santo State, southeastern Brazil. The ground in the area has an inclination of approximately 45˚ and the study site is located at an altitude of ca. 700 m. The region has well defined winter (June, July and August) and summer (December, January and February) seasons. Fragments of the Atlantic forest occur on the hill tops. Extensive coffee plantations can be found on the slopes and shrub vegetation occurs around a small creek in the valley.

Individuals of *Ophiodes striatus* were collected monthly by hand by RLT along random transects from December 1994 to April 1996, between 08:00 and 18:00 h, were anesthetized with ether and promptly preserved in 10% formalin in order to interrupt digestion and after one week, they were washed and transferred to 70% alcohol.

RESULTS

The snout-vent length (SVL) of preserved specimens varied from 59.0 to 235.0 mm, and total mass varied between 1.2 and 52.7 g. The slope of the length-mass relationship was not significantly different between males and females, but the means of snout-vent length and mass differed. Females were larger and heavier than males. The main food types in the diet of *O. striatus* were Blattodea, followed by Araneae, and Orthoptera. Size of prey varied from 3.5 to 28.0 mm (mean = 18.1 mm). The mean of prey items per stomach was 2.4. *Ophiodes striatus* appears to be a diurnal predator. Of the 96 specimens collected, 36 were males, 46 females and 14 were not confidently identified to sex. Male / female sex ratio was 1:1.3. Twenty adult females (43.5%) were gravid. Of these, the smallest had a SVL of 161.0 mm. Litter size varied from 3 to 11. A positive relationship existed between clutch size and snout-vent length as well as clutch size and total mass.

DISCUSSION

The Glass-lizard *O. striatus* has successfully colonized areas now almost totally devoted to coffee plantations in southeastern Brazil. The remaining vegetation dries providing new microhabitats for lizards, because local workers clean the plantation often. Some populations of forest-restricted lizard

species may be pre-adapted to life in open formations, constituting a full ecological vicariate (Vanzolini & Williams, 1981).

The three main items in its diet (Blattodea, Araneae and Orthoptera) were also the main items in the diet of the sympatric skink *Mabuya agilis*, and the diets of the two species were very similar overall (Teixeira et al., 2003). This reflects the similarities in some ecological aspects between these two species, which are both diurnal, terrestrial elongated lizards, which forage actively among the grass and herbaceous vegetation. The fact that we found colubrid and lizard scales in the stomach of *O. striatus* suggests that these lizards may sometimes feed on dead organic material such as shed skins or prey on other squamatans. This further suggests that chemical cues play an important role in prey identification as in other anguid lizards. The diet of *O. striatus* differed greatly from that of the fossorial anguid lizard *Diploglossus lessonae* of the Brazilian semi-arid caatinga, which fed on arthropods generally found underneath rocks (Vitt, 1985).

Trophic ontogeny was observed in *O. striatus* in this study. As there is no evidence of spatial partitioning between juvenile and adults, both may be dividing the available food resource. Only for the smallest juveniles was the size of prey significantly, revealing that larger *O. striatus* do not select the largest prey. Specialization on large prey is uncommon in most lizards (Gasnier et al., 1994), but occurs in some iguanians (Andrews, 1979) and in most varanoids.

The development of viviparity in squamates evolved from a gradual transition between egg-laying ancestor by varying degrees of eggshell thinning and egg retention (Guillette, 1993), associated with cold climatic conditions at high latitudes or high altitudes. Steps that lead to vivipary in reptiles include eggshell reduction, increased periods of egg retention and the development of some kind of primitive placenta, initially simply for gas and water exchange (Guillette, 1993).

Morphological and ecological similarities between *Ophiodes* (Diploglossinae) and *Ophisaurus* (Anguinae) suggest convergence most likely based on use of microhabitats in which limb loss, elongation of the body and tail, and serpentine locomotion provided a selective advantage. Species in both genera are limbless, snake-like and feed largely on arthropods (Fitch, 1984). Both appear to be seasonal in reproduction, which is typical of temperate zone anguid lizards.

BIBLIOGRAPHICAL REFERENCES

ANDREWS. R. M. 1979. The lizard *Corytophanes cristatus*: an extreme "sit-and-wait" predator. Biotropica 11:136-139.

CLERKE. R. B.. and R. A. Alford. 1993. Reproductive biology of four species of tropical Australian lizards and comments on the factors regulating lizard reproductive cycles. Journal of Herpetology 27:400-406.

BLACKBUM. D.. J. L.Vitt and C.A. Beuchat. 1984. Eutherian-like reproductive especializations in a viviparous reptile. Proccedings of the Natural Academy of Science 81:4860-4863.

COLLI. G. R.. A. K. Péres Jr. and M. Zatz. 1997. Foraging mode and reproductive seasonality in tropical lizards. Journal of Herpetology 31:490-499.

GASNIER. T. R.. W. E. Magnusson and A. P. Lima. 1994. Foraging activity and diet of four sympatric lizard species in a tropical rainforest. Journal of herpetology 28:187-192.

GUILLETTE. L. J.. Jr. 1993. The development and evolution of viviparity in lizards. BioScience 43:742-751.

LANGERON. J. 1926. Notes et observations sur l'overt fragile (*Anguis fragilis* de Duméril et Bibron) et as naissance en captivité le 29 septembre 1925. Bulletim of the Society History Natural Autun 29:28-30.

TEIXEIRA. R. L.. C. F. D. Rocha. D. Vrcibradic and M. G. T. Cuzzuol. 2003. Ecology of *Mabuya agilis* (Squamata. Scincidae) from a montane Atlantic rainforest area in southeastern Brazil. Cuadernos de Herpetología 17:101-109.

VITT. L. J. 1985. On the biology of the little known anguid lizard. *Diploglossus lessonae* in northeast Brazil. Papéis Avulsos de Zoologia 36:69-76.