NATURAL HISTORY OF THE LIZARD *Enyalius brasiensis* (LESSON, 1828) (LEIOSAURIDAE) FROM AN ATLANTIC FOREST OF SOUTHEASTERN BRAZIL

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**ABSTRACT**

Information on the ecology of lizard species from the Brazilian Atlantic Forest is scarce and almost nothing is known about the ecology of lizards of the genus *Enyalius*. In this study, we provide information about some aspects of the natural history of *E. brasiensis* from an area of Atlantic Forest in Ilha Grande, RJ. *Enyalius brasiensis* (N = 15) feeds mainly on arthropods. The most frequent food items were insect larvae, orthopterans, and ants; in terms of volume, larvac and termites were the most important food items; ants and termites were the most numerous prey categories. Two females were reproductive (one had 10 and the other, five vitellogenic follicles); the smallest measured 92.4 mm in SVL. Seven lizards were found on forest leaf litter. The other microhabitats used were vines, fallen logs, branches, and a crevice on a slope.

*Key words: Enyalius, diet, microhabitat, Atlantic Forest, Rio de Janeiro.*

**RESUMO**

História natural do lagarto *Enyalius brasiensis* (Lesson, 1828) (Leiosauridae) em área de Mata Atlântica do Sudeste do Brasil

Informações sobre a ecologia de espécies de lagartos da Floresta Atlântica brasileira são raras. Quase nada é conhecido sobre a ecologia de lagartos do gênero *Enyalius*. Com este estudo fornecemos informações sobre alguns aspectos da história natural de *E. brasiensis* de uma área de Mata Atlântica da Ilha Grande, RJ. Os indivíduos de *E. brasiensis* (N = 15) se alimentaram principalmente de artrópodos. As presas ingeridas com maior freqüência foram larvas de insetos, ortópteros e formigas; em termos volumétricos, larvas e cupins foram os itens mais importantes; e formigas e cupins foram as presas mais numerosas. Das 10 fêmeas encontradas, duas estavam reproductivas (uma tinha 10 e a outra, 5 fóliculos vitelogênicos); a menor delas medía 92,4 mm de tamanho corporal. Sete dos 15 lagartos foram encontrados sobre folhão no chão da mata. Os outros micro-habitats utilizados foram cipós, troncos caídos, galhos e um barranco de terra dentro de uma fenda de rocha.

*Palavras-chave: Enyalius, dieta, micro-habitat, Mata Atlântica, Rio de Janeiro.*

Information on the ecology of lizard species from the Brazilian Atlantic Forest is scarce (Sazima & Haddad, 1992). The study of reptiles in forested habitats is difficult because population densities are generally low, forest species are usually less conspicuous than open-habitat forms, vegetation is denser, and large amounts of leaf litter are found on the ground (Duellman, 1987).

Lizards of the leiosaurid genus *Enyalius* are restricted to forested areas (*E. bilineatus* is an
exception) along the Atlantic Rainforest of eastern Brazil and the Brazilian Amazon forest (Jackson, 1978; Ávila-Pires, 1995). Almost nothing is known about the ecology of these lizards, and information available is restricted to accounts of feeding habits and microhabitat use (Vanzolini, 1972; Sazima & Haddad, 1992; Vitt et al., 1996; Zamprogno et al., 2001; Sousa, 2000). In general, Enyalius lizards are diurnal, insectivorous, and use trees, shrubs, fallen logs, or leaves as perches, they are also commonly found on the ground (Jackson, 1978; Sazima & Haddad, 1992; Vitt et al., 1996; Zamprogno et al., 2001). A recent study deals with cyto genetic analysis of five species of Enyalius (Bertolotto et al., 2002).

Enyalius brasiliensis (Lesson, 1828) occurs from Itatiaia and Ilha Grande, in Rio de Janeiro State, northern to the southern margin of Rio Doce, in Espírito Santo State (Jackson, 1978). In the Atlantic Forest of Ilha Grande (23°11'S, 44°12'W), southeastern Brazil, E. brasiliensis is the second most frequently encountered lizard species, after the teiid Tupinambis merianae (Van Sluys & Rocha, 1999). In this study, we provide information about a few aspects of the natural history of E. brasiliensis, namely diet, microhabitat use, and reproduction.

MATERIAL AND METHODS

Field work was carried out mainly within two areas. One consisted of a relatively undisturbed forest (ca. 240 m above sea level) and the other was a 30-yr-old regenerating forest (ca. 100 m above sea level). Lizards were hand-collected whenever encountered during haphazard transects during the morning and afternoon.

Using a vernier caliper, each captured lizard was measured for its snout-vent length (SVL, to the nearest 0.1 mm) and weighed (to the nearest 0.1 g) using Pesola® spring balances. Diet analysis was based on stomach contents. Lizards were dissected and their stomach contents analyzed under a stereomicroscope. Each prey found was identified as to Order and measured for its maximum length and width, to the nearest 0.1 mm. The volume of each prey type was estimated using a modified version of the formula for a prolate spheroid: volume = \(4/3\pi (\text{length}/2) \times (\text{width}/2)^2\) (Vitt et al., 1996). An importance index \(I\) was calculated, as in Howard et al. (1999), and represents the relative importance of a prey type in relation to the entire diet. Female reproductive state was based on the presence of vitellogenic follicles and/or oviductal eggs. Clutch size was estimated from counts of vitellogenic follicles or oviductal eggs.

The original position of the microhabitat of each lizard captured was recorded according to five categories: a) on leaf litter on the ground; b) on branches or trunks; c) on fallen logs; d) on vines; and e) in crevices.

RESULTS AND DISCUSSION

We collected 15 Enyalius brasiliensis (10 females and five males). Females ranged from 48.7 to 100.6 mm in body size (SVL) and males measured from 68.9 to 85.4 mm. Comparing body size for adults (> 60.0 mm), there was no significant difference in mean body size for females (84.8 ± 13.3 mm) and males (77.7 ± 7.1 mm) (t-test: \(t = -1.152; df = 9.0; p = 0.279\)). Neither did head width differ (\(p = 0.411\)) between adults (males: mean = 14.4 ± 1.2 mm; females: mean = 15.4 ± 2.3 mm). However, the small sample size prevents further conclusions about sexual size dimorphism for E. brasiliensis.

Of the 10 females collected, two were reproductive. One had 10 vitellogenic follicles and the other had five vitellogenic follicles. Probably, this last female was initiating vitellogenesis. The smallest reproductive female measured 92.4 mm in SVL. Vanzolini (1972) comments on a female E. catenatus laying two eggs, and Vitt et al. (1996) reports a mean clutch size for E. leechii of 12.3 ± 0.7 (range: 10-14; \(N = 6\)). The two reproductive females were found in November and January, both months of the wet season. The two smallest E. brasiliensis collected (body sizes of 48.2 and 48.9 mm) were found in January and March, respectively.

The reproductive females of E. leechii analyzed by Vitt et al. (1996) were also collected between December and March, and these authors suspected that reproduction was seasonal. The fact that reproductive females and small-sized lizards were found only during the wet season suggests that E. brasiliensis reproduces seasonally in Ilha Grande also. However, the very limited information available precludes further conclusions about reproduction of Enyalius.

Enyalius brasiliensis at Ilha Grande fed mainly on arthropods (Table 1). One lizard contained no food items in its stomach and was excluded from dietary
Diet composition of the lizard *Enyalius brasiliensis* (N = 14) at Ilha Grande, Rio de Janeiro. Freq. (%) = number (and percentage) of stomachs containing that prey item; Vol. (%) = volume, in mm³, and volumetric percentage of each prey type; N (%) = total number (and numeric percentage) of prey items in each prey category; and $I_x$ = importance index.

<table>
<thead>
<tr>
<th>Item</th>
<th>Freq. (%)</th>
<th>Vol. (%)</th>
<th>N (%)</th>
<th>$I_x$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homoptera nymph</td>
<td>1 (7.14)</td>
<td>321.53 (1.91)</td>
<td>1 (0.57)</td>
<td>0.0321</td>
</tr>
<tr>
<td>Orthoptera</td>
<td>4 (28.57)</td>
<td>571.27 (3.39)</td>
<td>4 (2.25)</td>
<td>0.1140</td>
</tr>
<tr>
<td>Coleoptera</td>
<td>1 (7.14)</td>
<td>69.59 (0.41)</td>
<td>2 (1.14)</td>
<td>0.0290</td>
</tr>
<tr>
<td>Larvae</td>
<td>5 (35.71)</td>
<td>2746.99 (16.29)</td>
<td>11 (6.25)</td>
<td>0.1942</td>
</tr>
<tr>
<td>Hymenoptera Formicidae</td>
<td>4 (28.57)</td>
<td>371.84 (2.21)</td>
<td>77 (43.75)</td>
<td>0.2484</td>
</tr>
<tr>
<td>Isoptera</td>
<td>1 (7.14)</td>
<td>5851.07 (34.70)</td>
<td>77 (43.75)</td>
<td>0.2853</td>
</tr>
<tr>
<td>Diplopoda</td>
<td>2 (14.29)</td>
<td>244.13 (1.45)</td>
<td>2 (1.14)</td>
<td>0.0563</td>
</tr>
<tr>
<td>Mollusca gastropoda</td>
<td>2 (14.29)</td>
<td>198.67 (1.18)</td>
<td>2 (1.14)</td>
<td>0.0554</td>
</tr>
<tr>
<td>Scales</td>
<td>1 (7.14)</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Arthropod remains</td>
<td>7 (50.00)</td>
<td>5965.88 (3.10)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Plant matter</td>
<td>3 (21.43)</td>
<td>522.25 (35.38)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>–</td>
<td>16,863.22</td>
<td>176</td>
<td>–</td>
</tr>
</tbody>
</table>
Most *Enyalius brasilienis* (14/15) were found during morning transects and only one was found at 4:30 pm. On this subject, information about *Enyalius* activity is also scant. Most reports state that these lizards are diurnal, not specifying whether they are active all day long or only during parts of the day (Vanzolini, 1972; Jackson, 1978; Sazima & Haddad, 1992). At this point we cannot confidently define the activity pattern of *E. brasilienis* but evidence points to more activity, at least in the understory, during the morning. Seven of the fifteen lizards (46.7%) were found on leaf litter. The other microhabitats used were vines (6.7%), fallen logs (6.7%), branches (13.3%), and one pair (13.3%) was found inside a crevice on a slope bordering a trail. Mean height above ground was 76.0 + 30.5 cm (N = 5) and, for two individuals, mean perch diameter was 16.4 ± 5.2 mm. These results are similar to those previously reported for *E. catenatus* (Vanzolini, 1972) and *E. leechii* (Vitt et al., 1996).

*Enyalius brasilienis* at Ilha Grande is a diurnal, carnivorous lizard, which feeds mainly on ants, termites, and insect larvae. However, more data are needed to provide information about the ecology of these lizards.

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