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Diet of *Nothobachia ablephara* (Squamata: Gymnophthalmidae) in a Caatinga area of the San Francisco Valley in northeastern Brazil

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Lizards belonging to the family Gymnophthalmidae exhibit small body size (snout-vent length around 40 to 150 mm) and are distributed from Southern Mexico to Argentina, besides the Caribbean and on some continental islands of South and Central America. They inhabit the leaf litter of tropical and semi-tropical forests, but they also live in ground vegetation of open areas (Vanzolini, Ramos-Costa and Vitt, 1980; Rodrigues, 1995; Rodrigues, Zaher and Curcio, 2001). In Brazil, there is a great amount of species described for Caatinga areas, especially from the palaeoquaternary sand dunes of the São Francisco river (Rodrigues, 1991a,b). *Nothobachia ablephara* Rodrigues, 1984 (Fig. 1), which displays relictual geographic distribution, is an endemic species from these dune areas adjacent to sandy soils (Rodrigues, 2003). It exhibits diurnal/nocturnal activity and specializations associated to psamophilia and fossoriality, as suggested by its elongated body and markedly reduced limbs, such as the styliform front legs (Rodrigues, 1984). Information on the natural history of *N. ablephara* is very scarce (Rodrigues, 2003; Rocha and Rodrigues, 2005). Herein, we evaluated the diet composition of *N. ablephara* in a Caatinga region of northeast Brazil.

Field work was carried out between 19 September and 5 November 2011 at the Agrarian Science Campus of the Universidade Federal do Vale do São Francisco (UNIVASF) (09°19'41"S, 40°32'59"W; Elevation: 385 m), municipality of Petrolina, Pernambuco state, Brazil. Pitfall traps were used to collect the lizards, arranged linearly at two collection stations. Each station contained 10 buckets (7 liters) linked by drift fences. All lizards collected were euthanized with an injection of xylocaine diluted in water. Snout-vent length (SVL) was then recorded using Mitutoyo® digital calipers (to the nearest 0.1 mm). Diet was determined based on item categorization (taxonomic level order for insects), and volume by the ellipsoid formula: $V = 4/3\pi$ (length/2) x (width/2)2, according to Vitt, Zani and Caldwell (1996).

To calculate food-niche breadth from numerical and volumetric proportions, removing the effect of the number of prey categories consumed, we used standardized values of Simpson's Diversity Index in the standardized Levins Index, as follows: $Ba = B - 1/n - 1$, where B is Simpson's niche breadth, and n is the number/volume of prey categories used. Values in this case range from 0 (exclusive use of a single prey category) to 1 (equal use of all prey categories) (Kenney and Krebs, 2000). The importance value index (IVI) was also calculated for each food category, adding occurrence, numerical and volumetric percentages and dividing by three (IVI=F%+N%+V%/3), considering grouped stomach contents and separating males and females, in order to determine the proportion of each item in diet (Mesquita et al., 2006). The Mann-Whitney U test (Zar, 1999) was applied to verify possible differences in snout-vent length between males and females.

Twelve *N. ablephara* individuals were captured (7 males and 5 females). Snout-vent length in males (46.4 mm ± 11.3 mm) did not significantly differ from that of females (54.8 mm ± 8.6 mm) (Mann-Whitney U test, $Z = -0.731$, $P = 0.465$). However, the apparently

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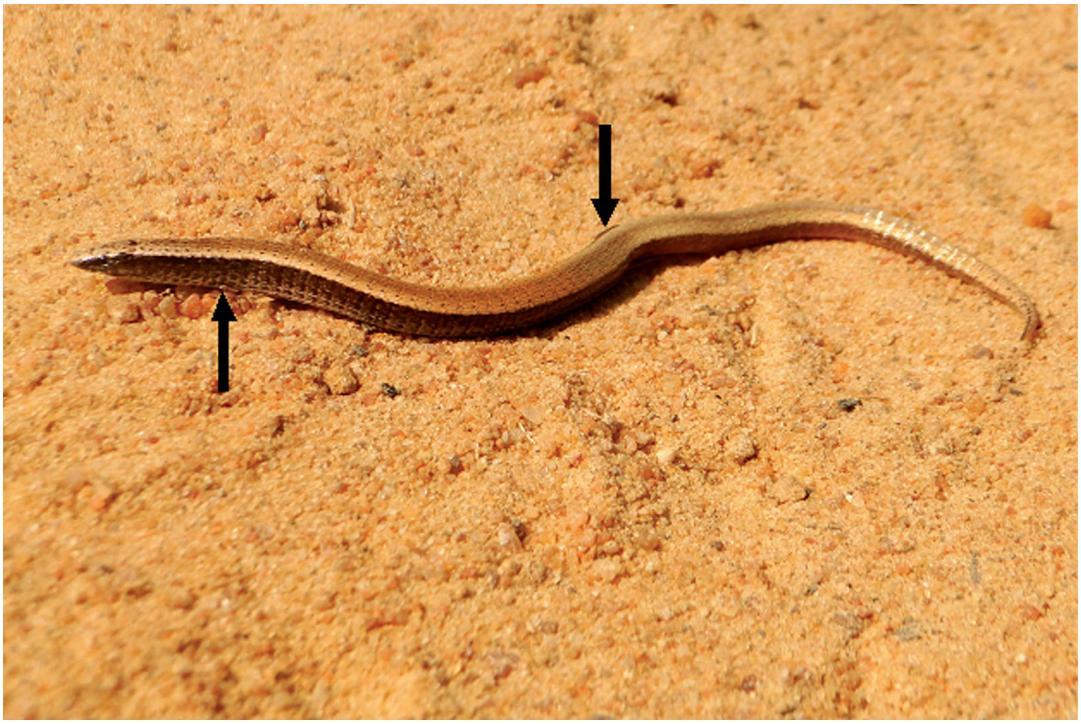

Figure 1. Adult specimen of *Nothobachia ablephara*, illustrating the styliform forelimb (lower arrow) and more developed hindlimb (upper arrow). Photo: L.B. Ribeiro.

greater investment in growth by females may result in different energy allocation to growth and reproduction between males and females, as observed for some lizard species (Pinto, Wiederhecker and Colli, 2005; Ribeiro, Kolodiuk and Freire, 2010).

With respect to diet, two females and one male had no stomach contents. A total of 14 items distributed into four categories were identified, with greater consumption of insect larvae and Isoptera (Table 1). Food niche breadth of *N. ablephara* (based on the number of food items) was 0.548, revealing that, despite the inclusion of few types of prey, overall exploitation of food resources was relatively equal. In terms of volume, food niche breadth was 0.273, and insect larvae and Isoptera were the most important diet items; however, when sex was considered, insect larvae was the only category recorded for females (Table 1).

Similar results were obtained by Rocha and Rodrigues (2005), where *N. ablephara* exhibited high positive preference for insect larvae, spiders and pseudoscorpions. In relation to factors associated with trophic ecology in lizards, high predation levels in a determinate category may be related to its availability in the environment and predator selectivity (Rocha and Anjos, 2007; Kolodiuk, Ribeiro and Freire, 2010; Ribeiro and Freire, 2011). In lizards, the choice of prey type and size is directly related to the trophic morphology and foraging strategy adopted for each species (Lima and Moreira, 1993). Three categories are traditionally identified: active foragers, sit-and-wait foragers (Huey and Pianka, 1981), and an intermediate variety, errant foragers (Dias and Silva, 1998; Pough et al., 2004). *Nothobachia ablephara* exhibited active foraging characteristics, feeding on sedentary prey, such as insect larvae and termites. As a member of the Scleroglossa group, *N. ablephara* has a sophisticated chemosensory apparatus to detect prey, enabling it to replace noxious prey (ants and other hymenoptera) by higher energy-content insects that do not produce chemically harmful compounds (Vitt and Pianka, 2005).

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Table 1. Diet composition of *Nothobachia ablephara* (N = 9: six males, three females) at Campus Ciências Agrárias, Petrolina municipality, Pernambuco, Brazil, from September to November 2011. F = frequency of occurrence, N = number, V = volume (mm3), IVI = importance value index (t = total sample, m = males, f = females).

Prey category	F (%)	N (%)	V (%)	IVI_t	IVI_m	IVI_f
Araneae	1 (11.1)	1 (7.1)	10.5 (3.1)	7.1	11.4	–
Isoptera	2 (22.2)	6 (42.9)	53.4 (15.5)	26.9	43.4	–
Insect larvae	6 (66.7)	6 (42.9)	247.0 (71.8)	60.5	33.4	100.0
Orthoptera	1 (11.1)	1 (7.1)	33.0 (9.6)	9.3	17.4	–
TOTAL		14	343.9			

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