Amphibia-Reptilia 30 (2009): 533-544

Food habits of Brazilian boid snakes: overview and new data, with special reference to *Corallus hortulanus*

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Abstract. This study examines the diet of eight boid snakes: *Boa c. constrictor*, *Boa c. amarali*, *Corallus caninus*, *C. hortulanus*, *Epicrates cenchria*, *E. crassus*, *E. assisi* and *Eunectes murinus* mainly by analyzing the gut contents of preserved museum specimens, and includes a literature review to present an overview of the diet of Brazilian boids. Mammals constitute the primary prey consumed by the majority of the species. Birds are also frequently consumed by *C. hortulanus* and *Boa contrictor*, and are the most important prey for *B. c. amarali*. Ectotherms (mostly lizards) were only consumed by immature snakes. Such prey is rarely consumed by *B. c. amarali* and not recorded for *Epicrates* and *Eunectes* species in our dissections. *C. caninus* is likely a mammal specialist and *Epicrates* prey on birds more opportunistically. The niche overlap index varied from 0.27-0.52 for species occurring in the same bioma and geographic range but it is possible this overlap is lower as most sympatric species explore different macrohabitat. *C. hortulanus* exhibited a significant relationship between prey size and predator head size; this relationship did not differ among mature and immature snakes. In comparison to immature individuals heavier adult snakes fed on heavier prey items however, the ratio between prey/predator mass decreased with increase in predator mass (or size). Most boids exploit diurnal and nocturnal preys, probably using both sit-and-wait and active tactics. They feed on the ground but boas and *C. hortulanus* and possibly *E. cenchria* also exploit arboreal prey.

Keywords: Boidae, diet, dietary niche, foraging strategies, prey items, prey size.

Introduction

Food habits have attracted the attention of many herpetologists over the years. The diet and food habits of snakes usually reflect singular adaptations in the snake morphology and anatomy (Mushinsky, 1987; Greene 1997). Most of these adaptations are evident in the skull, jaws and teeth (Savitzky, 1981, 1983; Godley, McDiarmid and Rojas, 1984; Mushinsky, 1987), but also include vertebrae (Gans, 1952, 1961) and behavior (Franz, 1977; Geene and Burghardt, 1978; Greene, 1983a). While some species are specialists (e.g., the colubrid *Tantilla melanocephala* feeds only on centipedes; Marques and Puorto, 1998), the diet can vary broadly in many others and ontogenetic variation is a common trait among snakes (Mushinsky, 1987; Greene, 1997; Glaudas et al., 2008).

Foraging strategies of Squamata are generally recorded as being active search or sit-and-wait (ambush) (Schoener, 1971). The first is characteristic of slender and fast-moving colubrids and elapids while the ambush behavior usually occurs in most heavy-bodied viperids, boids and pythonids (Greene, 1997). However, some snakes can use both strategies and can also vary which strategy they adopt based on body size due to ontogenetic switch in prey types (Greene, 1997).

Understanding the relationships between prey size and predator size is the first step in evaluating the application of optimal foraging theories to snakes (Mushinsky, 1987). Usually larger snakes tend to exploit larger prey items (see Mushinsky, 1987; Arnold, 1993; Greene, 1997), but there are some large snakes that ac-

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tively search for very small prey (Shine et al., 2004).

In this study we review the food habits of Brazilian boines and present new data on prey items, relationships between prey size and snake size among adult males, females and young individuals, inferring about hunting tactics and behavior. We compare our findings and trends with published data for other boines, and the close related erycinaes and pythonids.

Material and methods

Gut contents of *Boa c. constrictor* (38 adult females, 76 males and 308 immature), 201 *B. c. amarali* (47 females, 70 males and 84 immature), *Corallus caninus* (25 females, 11 males and 51 immature), *C. hortulanus* (109 females, 132 males and 234 immature), *Epicrates cenchria* (35 female, 48 males and 155 immature), *E. assisi* (18 females, 25 males and 86 immature), *E. crassus* (28 females, 35 males and 64 immature) and *Eunectes murinus* (4 females, 35 males and 375 immature) were analyzed. These specimens, originally collected in many different areas in Brazil, are housed in the collections of Instituto Butantan (IB), Museu de História Natural da Universidade Estadual de Campinas (ZUEC), Museu Paraense Emilio Goeldi (MPEG), Museu de Zoologia da Universidade de São Paulo (MZUSP), Universidade de Brasília (CHUNB) and Comissão Executiva do Plano da Lavoura Cacaueira (CEPLAC). Additionally, we obtained faeces from live specimens collected by other researchers in the areas where several of the museum specimens originated. We considered the three *Epicrates* as different species, according to Passos and Fernandez (2008), instead of *E. cenchria* subspecies, as originally known. Because the two *Boa constrictor* subspecies occur in different biomas in Brazil (*B. c. constrictor* in the rainforests of the Amazon and Atlantic Forest in north and northeast while *B. c. amarali* occurs in the cerrado [savannah] of central and southwest Brazil) we opted for not pooling the subspecies together, so information for each one can be easily accessed in future works.

For each snake we measured snout-vent length (SVL, mm) using a flexible measuring tape, head length (from the *quadratum* to the snout: HL, mm) with vernier calipers and body mass with Pesola® scales (g) after drainage of the excess preservative liquid. Snakes were recorded as immature or mature. Females were considered mature if they had oviductal embryo or ovarian follicles larger than 10 mm and males were mature if they had turgid testes and deferent duct convoluted (see Pizzatto and Marques, 2007). Prey species were identified to the lowest taxonomic level by comparison of whole specimens, fur, skull, paws, teeth, feathers and beak to reference individuals in scientific collections (cf. Lobert et al., 2001); intact prey were weighed and measure in length (SVL or snout-anus).

The relationship between prey mass and predator mass was analyzed using linear regression. To verify if both variables increased at the same rate (i.e., if small snakes eat proportionally the same size prey as large snakes), we compared if the slope of regression differed from one, using t-test where $t = (1 - \text{observed slope})/\text{standard error of}$ the slope (Stearns, 1992). The same analysis was performed using prey length and snake HL, and snake HL vs. snake SVL. Sexual divergence in prey size was investigated using ANCOVA, with prey SVL as the dependent variable, sex as the factor and snake SVL as the covariate (Zar, 1999). The same analysis was performed using predator and prey masses. In all these cases variables were log-transformed to meet assumptions of parametric test.

Dietary niche overlap was calculated for pairs of sympatric species using the MacArthur-Levins index modified by Pianka and by expressing the prey item overlap in terms of percentage (see Krebs, 1998 for both procedures). We did not include *E. murinus* in the niche overlap analysis because our results on stomach contents clearly do not reflect the range of prey items explored by this species.

Published data are presented for giving a more complete overview on the diet of the species occurring in Brazil and to evince trends within major groups.

Results

General trends from original data

All species examined fed exclusively on vertebrates including mammals, birds, lizards and frogs. Variation within the composition of vertebrate prey that comprised the diet of different species was evident. Overall, the dominant prey item consumed were mammals followed by birds (table 1, fig. 1). The diet of the majority of species contained only these two prey types.

Boa constrictor

Our data show that *Boa c. constrictor* and *Boa c. amarali* fed on lizards, birds and mammals (table 1) but diet composition differed between mature and immature specimens (fig. 1a, b). Ectothermic preys were consumed only by immature individuals, though still only made up a small proportion of the diet, and birds were the most common item for immature *B. c. amarali* (fig. 1a, b). Our limited data suggests that immature snakes do not reject large prey (fig. 2a-d), but there are also reports of young *B. constrictor* feeding on small prey (16% of preda-

Table 1. Prey items identified from gut in Brazilian boid snakes.

PREY	*Boa c. amarali*	*Boa c. constrictor*	*Corallus caninus*	*Corallus hortulanus*	*Epicrates assisi*	*Epicrates cenchria*	*Epicrates crassus*	*Eunectes murinus*
Amphibia								
unidentified Hylidae				1				
Reptilia								
Ameiva ameiva	1	4		1				
Tropidurus sp.				1				
unidentified Gymnophtalmidae		2						
unidentified lizard		1						
unidentified		1 (scales)						
Aves								
Cacicus haemorrhous				1				
Gallus gallus	1							
Thraupis sayaca				2				
Zonotrichia capensis	1							
unidentified Psittacidae				3				
unidentified Passeriformes	2	1		1		1	1	
unidentified	7	2		24				2
Mammalia								
Rodentia								
Caviidae								
Cavia sp.						1		
Cricetidae								
unidentified Sigmodontinae							1	
Echimyidae								
Clyomys laticeps							1	
unidentified	1	1		3				
Cricetidae	1			2	1	3	13	
Akodon cursor	1							
Necromys lasirus							1	
Nectomys squamipes				1				
Oligoryzomys nigripes				1				
Rhipidomys mastacalis				3				
Thaptomys nigrita						1		
unidentified rodent		3	1	6		3	1	
Muridae								
Rattus rattus						3		
Marsupialia								
Didelphis marsupialis		1	1					
Didelphis albiventris	1							1*
Gracilinanus microtarsus				1				
Marmosa murina				3				
Micoureus demerarae			1	1				
Monodelphis sp.							1	
Philander frenatus				1				
Chiroptera				5				
Phyllostomidae								
Artibeus obscurus				1				
unidentified				2				
Molossidae				1				
unidentified mammal	1	4	3	15	3	6	1	3
Total	17	20	6	80	4	18	20	6

* specimen from flood rescue.

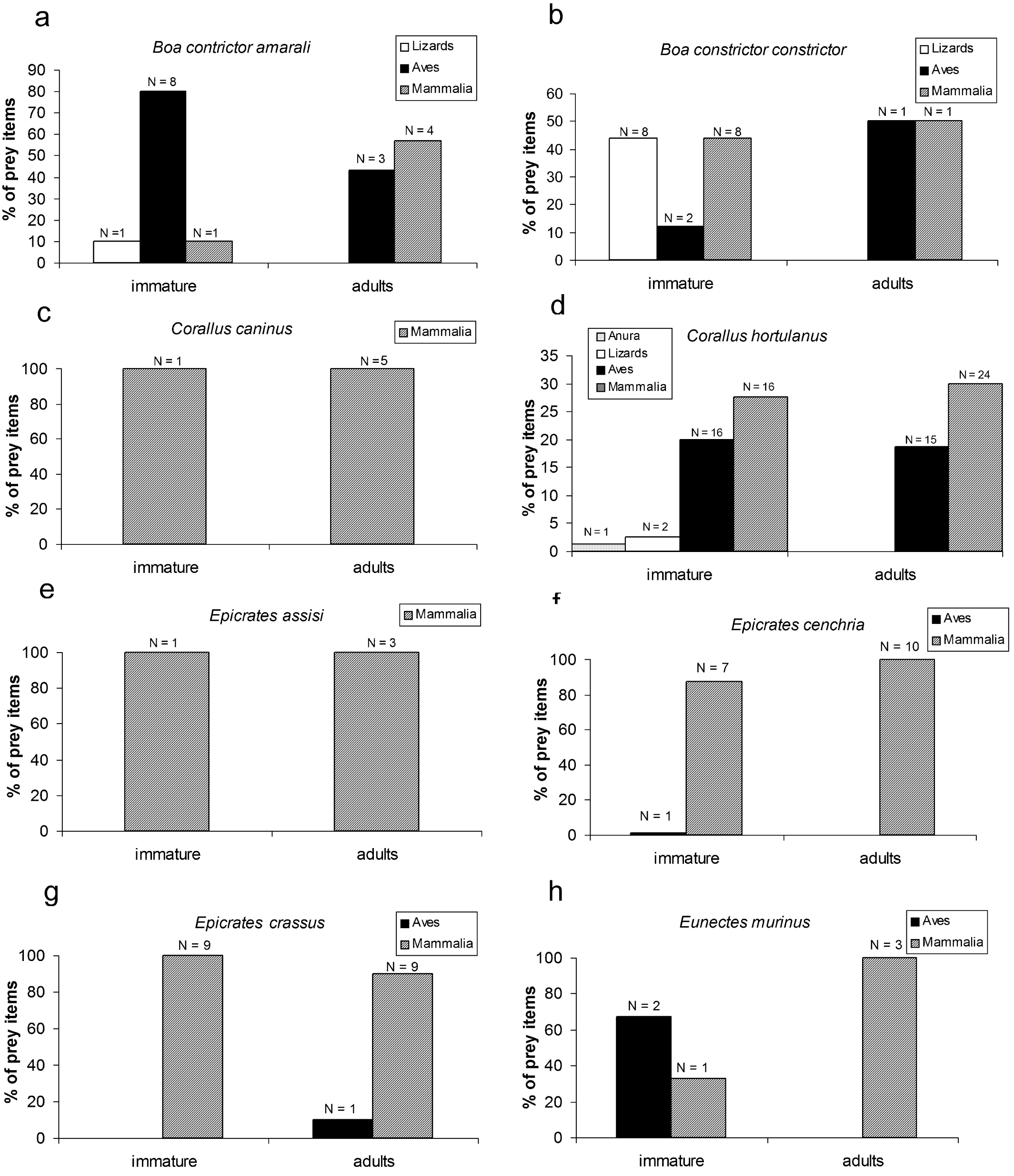

Figure 1. Percentage of consumed prey in adult and immature boid snakes.

tor mass: Boback et al. 2000; see also fig. 2a-d). One mature male *B. c. amarali* had two rodents in the stomach and another mature male had bird and mammal remains. One immature male *B. c. constrictor* had ingested a lizard and a newborn mouse. Thus, multiple prey items was ingested by 5.9% of *B. c. constrictor* specimens ($n_{\text{total}} = 17$) and 15.4% of *B. c. amarali* ($n_{\text{total}} = 13$). Bakkegard and Timm (2001) also reported multiple prey ingested by *B. c. constrictor*. Published data show that some populations of *Boa constrictor* prey extensively on birds (Boback, 2005; Quick et al., 2005) while in others, mammals are the main prey item consumed (Sironi et al., 2000). For mainland populations of this species lizards represent only a

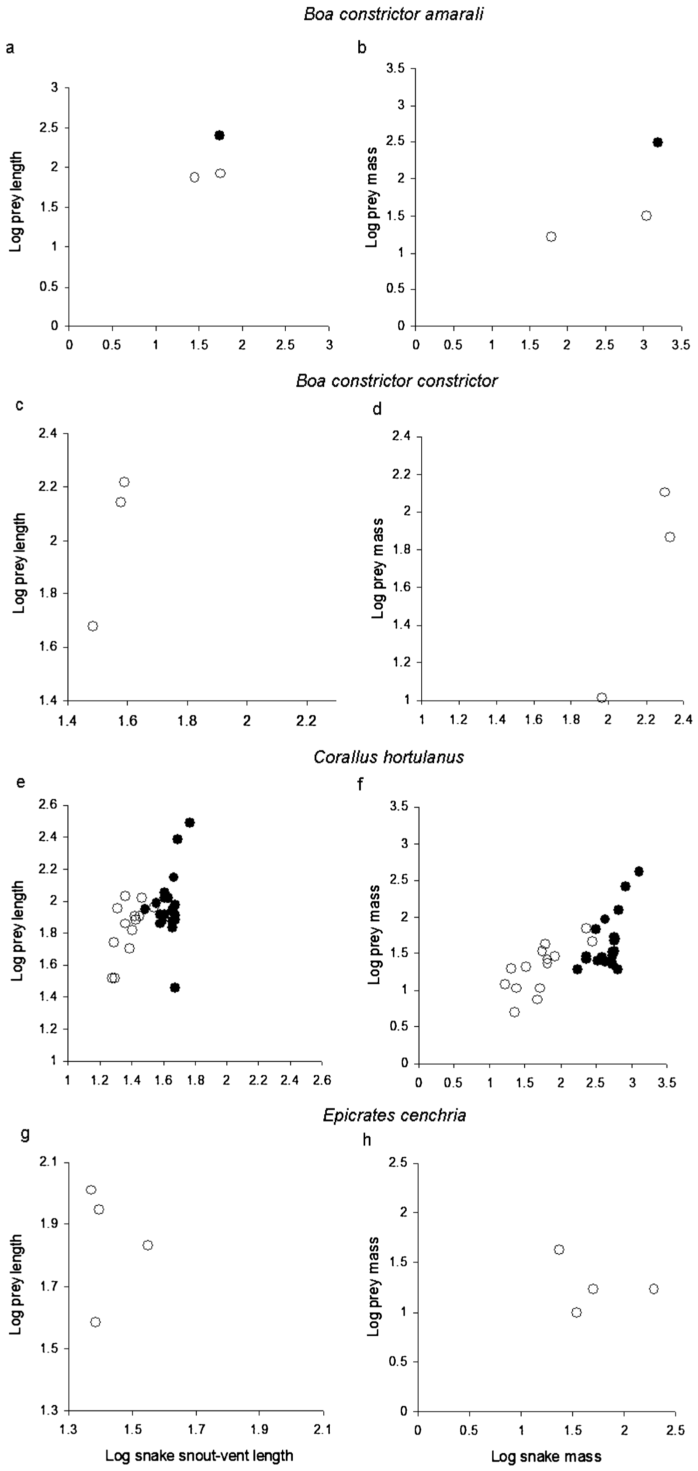

Figure 2. Relationship between prey and predator size in boid snakes. Black circles: adult snakes, white circles: immature snakes.

small proportion of the diet (Sironi et al., 2000) whereas for island populations they represent a highly important component of dietary intake (Quick et al., 2005). In Belize, *Boa constrictor* largely displays arboreal foraging habits primarily preying on birds (Boback, pers. com.). Opossums, semi-arboreal rats, rodent nestlings, lizards, and birds are reported as prey of *B. constrictor* in Costa Rica (Boback et al., 2000; Bakkegard and Timm, 2001). Our data reinforce that, despite their stout body, which does not facilitate arboreal habits, *B. constrictor* ssp. have the ability to utilize both terrestrial and arboreal habitat to access prey. Martins and Oliveira (1999) compiled published data for the dietary habits of this species and the records include monkeys, rodents, marsupials, bats, armadillos and birds. Thus, in general *B. constrictor* is generalist in diet, and present high trophic plasticity. This plasticity may be related to prey availability and differences in the habitat occupied by each subspecies.

Corallus caninus

Only six specimens presented prey (or vestiges) in their guts and they were all mammals (please note that two of these individuals may have been already analyzed by Cunha and Nascimento, 1978). Other authors also suggest that this species is a dietary specialist, feeding almost exclusively on mammals (Henderson, 1993 and pers. com.; Martins and Oliveira, 1999; this work). Only one record has been reported of a juvenile snake (380 mm SVL) preying upon a gekkonid lizard (likely *Thecadactylus*; Henderson, 1993) and despite popular believes (pers. obs.) there are no records of bids as prey for this species. All prey items we identified in the gut of *C. caninus* (the marsupials *Micoureus demerarae* and *Didelphis marsupialis*) as well as those ones identified by Henderson (1993) (one gecko and the rat *Oecomys bicolor*) are primarily arboreal (see Emmons, 1990; Eisenberg and Redford, 1999) suggesting that this snake forage on the vegetation. However its stouter body, when compared to other species in the genus, may permit this snake to forage on the ground as well (see Martins and Oliveira, 1999).

Corallus cropanii

There are only four specimens of this snake in collections. The unique known prey item of *C. cropanii* is a terrestrial marsupial *Metachirus nudicaudatus* (Marques and Cavalheiro, 1998, see Emmons, 1990 for reference on the marsupial habit). Together with *C. caninus*, this species have stouter bodies and larger heads than *C. hortulanus* (Pizzatto, Marques and Martins, 2007). These traits, when analyzed with closely related species that present the same habit (in this case all *Corallus* are arboreal), seem to be related to a diet based on mammals (Martins et al., 2001; Pizzatto, Marques and Martins, 2007). Thus *C. cropanii* may forage on the ground and sleep on the vegetation.

Corallus hortulanus

This species is very euriphagic, exhibiting a high diverse diet composition. In addition to mammals (including bats) and birds, immature snakes also preyed on frogs and lizards and one young specimen was collected with numerous porcupine (Erethizontidae) spines along the outside of the body (table 1). Multiple prey items were recorded to 8.7% of the snakes. One immature female *C. hortulanus* ingested two bats, two adult males ingested three birds each, and three adult females ingested three Psittacidae nestlings, two bats and two rodents, respectively. Published data also reinforce the generalist food habits of this species (Henderson, 1993, 2002; Martins and Oliveira, 1999 and references within). Due to our larger sample sizes on prey items for this species we were able to analyze predator-prey relationships. Prey body length increased with predator head length (linear regression: $r^2 = 0.26$, $P = 0.002$, fig. 2e) but the slope of the relationship did not differ from one (t-Student: $t_{31} = 1.19$, $P = 0.243$), i.e. both variables increase at the same rate. More than 50% of the individuals fed on prey weighing up to 20% of their own body mass and about 20% preyed on animals weighing from 40-95% of their masses. In terms of absolute mass, adult snakes exploited heavier prey ($r^2 = 0.48$, $P < 0.0001$; fig. 2f) and the slope of this relationship ($a = 0.49$, SE $= 0.093$) was significantly smaller than one ($t_{31} = 5.48$, $P < 0.001$). Thus, small snakes tended to eat relatively larger prey than large snakes. Accordingly, snake head length increased with SVL ($r^2 = 0.73$, $P < 0.0001$) but smaller snakes had relatively larger head ($a = 0.73$, SE $= 0.009$, $t_{496} = 29.7$, $P < 0.0001$). Geographical differences in diet could not be analyzed even because most specimens containing gut contents were collected in the same area. There was no sexual differences in the relationship of predator and prey lengths or masses in *C. hortulanus* (ANCOVA, size: slopes: $F_{(1,29)} = 0.12$, $P = 0.728$; intercept: $F_{(1,30)} = 0.36$, $P = 0.551$; mass: slopes: $F_{(1,29)} = 0.04$, $P = 0.843$, intercept: $F_{(1,30)} = 0.18$, $P = 0.734$). However, the largest prey, the marsupial *Philander frenatus* 307 mm SVL and 405 g was consumed by an adult female (SVL = 1760 mm, HL = 59 mm, M = 1300 g) while the largest prey consumed by an adult male (SVL = 1590 mm, HL = 49 mm, M = 820 g) was a water rat *Nectomys squamipes* 245 mm SVL and 260 g. The identification of prey items suggest that *C. hortulanus* prey on either on the ground or more often above it. The relative slender body of *C. hortulanus* (as well as other morphological features in this genus – see Lillywhite and Henderson, 1993) probably allows this snake to more effectively explore the vertical stratum of the forest, thus providing a wider dietary niche.

Epicrates assisi

The only prey recorded for this species were mammals (table 1), for both mature and immature individuals (fig. 1e). However, Vitt and Vangilder (1983) recorded mammals, bird eggs and lizards for this species (note that in this reference the authors refer to the species as *E. cenchria*).

Epicrates cenchria

Most specimens had ingested mammals, mainly rodents, and one immature had ingested a bird (table 1, fig. 1f). Despite the small sample size, most immature snakes ingested large prey, weighing roughly the same as themselves (fig. 2g, h). Other prey items recorded for this species in the Amazon forest range include domestic chicken and other birds, bird eggs, rodents, bats, frogs and lizards (see Martins and Oliveira 1999 and their references).

Epicrates crassus

Only one specimen had ingested a bird, all others fed on mammals (table 1, fig. 1g). Based on the prey items and the stout body (see Pizzatto et al. 2007) this is probably the most terrestrial of the three *Epicrates* species we studied and they may forage mainly on the ground.

Eunectes murinus

Our data on the diet of the anacondas are very poor, reflecting the difficulty in finding entire large snakes preserved in collections. We have recorded only mammals and birds in the gut of *Eunectes murinus* (table 1, fig. 1h). However, this species is reported to feed on several aquatic and terrestrial vertebrates: fishes, frogs, reptiles, birds, and mammals (cf. Strimple, 1993; Jácomo and Silveira, 1998; Elvey and Newlon, 1998; Martins and Oliveira, 1999; Rivas, 1999; Valderrama and Thorbjanarson, 2001), though the main prey items were birds, at least in the Venezuelan Llanos (Rivas, 1999). Apparently, *E. murinus* is an opportunistic predator which also exploits dead animals and conspecifics, usually inside the water or around it (O'Shea, 1994; Rivas, 1999; Rivas and Owens, 2000; Valderrama and Thorbjanarson, 2001). This species is reported to feed on large prey items, usually ranging from 14% to 50% of the snake mass (Jácomo and Silveira, 1988; Rivas, 1999, but see also Valderrama and Thorbjanarson, 2001) but were also observed hunting for prey of similar body masses than their own (Rivas, 1999).

Eunectes notaeus

This species is known to feed mostly on birds and mammals (Strüssmann, 1992; Waller, Buongermini and Micuci, 2001) though also includes large lizards (*Tupinambis* sp.), turtles, caimans and bird eggs (Cintra, 1989; Strüssmann and Sazima, 1991; Strüssmann, 1992), and probably feeds on carrion (Strüssmann, 1992). As *Eunectes murinus*, this species is known to forage in the water or around it (Strüssmann, 1992).

Dietary niche overlap

B. c. amarali and *E. crassus* occur in the Brazilian savannah and shared 29.28% of prey types, presenting a index of niche overlap of 0.321. *B. c. constrictor* and *E. cenchria* shared 35.53% of prey in the Brazilian rainforests, with an index of 0.45. *B. c. constrictor* and *C. hortulanus* presented the highest index value, 0.52, representing 51.7% of prey in common. *B. c. constrictor* and *C. caninus* had an index of 0.27 (30.26% of prey types in common), and the congeneric *C. hortulanus* and *C. caninus* shared 41.54% of prey items (index 0.46).

Discussion

General trends in prey items

Despite the generalist diet of most species, mammals represent the dominant prey for the majority of Brazilian boine snakes. These finding are consistent with previous studies on Neotropical boine snakes (Henderson et al., 1987; Henderson, 1993; Tolson and Henderson, 1993; Rivas, 1999; Bakkegard and Timm, 2001; Wiley, 2003; Quick et al., 2005), pythons (Henderson, 1993; Shine and Madsen, 1997; Shine et al., 1999; Luiselli and Angelici, 1998; Luiselli et al., 2002; Pearson, Shine and How, 2002), sand boas, and rubber boas (Erycinae; Rodrígues-Robles, Bell and Greene, 1999). Birds have also been reported as an important component in the diet of other boids (see Henderson, 1993; Tolson and Henderson, 1993; Rodrígues-Robles, Bell and Greene, 1998; Wiley, 2003).

The presence of domestic fowl and black rats (*Rattus rattus*) as prey of *Boa constrictor* and *Epicrates cenchria* indicates that these snakes dwell in anthropogenic habitats and it is not unusual to find boas in this kind of habitat (L. Pizzatto, pers. obs.). Other authors have also found boines and pythonids living in association with humans and feeding on domestic or commensal animals (e.g., *Boa constrictor occidentalis* – Sironi et al., 2000; *Corallus grenadensis* – Henderson and Winstel, 1995; *Epicrates cenchria* – Martins and Oliveira, 1999; *E. angulifer* – Tolson and Henderson, 1993; *E. inornatus* – Wiley, 2003; *Morelia spilota* – Shine and Fitzgerald, 1996; Fearn et al. 2001; *Pyhton reticulates* – Shine et al., 1999; *Python regius* – Luiselli and Angelici, 1998).

We found one *Corallus hortulanus* with numerous porcupine spines throughout the body. Although the snake was captured alive it was evidently severely injured and may have eventually died. Naive snakes perhaps try to catch unusual and dangerous items, a behavior that can prove costly to the snake. Attempts at predation on very spiky prey are usually unsuccessful, and can result in severe injury and even death. Records on other snakes preying on porcupines include species of large vipers and colubrids, but most are boid snakes (see Duarte, 2003). Other mechanically defended prey that can cause severe injuries are catfish, recorded as prey for anacondas (Beebe, 1966; Rivas, 1999) and filesnakes (Shine, 1986).

Ontogenetic shifts in diet

Changing from exploring ectothermic to endothermic prey as the snakes grow is common in many species and has been already recorded in many boines, including *Boa constrictor* (Sironi et al., 2000; Boback, 2005; Quick et al., 2005), *Corallus* spp. (Henderson, 1993, 2002), *Candoia* (Harlow and Shine, 1992), *Epicrates* (Reagan, 1984; Henderson et al., 1987). Ontogenetic shift in prey type also occurs in *Eunectes murinus* from Venezuela. However, in this case, juveniles feed mostly on birds and include more mammals in their diet as they grow (Rivas, 1999). Similar trends are observed among the Erycinae and Pythonidae. Young *Charina bottae* feed on lizards and Squamata eggs but switch to birds and mammals when large (Rodrígues-Robles, Bell and Greene, 1999). Carpet pythons feed on lizards when small and then switch to mammals and birds: from mice to rats and small to large birds as they grow (Fearn et al., 2001). The African royal pythons (*Python regius*) present both sexual and ontogenetic diet divergence: adult males prey mostly on birds while females feed mainly on mammals and young snakes hunt for little birds (Luiselli and Angelici, 1998).

Foraging strategies

Endothermic animals are the main food of boid snakes. They use infra-red sensors, usually located in the labial pits, to detect these prey (Gamow and Harris, 1973; Grace et al., 2001; Campbell et al., 2002). Chemical and visual cues may also have an important role in prey detection (Gehlbach, Watkinson and Krool, 1971; Grace et al., 2001; Mullin et al., 2004), especially ectothermic animals. Heavy-bodied snakes are assumed to be ambush predators (e.g. Pianka, 1974) but many boine snakes exhibit sit-and-wait tactics (e.g. *Corallus grenadensis* – Henderson, 1993; *C. caninus* – Martins and Oliveira, 1999; *Eunectes murinus* – Strimple, 1993; Rivas, 1999; Valderrama and Thorbjanarson, 2001). Field observations suggests that *C. hortulanus* (Martins and Oliveira, 1999), *Boa constrictor* (Greene, 1983b; S. Boback, pers. comm.), *Epicrates cenchria* (Martins and Oliveira, 1999) and *Eunectes murinus* (Strüssmann, 1992) utilize both ambush and active search strategies. A newborn mouse found in the stomach of an immature *Boa c. constrictor* and three newborn Psittacidae in an adult *C. hortulanus* support these field observations. Nestling rodents were already recorded as prey of other populations of *B. constrictor* (Bakkegard and Timm, 2001). Preying on nestlings (either mammals or birds) suggests that active search for food also occurs in both Ercycinae and Pythonidae, in addition to ambush foraging (Shine and Fitzgerald, 1996; Luiselli and Angelici, 1998; Rodrígues-Robles, Bell and Greene, 1999).

Relationship in predator-prey sizes

Relative head length decreases with increasing body size in *C. hortulanus*, allowing small snakes to explore relatively larger prey than adult snakes. The same trends are found in Great Basin rattlesnakes, *Crotalus lutosus* (X. Glaudas, pers. comm.) and other authors have already reported that young snakes tend to feed on relatively large prey (Godley, 1980; Sazima and Martins, 1990; Marques and Puorto, 1994), but will not refuse small items (see results). Boids and pythonids are well known for feeding on large prey but data on predator-prey size relationships are scarce for most species. Pythonids are probably better studied in this matter. Carpet pythons (*Morelia s. spilota*) in suburban areas in Australia present complex prey-predator size relationships: small snakes feed on relatively large prey, medium size animals explore both large and small prey and large snakes prey only on large items (Fearn et al., 2001). Similarly, large diamond pythons (*Morelia s. variegata*) feed mostly on large prey and are very efficient on doing so (Shine, 1991).

Dietary niche overlap

The niche overlap index varied from 0.27 to 0.52, which means that 29.3 to 51.7% of prey items were explored by a pair of species. However, differences in macrohabitat, hunting strategies and prey sizes may contribute for decreasing competition, especially because none of the studied boines seem to occur in high densities in Brazil. For example, *B. c. constrictor* and *C. hortulanus* presented the highest overlap but the boa is a large size semi-arboreal snake while the common tree boa is slender, relatively small arboreal species. Niche partitioning and competition in snakes' communities have attracted more attention of ecologists in the recent year (see Luiselli, 2006). In the tropical Africa, for example 90% of the studies showed a non-random pattern of resource partitioning (including diet) in reptile assemblages in contrast to only 41.7% in non-tropical Africa (Luiselli, 2007). This finding supports the hypothesis that tropical reptiles are more prone to competition and partition of the available resources, and in snakes communities food is the main resource being partitioned (Luiselli, 2006, 2007). Based in the data presented by Henderson (2002), Luiselli (2006) already have suggested that food partitioning may be important for reducing competition among Neotropical boids.

Final considerations

There is still much more to be done regarding the food habits of the Brazilian boines. Even species for which we gathered more information, such as *Corallus hortulanus*, the data available is still insufficient to investigate if there is any geographic variation or sexual divergence in the diet of this species. For some other species such as *Eunectes deschauenseei* and *Epicrates maurus* there are no records of prey items. Boid snakes are popularly known for eating large prey but reliable data on prey size is unavailable for most species. Our limited data suggests that most species explore prey weighting around 20-30% of their body mass, but even the smaller species, such as *C. hortulanus* had ingested prey weighting nearly their own body mass and one *E. cenchria* ate a prey almost twice its mass. More information on hunting strategies and prey size is also necessary to better characterize dietary niche overlap between sympatric species.

Acknowledgements. We thank Ivan Sazima, Paulo Roberto Manzani and Fatima M. de Souza (ZUEC), Hussam Zaher and Carolina Mello (MZUSP), Francisco Luís Franco and Valdir Germano (IB), Marli Penteado (CEPLAC), Ana Lúcia Prudente (MPEG), Guarino Colli, Mariana Zatz, Verônica Novaes e Silva (CHUMB), for access to the collections and laboratory help; Luís Fabio Silveira (USP) for identifying some of the birds; André L. Fonseca, Juarez Pezzuti, Talita Fontoura, Cristina Espanã and Instituto Butantan for logistical support; Ricardo Sawaya and Alexandro Tozetti for providing some field data; Robert Henderson, and Scott Boback for information and discussion on the diet of emerald boas and boa constrictor, Matt Greenless, Samantha Price-Rees, Xavier Glaudas, Lucca Luiselli and two anonymous referees for review and suggestions. This work was supported by Fapesp (PhD grant to LP) and CNPq (OAVM).

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Received: February 11, 2009. Accepted: May 4, 2009.