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THE SNAKE ASSEMBLAGE OF PARQUE NACIONAL DE SETE CIDADES, STATE OF PIAUÍ, BRAZIL

Wáldima Alves da Rocha[1,2] and Ana Lúcia da Costa Prudente[1]

[1] *Museu Paraense Emílio Goeldi (MPEG), CZO, Laboratório de Herpetologia. Avenida Perimetral, nº 1.901, Caixa Postal 399, Terra Firme, 66017-970, Belém, Pará, Brasil.*
[2] *Corresponding author: waldima@yahoo.com.br.*

Abstract. We describe the composition, abundance and some natural history aspects of the snake community of Parque Nacional de Sete Cidades (PNSC), Municipality of Piracuruca, State of Piauí, northeastern Brazil, and compare its composition with those of nine other localities in Brazil. We used three sampling methods: time-constrained search, pitfall traps with drift fence and incidental encounters, and recorded 87 snakes, belonging to five families (Boidae, Colubridae, Dipsadidae, Elapidae, Viperidae), 18 genera and 24 species. The dominant species was *Thamnodynastes* sp. A (13.1%), followed by *Oxyrhopus trigeminus* and *Micrurus ibiboboca* (10.3%). There was a predominance of terrestrial species and those with diurnal activity. The typical cerrado showed the greatest species richness, and the lowest richness were recorded in the campo limpo (grasslands) and cerrado rupestre (rocky grasslands). Species composition of the PNSC community was more similar to those of the Cerrado-Caatinga transition zone and the Caatinga.

Keywords. Transition area, Diversity, Snakes, Natural History.

Introduction

High species richness and complexity of ecological relationships are remarkable features that characterize the snake fauna of the Neotropical region (Duellman, 1978, 1989, 1990; Henderson *et al.,* 1979; Toft, 1985; Vitt, 1987; Cadle and Greene 1993). Snake assemblages have been the focus of studies in different Brazilian biomes, such as the Amazon (Cunha and Nascimento, 1978; Dixon and Soini, 1986; Zimmermann and Rodrigues, 1990; Martins and Oliveira, 1998; Santos-Costa, 2003; Maschio *et al.,* 2009), the Atlantic Forest (Marques, 1998; Argolô, 2004; Hartmann *et al.,* 2009), the Araucaria Forests (Di-Bernardo, 1998), the Caatinga (Vanzolini *et al.,* 1980, Vitt and Vangilder, 1983; Lima-Verde and Gascon, 1990), the Cerrado (França *et al.,* 2006; Sawaya *et al.,* 2008), the Pampa (Cechin, 1999; Zanella and Cechin, 2006) and the Pantanal (Strüssmann and Sazima, 1993).

The contact regions between different Brazilian biomes are considered ecotones or transition zones and, according to Smith *et al.* (1997), are sites of divergence and production of animal and plant species. The northeast of Brazil has one of the largest extensions of ecotones in the country, which include, besides the Cerrado, the Atlantic Forest, the Caatinga, rocky grasslands, dunes, restingas and the Amazon Rainforest. Tthese transition zones are areas of complex interaction of the flora and fauna from adjacent biomes (IBGE 1992; Rodrigues, 2003). A large transition zone is located in the state of Piauí, where Amazon Rainforest, Cerrado and Caatinga occur together and associated with one another (Rizzini, 1963, 1967; Andrade, 1968), resulting in a mosaic of different vegetation types (Oliveira *et al.,* 1997; Castro, 2003; Ratter *et al.,* 1997; Ratter *et al.,* 2003). Some areas in the northern region of the Cerrado of the Central Plateau, between the states of Maranhão and Piauí, although admittedly ecotone areas, are considered part of the Cerrado (MMA, 2002).

Here we describe the composition, abundance, and some natural history aspects of the snake community of Parque Nacional de Sete Cidades (PNSC), Municipality of Piracuruca, State of Piauí, northeastern Brazil, and compare its composition with those of nine other localities in Brazil.

Material and Methods

Study Area

The Parque Nacional de Sete Cidades (PNSC), is located in the northeastern State of Piauí, Brazil, in the transition between the plateau and the coastal plain, covering the municipalities of Piracuruca and Brasileira (04°05'-04°15'S and 41°30'-41°45'W) (Fig. 1). It has an area of 6221 hectares, a perimeter of 40 km, relief formed by sedimentary basins, and altitudes ranging from 100 to 300 m above sea level. Its climate is tropical in the equatorial zone, Koppen type $C_2W_2A'_4a'$ (Thornthwaite, 1948). The average annual temperature is 26.5°C, with minimum temperatures in May and June (average 25.6°C) and

maximum temperatures in October (average 28.1°C) (Lima and Assunção, 2002). The average annual rainfall is 1300 mm, with a hydric excess of 660 mm in the rainy months (February-April) and hydric deficit of 706 mm in the dry months (August-November) (IBAMA, 2002; Oliveira, 2004).

The vegetation is typical of a transition zone between the Caatinga and the Cerrado; however, the vegetation types typical of the Cerrado are more evident, containing patches of Caatinga vegetation and, to a lesser extent, floodplains and gallery forests along small and medium-sized rivers and 22 springs which occur in the area (Coimbra-Filho and Maia, 1979). The vegetation at the park was classified according to Ribeiro and Walter (1998) and Oliveira (2004) in six vegetation types: campo limpo (grasslands; 887.6 ha or 14.3% of the total area at PNSC) with predominantly robust herbaceous vegetation, up to 1.5 m high; cerrado rupestre, (rocky grasslands) (653.1 ha or 10.5% of PNSC) with poorly developed plants, reaching up to 2 m high, adapted to drought, growing on sedimentary or ferruginous rocky outcrops; typical cerrado (2341.7 ha or 37.6% of PNSC) with herbaceous-subshrub and subshrub-woody layers, up to 5 m high, with twisted and irregular branches and trunks; cerradão (woodland; 1513.3 ha or 24.3% of PNSC) almost always associated with semi-deciduous dry forest, with tall, straight trees (up to 7 m tall) and trunks with thin, smooth or rough bark; semi-deciduous forest (525.7 ha or 8.4% of PNSC), with tall trees (about 9 m tall) and a large number of shrubs and lianas in the understory; and flooded gallery forest (204.6 ha or 3.3% of PNSC) made up of narrow strips of forest along the rivers

Figure 1. Geographic location of the Parque Nacional de Sete Cidades and the other areas used for comparison: 1) Sete Cidades (Cerrado/Caatinga Transition Zone), 2) Nazareth (Cerrado/Caatinga Transition Zone), 3) Uruçuí (Cerrado), 4) Capivara (Caatinga), 5) Confusões (Caatinga), 6) Urbano (Cerrado), 7) Apodi (Caatinga), 8) Exu (Caatinga), 9) Emas (Cerrado), 10) Itirapina (Cerrado).

and streams, irregular canopy height (8-12 m), with the occurrence of palm trees, vines and herbaceous plants in the understory.

Data collection and analysis

Were made six bimonthly field trips to the Parque Nacional de Sete Cidades (PNSC) between September, 2005, and September, 2006, each lasting 20 consecutive days, totalling 120 days in the field. We sampled the six vegetation types present in the park, using 500 × 500 m areas in each vegetation type.

Three sampling methods were used: time-constrained search (Fitch, 1987; Martins and Oliveira, 1998; Sawaya *et al.,* 2008), pitfall traps with drift fence (Greenberg *et al.,* 1994; Cechin and Martins, 2000; Enge, 2001), and incidental encounters (Santos-Costa, 2003; Sawaya *et al.,* 2008).

Time constrained search (TCS) consisted of walking slowly along pre-existing tracks defined within the areas, searching actively (visually) in burrows, termite nests, shrubs, grasses, etc. This procedure was performed for ten consecutive days in each area, in two separate trips during the project. The search lasted 4 h per day (2 h in the morning and 2 h at night), and was done by two people. Thus, each area had the same sampling effort of 160 man-hours (8 man-hours/day × 20 days), totaling 960 man-hours for the six areas.

The pitfall traps with drift fence (PFT) were arranged in a Y configuration, formed by four 60 L buckets, buried at ground level at a distance of 10 m each, connected by a 100 cm tall canvas which was buried 10 cm into the soil to prevent the specimens from crossing from one side of the canvas to the other. In each area we installed seven sets of traps, with a total of 28 buckets per area. Each set of traps was at least 250 m from each other, and was considered an independent sample (Enge, 2001). The buckets remained open until the end of each field trip. Thus, in total, each set of traps remained open for 40 days in each area, totaling 5760 bucket-hours for the six areas.

We considered as an incidental encounter (IE) all specimens found sporadically by the team, or by third parties in the study area and neighboring areas of the park, as well as those found using a sampling method other than those described above.

For each snake observed and/or captured we recorded the following data (if applicable): habitat – campo limpo, cerrado rupestre, typical cerrado, cerradão, semideciduous forest and gallery forest (Oliveira, 2004); microhabitat – aquatic, fossorial, terrestrial, cryptozoic, and arboreal (Martins, 1994); daily activity – diurnal, nocturnal and diurnal/nocturnal.

The specimens collected were deposited in the herpetological collection of the Museu Paraense Emílio Goeldi (MPEG) (Appendix). We restricted our identifications to the species level and, whenever possible, to the subspecies level, in order to increase the level of information and refinement of the results. Identifications to the generic level were disregarded.

Due to the differences in sample sizes, we used rarefaction curves to compare species richness among different vegetation types (Colwell and Coddington, 1994). To compare diversity indices between vegetation types, we calculated, using the rarefaction method, the means of the diversity indices of 1000 randomizations of captures in the vegetation types with highest total abundance. Rarefaction curves of species were built with the help of the program EstimateS v. 7.5 (Colwell, 2005).

The capture effort for TCS in the different vegetation types was calculated following Martins and Oliveira (1998), while for pitfall traps the effort was measured in hours and corresponded to the time during which the traps were left open. The encounter rate of snakes was calculated by dividing the number of specimens collected by the total number of hours worked (total number specimens captured/total number of man-hours worked in the TCS).

To evaluate the similarity between the composition of the snake assemblage in the Parque Nacional de Sete Cidades and those of other open formations and transition zones in Brazil, we used data from nine additional localities: Cerrado: Estação Ecológica de Itirapina, State of São Paulo (Itirapina; Sawaya *et al.,* 2008); Parque Nacional das Emas, State of Goiás (Emas; Valdujo *et al.,* 2009); Urbano Santos, State of Maranhão (Urbano; Lima, 2003), Estação Ecológica Uruçuí-Una, State of Piauí (Uruçui; H. Zaher pers. comm.); Caatinga: Parque Nacional Serra das Confusões, State of Piauí (Confusões; H. Zaher pers. comm.); Parque Nacional Serra da Capivara, State of Piauí (Capivara; Olmos, 1988); Exu, State of Pernambuco (Exu; Vitt and Vangilder, 1983); Chapada do Apodi, State of Ceará (Apodi; Lima-Verde, 1976), Transition zone: Nazareth Farm, State of Piauí (Nazareth; Rocha and Santos, 2004; Fig. 1).

We performed a Principal Coordinates Analysis (PCO) and a Cluster Analysis using the Unweighted Pair Group Average Method (UPGMA) and Gower's

similarity coefficient. The multivariate analyses were performed in MVSP 3.1 software (Kovach, 1999).

Results

We recorded 24 species belonging to 18 genera and five families (Boidae, Colubridae, Dipsadidae, Elapidae and Viperidae; Table 1). *Bothropoides lutzi* (Miranda-Ribeiro, 1915) and *B. neuwiedi* (Wagler, 1824) were mentioned by Coimbra-Filho and Maia (1979) as occurring in the Parque Nacional de Sete Cidades; however, they were not collected in this study and no material is deposited in scientific collections, so their presence has not been confirmed for the region.

Among the 24 species recorded, 18 species (n = 30 individuals) were sampled by incidental encounters, six of which were sampled exclusively by this method. *Caudisona durissa* (n = 4; 2.8%), *Thamnodynastes* sp. A, *Xenodon merremi,* and *Micrurus ibiboboca* (n = 3; 2.1% each) were the most abundant species with the method of incidental encounters.

Considering only the quantifiable capture methods, time constrained search and pitfall traps with drift fence, we found 18 species (n = 57 individuals), the most abundant of which were *Thamnodynastes* sp. A (n = 11; 19.3%), *Oxyrhopus trigeminus* (n = 9; 15.7%), *Micrurus ibiboboca* (n = 6; 10.5%), and *Pseudoboa nigra* (n = 5; 8.7%). With a sampling effort of 960 person-hours, we recorded 16 species (n = 46) using TCS (three species exclusive to this method), with an average encounter rate of 0.033 snakes per person-hour (one snake every 32 man-hours of search). Seven species (n = 11) were found in the PFTs (two exclusive to this method) with a sampling effort of 5.760 bucket-hours and an encounter rate of 0.002 snakes collected per bucket-hour (one snake every 240 open bucket-days; Table 2).

Table 1. List of snake species recorded in the Parque Nacional de Sete Cidades. Number of specimens found (N); Habitat types: CL = campo limpo, CR = cerrado rupestre, CT = typical cerrado, CE = cerradão, SF = semi-deciduous forest, and GF = gallery forest).

Species	N	Habitat					
		TC	CE	CR	CL	SF	GF
Boidae							
Boa constrictor Linnaeus, 1758	3	2	1				
Epicrates assisi Machado 1945	1						1
Eunectes murinus (Linnaeus, 1758)	1						1
Colubridae							
Drymarchon corais (Boie, 1827)	3	1		1			1
Leptophis ahaetulla (Linnaeus, 1758)	3	1					2
Mastigodryas boddaerti (Sentzen, 1796)	1	1					
Oxybelis aeneus (Wagler, 1824)	2	1	1				
Spilotes pullatus (Linnaeus, 1758)	4	2	1			1	
Tantilla melanocephala (Linnaeus, 1758)	2	1				1	
Dipsadidae							
Apostolepis cearensis Gomes, 1915	1	1					
Leptodeira annulata (Linnaeus, 1758)	3	1					2
Liophis poecilogyrus (Wied, 1825)	2					1	
Liophis viridis Günther, 1862	4	1			2		1
Oxyrhopus trigeminus Duméril, Bibron and Duméril, 1854	9	1	1	3	3		1
Philodryas nattereri Steindachner, 1870	1			1			
Philodryas olfersii (Lichtenstein, 1823)	1	1					
Pseudoboa nigra (Duméril, Bibron and Duméril, 1854)	6	3	2			1	
Psomophis joberti (Sauvage, 1884),	2	2					
Taeniophallus occipitalis (Jan, 1863)	1	1					
Thamnodynastes sp. A	14	3	2	6		2	1
Thamnodynastes sp. B	3			2	1		
Xenodon merremii (Wagler, 1824)	6	3				1	2
Elapidae							
Micrurus ibiboboca (Merrem, 1820)	9	2	1	1	1	2	2
Viperidae							
Caudisona durissa (Linnaeus, 1758)	5	1	2	2			

Rarefaction curves did not reach an asymptote, indicating that we did not capture all the probable species in any of the areas. For the same number of samples, the richest habitat was the typical cerrado (79.1%, with five exclusive species), followed by gallery forest (37.5%, with two exclusive species), cerradão (33.3%), semi-deciduous forest (25.0%, with one unique species), cerrado rupestre (20.8%, with one unique species) and campo limpo (16.6%; Table 1; Fig. 2).

Considering microhabitat use, ther was a predominance of terrestrial species (75%), followed by arboreal (16.6%), aquatic (4.16%) and fossorial (4.16%) species. In the studied assemblage, 61% of the species were exclusively diurnal, whilst 39% (*Boa constrictor, Oxyrhopus trigeminus, Pseudoboa nigra, Micrurus ibiboboca, Caudisona durissa*) were active both during the day and at night (Table 2).

The Principal Coordinates Analysis (PCO) and the cluster analysis showed the same patterns regarding the similarity of the areas compared (Figs. 3 and 4). The first two axes of the PCO together explained 37.4% of the total data variance (axis 1: eigenvalue = 1.38 and 20.8% of variance, axis 2: eigenvalue = 1.1 and 16.5% of variance; Fig. 3). The PCO axis 1 ordinated the snake assemblages into two groups: group 1 contains the assemblages from the Caatinga (Exu, Capivara, Apodi and Confusões), two Cerrado/Caatinga transition zones (Nazareth Farm and Parque Nacional de Sete Cidades), and the northeastern Cerrado (Urbano Santos), and group 2 contains only assemblages from the Cerrado (Uruçuí-Una, Emas, and Itirapina). The PCO axis 2 ordinated assemblages into

Table 2. List of snake species recorded in the Parque Nacional de Sete Cidades. Number of specimens found in each microhabitat (LL = leaf litter, OV = on the vegetation, G = Ground, UG = under the ground, OT = on trunks, W = Water, OR = On rocks); daily activity (D = Daytime, N = Night); and method (TCS = time-constrained search, PFT = pitfall traps and IE = incidental encounters. For microhabitat and activity we did not consider specimens sampled by the pitfall traps.

Species	Microhabitat							Methods			Activity	
	LL	OT	OV	UG	G	OR	W	TCS	PFT	IE	D	N
Boidae												
Boa constrictor Linnaeus, 1758	2	1						1		2	2	1
Epicrates assisi Machado, 1945			1							1	1	
Eunectes murinus (Linnaeus, 1758)							1	1			1	
Colubridae												
Drymarchon corais (Boie, 1827)	2	1						2		1	1	
Leptophis ahaetulla (Linnaeus, 1758)			3					2		1	2	1
Mastigodryas boddaerti (Sentzen, 1796)					1					1	1	
Oxybelis aeneus (Wagler, 1824)					1					2	2	
Spilotes pullatus (Linnaeus, 1758)	2		2					2		2	4	
Tantilla melanocephala (Linnaeus, 1758)									2			
Dipsadidae												
Apostolepis cearensis Gomes, 1915	1									1	1	
Leptodeira annulata (Linnaeus, 1758)			3					3			2	1
Liophis poecilogyrus (Wied, 1825)		1						1	1		2	
Liophis viridis Günther, 1862	3							1	2	1	4	
Oxyrhopus trigeminus Duméril, Bibron and Duméril, 1854	5			1	1			7	1	1	5	2
Philodryas nattereri Steindachner, 1870									1		1	
Philodryas olfersii (Lichtenstein, 1823)					1					1	1	
Pseudoboa nigra (Duméril, Bibron and Duméril, 1854)	4		1					2	3	1	3	2
Psomophis joberti (Sauvage, 1884),	1							1		1	2	
Taeniophallus occipitalis (Jan, 1863)	1									1	1	
Thamnodynastes sp. A	8			1	3			10	1	3	8	4
Thamnodynastes sp. B	1			2				3			2	1
Xenodon merremii (Wagler, 1824)	6							3		3	6	
Elapidae												
Micrurus ibiboboca (Merrem, 1820)	8			1				6		3	1	8
Viperidae												
Caudisona durissa Linnaeus, 1758	4					1		1		4	4	1

two groups: one containing the assemblages from the Caatinga areas (Exu, Apodi, Capivara) and another with the assemblages of the Cerrado/Caatinga transition zones (Nazareth Farm, Parque Nacional de Sete Cidades), Caatinga (Confusões), and one from the northeastern Cerrado (Urbano Santos). Axis 2 also separated the Cerrado localities in the midwest (Emas) and southeast (Itirapina) from the northeastern Cerrado (Uruçuí; Fig. 3).

Two groups were defined using the cluster analysis, according to vegetation characteristics: 1) Cerrado areas of the midwest of Brazil, and 2) formations present in the northeastern Cerrado, the Caatinga, and the Cerrado/Caatinga transition zones. The assemblages of the Cerrado from the midwest (group 1) are similar to each other, but were faunistically distant from the assemblages of the northeastern Cerrado (Uruçuí and Urbano Santos). Group 2 showed two main clusters, one with the vegetation types from the Caatinga (Exu, Capivara and Apodi), and the other with vegetation types from the northeastern Cerrado, the Caatinga and the Cerrado/Caatinga transition zones. The northeastern Cerrado areas (Uruçui and Urbano Santos) were more similar to the Caatinga areas than the Cerrado areas of the midwestern and southeastern regions of Brazil (Emas and Itirapina). The snake assemblage of Parque Nacional de Sete Cidades showed greater similarity (60%) with Nazareth, which is also a Cerrado/Caatinga transition zone. Thus, the composition of snake species in Sete Cidades was more similar to those of open areas, such as the Cerrado/Caatinga transition zone (ecotone) and the Caatinga (Fig. 4).

Discussion

The number of species collected in the Parque Nacional de Sete Cidades is similar to those obtained in other open vegetation types, especially in the Cerrado and the Caatinga (Vanzolini, 1948; Lima-Verde, 1976; Vitt and Vangilder, 1983; Strüssmann, 2000). This low number of species reflects the pattern shown

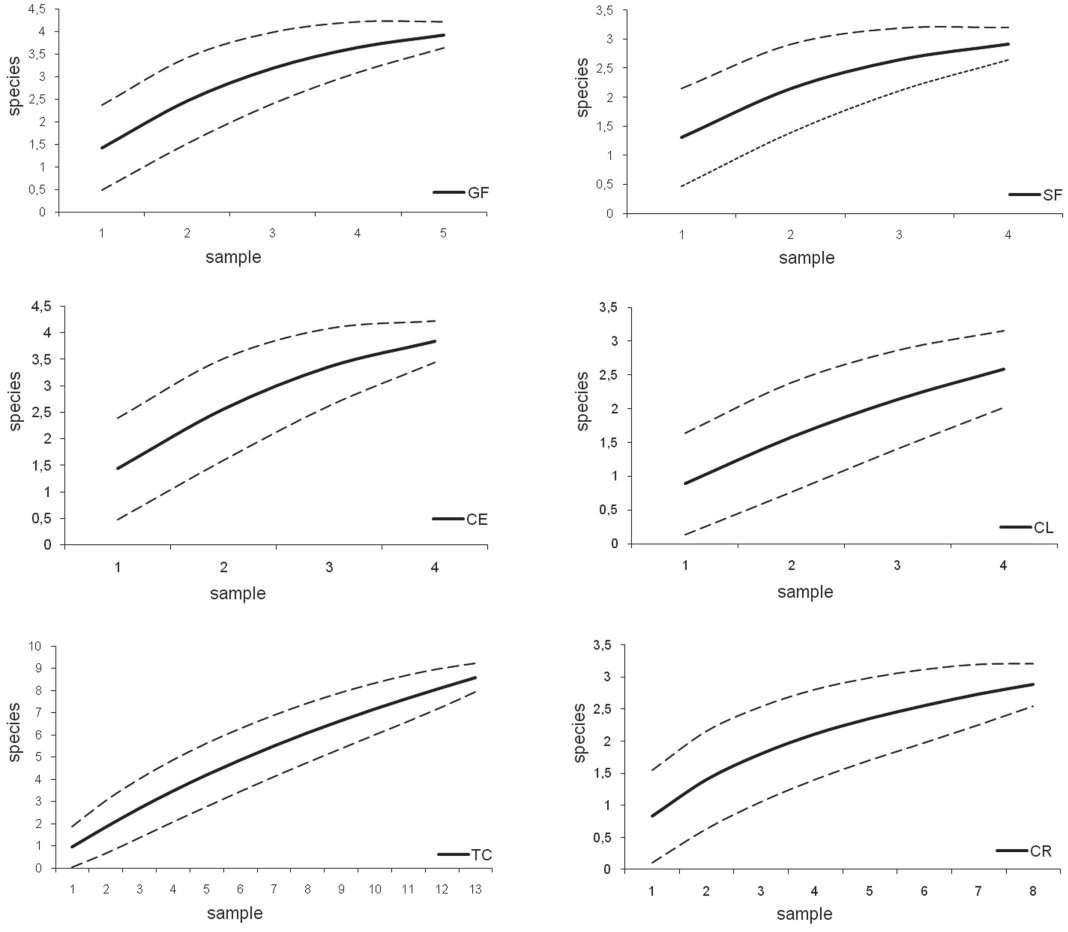

Figure 2. Rarefaction curves based on the number of samples in each environment (confidence interval 95%). GF = gallery forest, SF = semi-decidous forest, CE = cerradão, CL = campo limpo; TC = typical cerrado, and CR = cerrado rupestre.

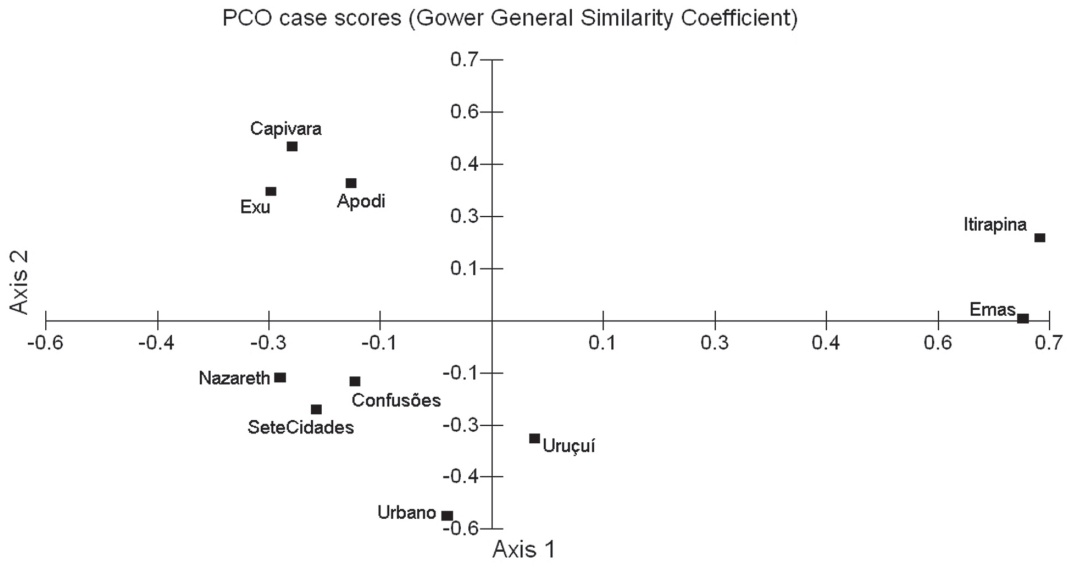

FIGURE 3. Ordination diagram of the Principal Coordinates Analysis resulting from the species composition (presence and absence of 100 species) of ten localities. Axis 1: eigenvalue = 1.4 and 20.8% variance, axis 2: eigenvalue = 1.1 and 16.6% variance. Localities: Sete Cidades (Cerrado/Caatinga Transition Zone); Nazareth (Cerrado/Caatinga Transition Zone); Uruçui (Cerrado); Capivara (Caatinga); Confusões (Caatinga); Urbano (Cerrado); Apodi (Caatinga); Exu (Caatinga); Emas (Cerrado); Itirapina (Cerrado).

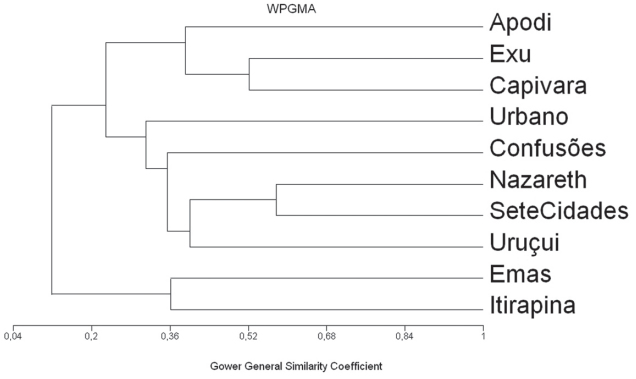

FIGURE 4. Dendrogram of the cluster analysis resulting from the species composition (presence and absence of 100 species) from ten localities. Localities are the same in figure 3.

by Silva and Sites (1995), where localities with a predominance of open vegetation types tend to have relatively lower diversity when compared to forest formations (Vanzolini, 1948; Lima-Verde, 1976; Vitt and Vangilder, 1983; Cunha and Nascimento, 1993; Martins and Oliveira, 1998; Strüssmann, 2000; Santos-Costa, 2003; Argôlo, 2004; Bernarde, 2004; Morato, 2005; França *et al.,* 2006; Sawaya *et al.,* 2008).

Similarly to most South American snake assemblages (Vitt and Vangilder, 1983; Lima-Verde and Gascon, 1990; Strussmann and Sazima, 1993; Di-Bernardo, 1998; Marques, 1998; Martins and Oliveira, 1998; Cechin, 1999; Strussmann, 2000; Lima, 2003; Rocha and Santos, 2004; Morato, 2005; Sawaya *et al.,* 2008), there was a predominance of of the families Dipsadidae and Colubridae (*sensu* Zaher *et al.,* 2009) in the PNSC assemblage.

Unlike most South American snake assemblages, where the most abundant species belong to the genus *Bothrops* (Marques, 1998; Martins and Oliveira, 1998; Cechin, 1999; Santos-Costa, 2003; Sawaya *et al.,* 2008), in the PNSC the most abundant species was *Thamnodynastes* sp. A. This species was identified as *Thamnodynastes* sp. 2 in Franco and Ferreira (2002), and is currently being described.

The presence of *Micrurus ibiboboca* as one of the most abundant species was also observed by Lima (2003) in an assemblage from the Cerrado of northeastern Brazil. In general, species of *Micrurus* are not abundant in South American assemblages (Martins and Oliveira, 1998; Strüssmann, 2000; Lima, 2003; Santos-Costa, 2003; Bernarde, 2004; Sawaya *et al.,* 2008), perhaps because of their primarily fossorial habits, which make them difficult to find.

The presence of a greater number of species in typical cerrado supports the suggestion that vegetation types with more structural complexity tend to show a higher species richness Oliveira (2004), perhaps because of the higher availability of different microhabitats (Rand and Humphrey, 1968). Thus, the low capture rates obtained for campo limpo and cerrado rupestre may be related to the low structural complexity of these vegetation types (Oliveira, 2004), with a limited range of microhabitats available for the

snakes. Thus, the heterogeneity present in the Cerrado phytophysiognomies (Ricklefs and Lovette, 1999) may explain the differences between the number of species observed in the six areas studied.

Generalist species, such as *Oxyrhopus trigeminus* and *Micrurus ibiboboca,* which were found in all vegetation types of PNSC, may present a greater environmental plasticity and therefore a greater tolerance to environmental gradients in the area. On the other hand, other species seem to be much more dependent on particular habitats, such as the aquatic *Eunectes murinus,* which was found only in wet areas such as gallery forests.

The complementarity between the three sampling methods used in the PNSC indicates the importance of using several methods in community studies, in order to obtain more consistent results regarding the composition of local snakes (Martins, 1994). Time-constrained search (TCS) associated with pitfall traps (PFT) seems to be the best combination of methods for sampling an area, as they provide access to species from different habitats (Bury and Raphael, 1983; Neckel-Oliveira and Gordo, 2004). As suggested by Sawaya *et al.* (2004) and Ribeiro-Jr *et al.* (2008), the joint use of the incidental encounter method (IE) with the other two quantifiable methods (TCS and PFT) increased the likelihood of recording unique and rare species in the PNSC.

The predominance of terrestrial dipsadids (*sensu* Zaher *et al.* 2009) in the PNSC seems to reflect the large number of terrestrial species among the Xenodontinae (Cadle and Greene, 1993). Most snakes in the PNSC are diurnal, what disagrees with the suggestion by Vanzolini (1948) that in open vegetation types such as the Cerrado, there is a predominance of nocturnal snakes. These results may reflect the composition of the PNSC assemblage, in which 80% of the species belong to the families Dipsadidae and Colubridae, families composed mostly by diurnal species (Cadle and Greene, 1993).

Among the assemblages analyzed, there is a greater similarity between the PNSC and areas located in the Cerrado/Caatinga transition zone and the Caatinga. Although influenced by both the Cerrado and the Caatinga faunas, the snake assemblage of PNSC is more related to the Caatinga assemblages. The results of our multivariate analyses corroborate the suggestion by Colli *et al.* (2002) that the Cerrado and the Caatinga have each a typical snake fauna, contrary to Vanzolini (1976). Furthermore, our results show that the PNSC is an important area for the conservation of snake assemblages of the Cerrado/Caatinga transition zone and of the Caatinga itself.

Resumo

Este trabalho teve como objetivo descrever a composição, a abundância e alguns aspectos da história natural da comunidade de serpentes do Parque Nacional de Sete Cidades (PNSC), no Município de Piracuruca, Piauí, nordeste do Brasil, e comparar sua composição com aquelas de outras localidades no Brasil. Foram utilizados três métodos de coleta: procura limitada por tempo, armadilhas de interceptação e queda e encontros ocasionais. Foram registradas 87 serpentes, distribuídas em cinco famílias (Boidae, Colubridae, Dipsadidae, Elapidae, Viperidae), 18 gêneros e 24 espécies. A espécie dominante foi *Thamnodynastes* sp. A (13.1%), seguida de *Oxyrhopus trigeminus* e *Micrurus ibiboboca* (10.3%). Houve um predomínio de espécies terrestres e com atividade diurna. A fitofisionomia definida como cerrado típico apresentou maior diversidade de espécies, sendo as menores diversidades registradas no campo limpo e cerrado rupestre. A composição de espécies da comunidade do PNSC mostrou maior similaridade com taxocenoses de áreas de transição Cerrado/Caatinga e de Caatinga.

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Appendix

Specimens examined (MPEG: Museu Paraense Emílio Goeldi)

BRAZIL – Piauí: Piracuruca – BOIDAE – *Boa constrictor* – MPEG 22853; COLUBRIDAE – *Drymarcon corais* – MPEG 22858, MPEG 23332; *Leptophis ahaetulla* – MPEG 22863, MPEG 22864; *Mastigodryas boddaerti* – MPEG 22890, MPEG 22891; *Liophis poecilogyrus* – MPEG 22872, MPEG 22873; *Liophis viridis* – MPEG 22869, MPEG 22862; *Oxybelis aeneus* – MPEG 22896, MPEG 22897; *Spilotes pullatus* – MPEG 22859, MPEG 22860, MPEG 22861; *Tantilla melanocephala* – MPEG 22859, MPEG 23332; DIPSADIDAE – *Leptodeira annulata* – MPEG 22889, MPEG 22870; *Oxyrhopus trigeminus* – MPEG 22878, MPEG 22879, MPEG 22880, MPEG 22881, MPEG 22882, MPEG 22883, MPEG 22884, MPEG 22885, MPEG 22886; *Philodryas nattereri* – MPEG 22878; *Philodryas olfersii* – MPEG 22878; *Pseudoboa nigra* – MPEG 22892, MPEG 22893, MPEG 22894, MPEG 22895; *Psomophis joberti* – MPEG 22865, MPEG 22866; *Taeniophallus occipitalis* – MPEG 22859; *Thamnodynastes* sp. A – MPEG 23348, MPEG 23333, MPEG 23334, MPEG 23335, MPEG 23337, MPEG 23338, MPEG 23339, MPEG 23340, MPEG 23345; MPEG 23346, MPEG 23347, MPEG 23341, MPEG 23342; *Thamnodynastes* sp. B – MPEG 23336, MPEG 23343, MPEG 23344; *Xenodon merremi* – MPEG 22874, MPEG 22875, MPEG 22876, MPEG 22877, MPEG 22887; ELAPIDAE – *Micrurus ibiboboca* – MPEG 23349, MPEG 23350, MPEG 23351, MPEG 23352, MPEG 23353, MPEG 23354, MPEG 23355; VIPERIDAE – *Caudisona durissa* – MPEG 22855, MPEG 22854, MPEG 22856, MPEG 22857.