

Reptiles in an ecotonal area in northern State of Piauí, Brazil

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RESUMO: (Répteis em uma área ecotonal no norte do estado do Piauí, Brasil) Nós apresentamos os resultados de um inventário de répteis de uma área de ecótono Cerrado/Caatinga, localizada no município de Batalha, estado do Piauí. Realizamos o estudo entre maio de 2004 e janeiro de 2007, na área da Fazenda Paquetá. Utilizamos armadilhas de interceptação e queda, procura limitada por tempo, manzuá (armadilha feita de madeira, em forma de um cesto, usada na captura de lagostas e peixes) e encontros ocasionais para amostragem. Listamos um total de 31 espécies de répteis, sendo 14 espécies de serpentes, 14 espécies de lagartos, uma de anfisbena, uma de quelônio e uma de crocodiliano. O método amostral mais eficiente foi o das armadilhas de interceptação e queda, com 10 espécies, representadas principalmente por lagartos terrestres. A fauna de répteis registrada na área de estudo consta de representantes que ocorreram em mais de uma fisionomia, porém, 16% (n=5) dos répteis foram amostrados apenas em áreas de florestas estacionais semidecíduas. Assim, a manutenção de fragmentos preservados de florestas estacionais semidecíduas tais como os encontrados na Fazenda Paquetá podem assegurar a existência de espécies de habitats florestais no âmbito deste ecótono Cerrado/Caatinga.

Palavras-chave: Conservação, Florestas Estacionais Semidecíduas, Lagartos, Serpentes.

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ABSTRACT: We present the results of an inventory of reptiles from an area of Cerrado/Caatinga ecotone, located in municipality of Batalha, state of Piauí. We conducted this study from May 2004 to January 2007, in area of Fazenda Paquetá. We performed the sampling with pitfall traps with drift-fences, time-constrained search, occasional encounters and manzuá (a basket shape trapmade of wood used in the catch of lobster and fishes). We recorded 31 species of reptiles, including 14 of snakes, 14 of lizards, one of amphisbaenian, one of turtle and one of crocodilian. The most efficient sampling method were pitfall traps with drift-fences, with 10 species, mostly represented by terrestrial lizards. The reptile fauna registered in the study area consists in species that occurred in more than one phytophysiognomy, however, 16% (n=5) of the reptiles were sampled only in areas of semideciduous seasonal forest. Thus, the maintenance of preserved fragments of semideciduous seasonal forest such as those present at Fazenda Paquetá may ensure the existence of forest habitat species within this Cerrado/Caatinga ecotone.

Keywords: Conservation, Semideciduous Seasonal Forest, Lizards, Snakes.

Introduction

The Brazilian Cerrado is a tropical savanna ecoregion that occupies 2 million km² and it is composed mainly by a mosaic of grasslands, shrublands, woodlands with small trees and also gallery forest along the watercourses (Ratter *et al.*, 1997; Oliveira-Filho & Ratter, 2002; Klink & Machado, 2005). Such habitat heterogeneity directly explains part of the Cerrado biodiversity, which allows the maintenance of viable populations of a large number of species (Colli *et al.*, 2002; Silva & Bates, 2002; Pagotto & Souza, 2006). Besides, this ecoregion is one of the world's biodiversity hotspots owing to the high species richness and endemism under imminent threat from land-use conversion (Myers *et al.*, 2000).

Nevertheless, the Cerrado has been suffering an increasing effect of human impact and extraction practices, as agriculture (Gardner, 2006). Consequently, , from 20 to 80% of the total area of the Cerrado has been altered at some degree, cleared or transformed in some way due to agriculture and development (Alho & Martins, 1995; Cavalcanti, 2002; Jepson, 2005). Besides, only ca. 2.2% of the Cerrado area is legally protected (Klink & Machado, 2005) and the indications are that 20% of endemic and threatened species remain outside of any of the region's parks and reserves (Machado *et al.*, 2004). This panorama turns the Cerrado conservation status worse

than for other tropical savannas (Silva & Bates, 2002). Even though, such biological and conservationist importance are not reflected in scientific knowledge, throughout the Cerrado area, with large gaps on Northern (Tocantins, Maranhão and Piauí), Eastern (Bahia) or Southwestern (Mato Grosso) portions (Machado *et al.*, 2008).

In the state of Piauí, the Cerrado occupies about 12 million hectares, or 46% of the state's total area and 6% of the Cerrado biome (Castro & Martins, 1999; Matos & Felfili, 2010). Of this total, 70.4% are in southwestern and extreme south of state and 29.6 % in your transitional area (Aguiar & Montero, 2005). These transition areas cross lengthwise the entire state, occupying an area of c.a 123.000 km², forming the largest phytoecological domain of the Parnaíba river basin (Castro, 2007). This ecotonal characteristic creates a complex mosaic of vegetation types throughout the state, including drier Caatinga and Cerrado patches mixed with more humid habitats, such as the gallery forests and the seasonally-dry tropical forests (SDTF) (Castro, 2003; Ratter *et al.*, 1997). Just as the Cerrado, the tropical dry forests are one of the most threatened ecosystems in South America, mainly due to strong anthropogenic pressures, as the agricultural expansion and livestock (Machado *et al.*, 2004; Yepes & Villa, 2010).

The herpetofauna of the state of Piauí is heterogeneously known, owing to an historical small number of publications. However, this situation has improved in the past ten years, through the publication of a considerable number of studies dealing with community ecology (e.g., Rocha & Santos, 2004; Orofino *et al.*, 2010; Rocha & Prudente, 2010; Rodrigues & Prudente, 2011; Roberto *et al.*, 2012), new species records or species lists (e.g., Annunziata *et al.*, 2007, 2009; Silva *et al.*, 2007a, 2007b; Loebmann & Mai, 2008; Lisboa *et al.*, 2010; Silva-Leite *et al.*, 2010; Benício *et al.*, 2011, 2012; Delfim *et al.*, 2011; Ramalho *et al.*, 2011; Freitas *et al.*, 2012; Dal Vechio *et al.*, 2013; Roberto *et al.*, 2013a; Silva *et al.*, 2013; Benício & Fonseca, 2014; Benício *et al.*, 2014; Cavalcanti *et al.*, 2014; Benício *et al.*, 2015a, 2015b) or description of hitherto unknown species (e.g., Rodrigues *et al.*, 2001; Bour & Zaher, 2005; Nogueira & Rodrigues, 2006; Brandão *et al.*, 2008; Arias *et al.*, 2011; Silva & Ávila-Pires, 2013; Roberto *et al.*, 2013b).

The state of Piauí still needs species inventories throughout its territory to improve the knowledge on its herpetofauna. In the last forty years since the classic study of Vanzonili *et al.* (1980), only five studies with reptiles were carried out in ecotonal areas in the Northern of the state (Rocha & Santos, 2004; Rocha & Prudente, 2010; Rodrigues & Prudente, 2011; Benício *et al.*, 2015a; 2015b). Herein, we provide new data on the composition of reptiles in the Fazenda Paquetá, municipality of Batalha, Piauí.

Materials and Methods

Study site. The Fazenda Paquetá (03°58'49''S, 42°05'39''W) is a 60 ha area, located in the municipality of Batalha, Northern state of Piauí, at 160 km NE from Teresina. The region is covered by Cerrado/Caatinga ecotone vegetation, besides patches of gallery forests along the watercourses, deciduous subdesert shrubland (*Cerrado rupestre*) and semideciduous seasonal forests (SDSF) (Oliveira *et al.*, 2007). In addition, occasional sampling occurred at disturbed areas, which were abandoned agricultural areas mainly dominated by secondary growth vegetation. The sampling locality is inserted within the Campo Maior Complex, one of the eight Caatinga ecoregions, and it is characterized by the hot and wet climate, with mean annual precipitation of 1,300 mm concentrated between June and December (Velloso *et al.*, 2002). It is estimated that 50% of this ecoregion has already been degraded by livestock and pottery (Velloso *et al.*, 2002). On a floristic inventory, 109 species were recorded for Fazenda Paquerá, mainly Leguminosae, Asteraceae, Bignoniaceae, Rubiaceae and Combretaceae (Oliveira *et al.*, 2007).

Data collection. We carried the fieldwork from May 2004 to January 2007, four times per year, every three months. Specimens were captured using the following collecting methods: pitfall traps with drift fences (PT, Cechin & Martins, 2000), time-constrained search (TCS, Zanella & Cechin, 2006), incidental encounters (Sawaya *et al.*, 2008) and “manzuá”- a basket shape trapmade of wood used in the catch of lobsters and fishes (Barreto *et al.*, 2010).

We installed three stations of PT, being two arranged in line (one with five buckets and one with ten buckets), and one with fifteen buckets arranged in a “T” shape. These arrangements do not enhance the sampling performance (Ribeiro-Júnior *et al.*, 2008), thus they are treated as equals. On each trap station, 60 liter buckets were buried at the ground level, about ten meters apart from each other, with at least 300 m between the stations. All buckets were connected by a 0.5 m high plastic drift fence. The three PT stations were placed in SDTF, Cerrado/Caatinga ecotone and Cerrado patches. These traps were checked daily, during 50 non-consecutive days.

The TCS were performed in the trails within the study areas, with four hours daily samples, two during the day and two at night. All samples were simultaneously performed by two independent collectors, resulting on an effort of 200 hours of active sampling. The manzuá was installed in water sources available in the study area (lakes or small streams). This

trap used an attractive bait for turtles, but whenever the individuals entered into the trap, they were not able to leave. This method was applied during three consecutive days, remaining in the water for eight hours/day. These methods used in combination, are considering complementary methods and access different reptile faunas (Ribeiro-Júnior *et al.*, 2008).

We collected all specimens according to the permit number 120/04, issued by Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA) through Centro Nacional de Pesquisa e Conservação de Répteis e Anfíbios (RAN). Collected specimens were euthanized with anesthetic, fixed in 10% formalin and preserved in 70% alcohol. Voucher specimens are deposited at the Herpetological Collection of the Museu Paraense Emílio Goeldi (MPEG, Belém, Pará) and the Coleção de História Natural da Universidade Federal do Piauí (CHNUFPI, Floriano, Piauí). Species identification was performed by specialists and comparison to specimens of the Herpetological Collection of the Museu Paraense Emílio Goeldi. The nomenclature used herein followed the list of species for Brazilian reptiles (Costa & Bérnils, 2014).

Results

We recorded 31 species (Table 1, Figures 1 and 2) of reptiles of the families: Amphisbaenidae (1 species), Gymnophthalmidae (2 species), Gekkonidae (2 species), Iguanidae (1 species), Phyllodactylidae (1 species), Dactyloidae (1 species), Scincidae (1 species), Sphaerodactylidae (1 species), Teiidae (3 species), Tropiduridae (2 species), Alligatoridae (1 species), Chelidae (1 species), Boidae (2 species), Colubridae (3 species), Dipsadidae (7 species), Elapidae (1 species) and Viperidae (1 species).

The number of species recorded exclusively by PT accounted for 32% of total sample (n=10, Table 1), mainly represented by terrestrial lizards (e.g., *Gonatodes humeralis*, *Colobosauroides cearensis*, *Micrablepharus maximiliani*, *Ameiva ameiva*, *Cnemidophorus pyrrhogularis*, *Salvator merianae* [Figure 2B]) and *Tropidurus hispidus*) and the snakes *Apostolepis cearensis* and *Micrurus* sp.. *Pit-fall traps* increased significantly the species richness, and the size of the buckets used were considered adequate enough for sampling lizards, but not for larger snakes. Such bias was solved with the data obtained with occasional samplings that increased in ca. 28% the squamate reptiles species richness for the study area, with the record of six species of snakes and two of lizards (Table 1). Besides, most of the Fazenda Paquetá reptiles species are terrestrial and diurnal forms.

Table 1. List of reptiles sampled in Fazenda Paquetá, Piauí. **Activity:** D, daytime; N, night. **Habit:** T, terrestrial; F, fossorial; SF, semifossorial; A, arboreal; AQ, aquatic. **Phytophysiognomies:** CER/CAA, Cerrado/Caatinga ecotone; SDSF, semideciduous seasonal forest; GF, gallery forest; DSS, deciduous subdesert shrubland; DA, disturbed area. **Sampling method:** PT, pitfall traps with drift fences; TCS, time constrained search; OE, occasional encounter; M, manzuá.

| TAXA | ACTIVITY | HABIT | PHYTOFISIOGNOMIES | SAMPLING METHOD |
|--|----------|-------|-------------------|-----------------|
| REPTILIA | | | | |
| SQUAMATA | | | | |
| "AMPHISBAENIANS" | | | | |
| AMPHISBAENIDAE | | | | |
| <i>Amphisbaena vermicularis</i> Wagler, 1824 | N | F | SDSF | PT |
| "LIZARDS" | | | | |
| GEKKONIDAE | | | | |
| <i>Hemidactylus agrisus</i> Vanzolini, 1978 | D | T/A | DA | TCS |
| <i>Hemidactylus mabouita</i> (Moreau de Jonnés, 1818) | D | T/A | DA | TCS |
| GYMNOPHTALMIDAE | | | | |
| <i>Colobosauroides cearensis</i> Cunha, Lima-Verde & Lima 1991 | D | SF | CER/CAA; SDSF | PT |
| <i>Micrablepharus maximiliani</i> (Reinhardt & Luetken, 1862) | D | SF | CER/CAA; SDSF | PT |
| IGUANIDAE | | | | |
| <i>Iguana iguana</i> (Linnaeus, 1758) | D | T/A | CER/CAA; SDSF; DA | OE |
| POLYCHROTIDAE | | | | |
| <i>Polychrus acutirostris</i> Spix, 1825 | D | T/A | CER/CAA; SDSF | TCS; OE |
| PHYLLODACTYLIDAE | | | | |
| <i>Phyllorpezus pollicaris</i> (Spix, 1825) | N | SF | DSS | TCS |

Table 1 (cont.)

| TAXA | ACTIVITY | HABIT | PHYTOFISIOGNOMIES | SAMPLING METHOD |
|---|----------|-------|----------------------------|-----------------|
| SCINCIDAE | | | | |
| <i>Brasiliscincus heathi</i> (Schmidt & Inger, 1951) | N | SF | CER/CAA; DA | PT |
| SPHAERODACTYLIDAE | | | | |
| <i>Gonatodes humeralis</i> (Guichenot, 1855) | D | T/A | SDSF | PT |
| TEIIDAE | | | | |
| <i>Ameiva ameiva</i> (Linnaeus, 1758) | D | T | CER/CAA; SDSF; GF; DSS; DA | PT |
| <i>Ameivula pyrrhogularis</i> (Silva & Ávila-Pires, 2013) | D | T | CER/CAA; DSS; DA | PT |
| <i>Salvator merianae</i> (Duméril & Bibron, 1839) | D | T | CER/CAA; SDSF | PT; OE |
| TROPIDURIDAE | | | | |
| <i>Tropidurus hispidus</i> (Spix, 1825) | D | T/A | CER/CAA; SDSF; GF; DA | PT; OE |
| <i>Tropidurus semitaeniatus</i> (Spix, 1825) | D | T | CER/CAA; DSS; DA | OE |
| "SNAKES" | | | | |
| BOIDAE | | | | |
| <i>Boa constrictor</i> (Linnaeus, 1758) | D/N | T/A | CER/CAA | TCS; OE |
| <i>Corallus hortulanus</i> (Linnaeus, 1758) | D/N | A | GF | TCS |
| COLUBRIDAE | | | | |
| <i>Drymarchon corais</i> (Boie, 1827) | D | T | CER/CAA; DA | OE |
| <i>Leptophis ahaetulla</i> (Linnaeus, 1758) | D/N | A | CER/CAA; SDSF | OE |
| <i>Spilotes pullatus</i> (Linnaeus, 1758) | D | T/A | SDSF; DA | OE |
| <i>Tantilla melanocephala</i> (Linnaeus, 1758) | D | T | SDSF | TCS |

Table 1 (cont.)

| TAXA | ACTIVITY | HABIT | PHYTOFISIOGNOMIES | SAMPLING METHOD |
|---|----------|-------|-----------------------|-----------------|
| DIPSADIDAE | | | | |
| <i>Apostolepis cearensis</i> Gomes, 1915 | D | T | CER/CAA; SDSF | PT |
| <i>Leptodeira annulata</i> (Linnaeus, 1758) | D/N | T | CER/CAA | OE |
| <i>Oxyrhopus trigeminus</i> (Duméril, Bibron & Duméril, 1854) | D/N | T | CER/CAA; DA | TCS |
| <i>Philodryas olfersii</i> (Lichtenstein, 1823) | D | T/A | SDSF | OE |
| <i>Psomophis joberti</i> (Sauvage, 1884) | D | A | SDSF | TCS |
| <i>Xenodon merremii</i> (Wagler, 1824) | D/N | T | CER/CAA; SDSF; GF; DA | PT; TCS |
| ELAPIDAE | | | | |
| <i>Micrurus</i> sp. | D/N | F | CER/CAA; SDSF | PT; TCS |
| VIPERIDAE | | | | |
| <i>Crotalus durissus</i> (Linnaeus, 1758) | D/N | T | CER/CAA; DA | OE |
| ARCHOSAURIA | | | | |
| CROCODYLIA | | | | |
| ALLIGATORIDAE | | | | |
| <i>Paleosuchus palpebrosus</i> (Schneider, 1801) | N | AQ | GF | TCS |
| ANAPSIDA | | | | |
| TESTUDINES | | | | |
| CHELIDAE | | | | |
| <i>Phrynops Geoffroanus</i> (Schweigger, 1812) | D | AQ | GF | M |

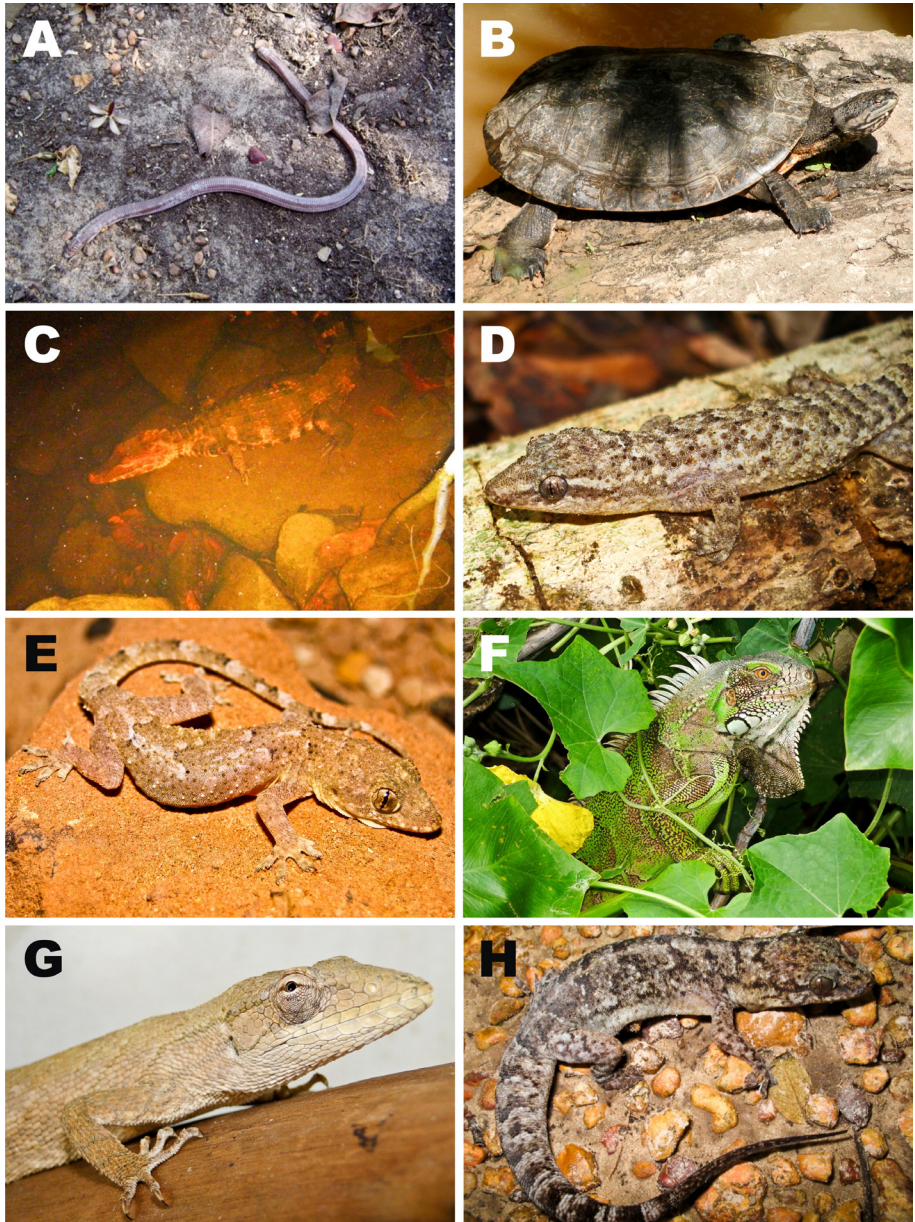


Figure 1. Reptile species observed at Fazenda Paquetá, Batalha, Piauí, Northeastern Brazil. A: *Amphisbaena vermicularis*; B: *Phrynops geoffroanus*; C: *Paleosuchus palpebrosus*; D: *Hemidactylus agrius*; E: *Hemidactylus mabuia*; F: *Iguana iguana*; G: *Polychrus acutirostris*; H: *Phyllopezus pollicaris*.

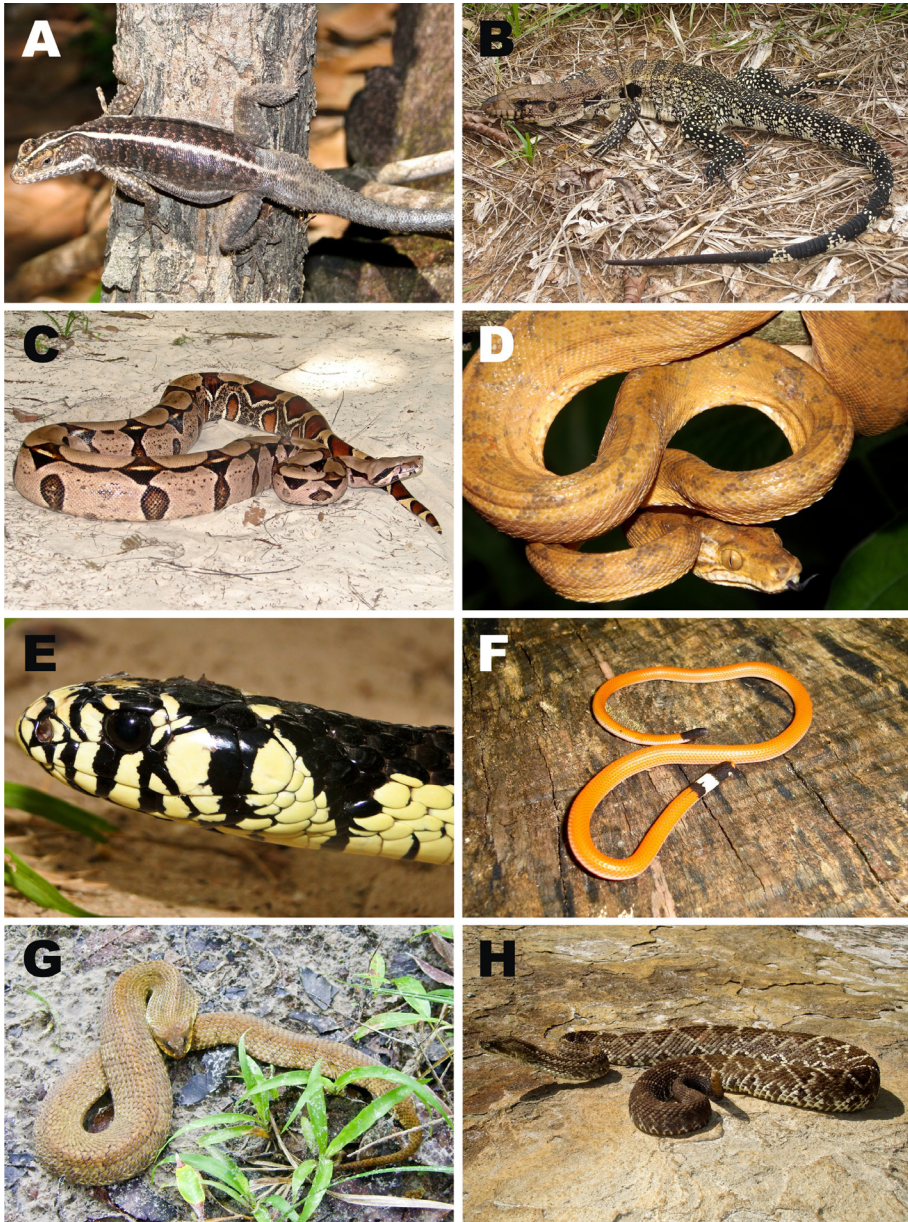


Figure 2. Reptile species observed at Fazenda Paquetá, Batalha, Piauí, Northeastern Brazil. A: *Tropidurus semitaeniatus*; B: *Salvator merianae*; C: *Boa constrictor*; D: *Corallus hortulanus*; E: *Spilotes pullatus*; F: *Apostolepsis cearensis*; G: *Xenodon merremii*; H: *Crotalus durissus*.

Among the studied phytophysiognomies in the study area, five species of reptiles were collected in only one environment mainly associated with semideciduous forests: *Amphisbaena vermicularis* (Figure 1A), *Gonatodes humeralis*, *Philodryas olfersii*, *Psomophis joberti* and *Tantilla melanocephala*. The species *Phyllopezus pollicaris* (Figure 1H) was found in area of Cerrado. Other reptiles were found in Cerrado/Caatinga ecotone areas: *Colobosauroides cearensis*, *Micrablepharus maximiliani*, *Polychrus acutirostris* (Figure 1G), *Brasiliscincus heathi*, *Tropidurus semitaeniatus* (Figure 2A), *Ameivula pyrrhogularis*, *Salvator merianae*, *Boa constrictor* (Figure 2C), *Apostolepsis cearensis* (Figure 2F), *Drymarchon corais*, *Leptodeira annulata*, *Leptophis ahaetulla*, *Oxyrhopus trigeminus* and *Crotalus durissus* (Figure 2H). The species *Iguana iguana* (Figure 1F), *Brasiliscincus heathi*, *Tropidurus hispidus*, *Tropidurus semitaeniatus*, *Drymarchon corais*, *Oxyrhopus trigeminus* and *Crotalus durissus* were sampled also in disturbed areas (abandoned agricultural areas mainly dominated by secondary vegetation). *Hemidactylus mabuia* (Figure 1E) and *Hemidactylus agrius* (Figure 1D) were sampled only in disturbed areas. The species *Ameiva ameiva* was found in all areas sampled, being observed mainly in areas of transition Cerrado/Caatinga. In addition, three species (*Corallus hortulanus* [Figure 2D], *Phrynops geoffroanus* [Figure 1B] and *Paleosuchus palpebrosus* [Figure 1C]) were sampled only in the gallery forest (Table 1).

Discussion

The richness of Squamata reptiles found in the study area was lower than other studies conducted in the state of Piauí. In studies involving only snakes, Rocha & Santos (2004) recorded 16 species in area of the Fazenda Nazareth, José de Freitas, Rocha & Prudente (2010) recorded 24 species in the area of Parque Nacional de Sete Cidades, municipality of Piracuruca, Rodrigues & Prudente (2011) recorded 19 species for Castelo do Piauí municipality. Besides, 11 species recorded at Fazenda Paquetá (*Apostolepsis cearensis*, *Boa constrictor*, *Crotalus durissus*, *Leptophis ahaetulla*, *Micrurus* sp., *Oxyrhopus trigeminus*, *Philodryas olfersii*, *Psomophis joberti*, *Spilotes pullatus* [Figure 2E], *Tantilla melanocephala* and *Xenodon merremii* [Figure 2G]) were common to all these inventories. For the lizards it was also observed a lower number of species when compared to other sampled locations. Arias *et al.* (2011) reported the existence of 16 species of lizards in the Parque Nacional da Serra das Confusões (Guariba and Caracol municipalities) and seven species were also observed at Fazenda Paquetá: *Ameiva ameiva*, *Brasiliscincus heathi*, *Iguana iguana*,

Micrablepharus maximilian, *Phyllopezus pollicaris* (Figure 1H), *Salvator merianae* and *Tropidurus semitaeniatus* (Figure 2A).

Recently, four inventories of “amphisbaenians” and “lizards” of the state of Piauí, were published: Dal Vechio *et al.* (2013) reported the existence of 23 species in the Estação Ecológica de Uruçuí-Una, in the southwest of the state of Piauí; Cavalcanti *et al.* (2014) reported the existence of 17 species in the Parque Nacional da Serra da Capivara, in the municipalities of São Raimundo Nonato, Coronel José Dias, Brejo do Piauí, and João Costa; Benício *et al.* (2015a) reported the existence of 14 species in the municipality of Picos; and Benício *et al.* (2015b) reported the existence of 11 species in the municipality of Barras. On such inventories, 11 species were also recorded in the Fazenda Paquetá: *Ameiva ameiva*, *Amphisbaenia vermicularis*, *Brasiliscincus heathi*, *Hemidactylus mabouia*, *Iguana iguana*, *Micrablepharus maximiliani*, *Polychrus acutirostris*, *Phyllopezus pollicaris*, *Salvator merianae*, *Tropidurus hispidus* and *Tropidurus semitaeniatus*. These shared species occur in Cerrado and Caatinga (Nogueira *et al.*, 2011), indicating the ecotonal characteristics of the Fazenda Paquetá area.

The species *Philodryas olfersii*, *Tantilla melanocephala* and *Amphisbaenia vermicularis* were recorded only in semideciduous seasonal forest areas in the Fazenda Paquetá. However, *P. olfersii* and *T. melanocephala* can be found in all vegetation types of Caatinga (Guedes, *et al.*, 2014), as well as *A. vermicularis* that is widely distributed, occurring in Cerrado, Caatinga and Atlantic Forest (Recoder *et al.*, 2011). *Micrurus* sp. was registered in areas of cerrado/caatinga ecotone and semideciduous seasonal forest in the Fazenda Paquetá, is considered endemic to the Caatinga region and possibly represents an undescribed new species (Guedes *et al.*, 2014).

The species *Ameivula pyrrhogularis* was recently described for the state of Piauí (Silva & Ávila-Pires, 2013), and it is widely distributed in the Northern region of the state, and it is probably associated to the ecotonal region, within the Campo Maior Complex ecoregion, inhabiting sandy soil areas with low density of grasses (Silva & Ávila-Pires, 2013). In addition, this ecotonal region also allows the presence of forested habitat species, such as *Gonatodes humeralis*, found throughout most of the Amazonian region (Ávila-Pires, 1995) and *Colobosauroides cearensis*, found in relictual moist forests or arboreal Caatinga areas (Cunha *et al.*, 1991; Silva *et al.*, 2007b; Loebmann & Haddad, 2010). The occurrence of this species in the study area shall be associated with the more humid and warmer conditions in semideciduous seasonally forests than in other phytophysiognomies. The association with SDSF was also reported for an amblypygid (Carvalho *et al.*, 2011), two marsupials (Miranda *et al.*, 2005; 2009), birds (Lopes *et al.*, 2007),

and amphibians (Benício *et al.*, 2011) in the state of Piauí. Thus, considering that about 50% of the Campo Maior Complex ecoregion area has already been altered (Velloso *et al.*, 2002), the maintenance of SDSF preserved fragments such as those present at Fazenda Paquetá may ensure the occurrence of forest habitat species within this Cerrado/Caatinga ecotone.

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Appendix. Voucher specimens deposited at the Coleção de História Natural da Universidade Federal do Piauí (CHNUFPI) and Coleção de Herpetologia Museu Paraense Emílio Goeldi (MPEG): *Ameiva ameiva* (CHNUFPI 0707-010, CHNUFPI 0713, CHNUFPI 0715-16); *Ameivula phyrrogularis* (CHNUFPI 0717, CHNUFPI 0719); *Amphisbaena vermicularis* (CHNUFPI 0720-21); *Apostolepis cearensis* (CHNUFPI (SER) 0047); *Paleosuchus palpebrosus* (CHNUFPI 0001); *Colobosauroides cearencis* (CHNUFPI 0483-84, CHNUFPI 0486, CHNUFPI 0493, MPEG 23022-24); *Corralus hortulanus* (CHNUFPI (SER) 0051); *Gonatodes humeralis* (CHNUFPI 0471-79); *Hemidactylus agrilus* (CHNUFPI 0723); *Hemidactylus mabouia* (CHNUFPI 0724); *Leptodeira anullata* (CHNUFPI (SER) 0031); *Micrablepharus maximiliani* (CHNUFPI 0725-27); *Philodryas olfersii* (CHNUFPI (SER) 0046); *Phyllopezus pollicaris* (CHNUFPI 0742); *Psomophis joberti* (CHNUFPI (SER) 0049-50); *Polychrus acutirostris* (CHNUFPI 0711); *Salvator merianae* (CHNUFPI 0720); *Tantilla melanocephala* (CHNUFPI (SER) 0048); *Tropidurus hispidus* (CHNUFPI 0712, CHNUFPI 0714, CHNUFPI 0718); *Xenodon merremii* (CHNUFPI (SER) 0045).