# Bats from the Atlantic rainforest of southern Bahia, Brazil

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## Abstract

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Data collected during 16 years of bat surveys (1986 to 2002) in southern Bahia, Brazil, is presented here. Bats were surveyed in 14 municipalities, in habitats that included residences, caves, forests and agricultural areas, resulting in a total of 6576 captures of 60 species from the bat families Emballonuridae (5 sp), Noctilionidae (1 sp), Phyllostomidae (46 sp), Thyropteridae (1 sp), Natalidae (1 sp), Molossidae (3 sp) and Vespertilionidae (2 sp). These data include 29 species not previously documented for the state of Bahia. We also report the first record of *Vampyrodes caraccioli* for this biome, extending its distribution over 3.000 km eastwards. The present data significantly increase the knowledge of the bat fauna of Bahia, providing an updated list of 78 documented species, belonging to 50 different genera and eight families.

***Key words:*** *Chiroptera, inventories, southern Bahia, Atlantic rainforest, Brazil*

## Resumo

Faria, D.; Soares-Santos, B. and Sampaio, E. **Morcegos da Mata Atlântica do sul da Bahia, Brasil.** *Biota Neotrop.* May/Aug 2006 vol. 6 no. 2, http://www.biotaneotropica.org.br/v6n2/pt/abstract?inventory+bn02406022006. ISSN 1676-0603.

Os resultados de 16 anos de coletas de morcegos no sul da Bahia, Brasil, são presentados neste trabalho. De 1986 a 2002, morcegos foram coletados em 14 municípios da região, totalizando 6576 capturas de 59 espécies das famílias Emballonuridae (5 sp), Noctilionidae (1 sp), Phyllostomidae (46 sp), Thyropteridae (1 sp), Natalidae (1 sp), Molossidae (3 sp) and Vespertilionidae (1 sp). São registras 29 espécies não documentadas anteriormente para o estado da Bahia, e várias outras espécies com poucos registros dentro dos limites da Mata Atlântica. Também é apresentado o primeiro registro de *Vampyrodes caraccioli* para este bioma, estendendo seu limite de distribuição em mais de 3.000 km a leste. Os dados sumarizados aumentaram o conhecimento da fauna de morcegos para todo o estado, agora com uma lista atualizada de 78 espécies registradas, pertencentes a 50 diferentes gêneros e oito famílias.

***Palavras-chave:*** *Chiroptera, inventários, sudeste da Bahia, Mata Atlântica, Brasil*

## Introduction

The Atlantic rainforest represents one of the richest biomes in the world, harboring 1- 8% of the planet's biodiversity, including a rich assemblage of endemic species of plants and animals (Ministério do Meio Ambiente 2000, Galindo-Leal & Câmara 2003). After 500 years of human settlement, most of this overwhelming biodiversity is currently distributed in less than 8% of what remains of the original area covered by the Atlantic forest (SOS Mata Atlântica & INPE 1993). Currently, the Atlantic forest is also habitat for 70% of the Brazilian population of *Homo sapiens* (Ministério do Meio Ambiente 2000), a fact that imposes severe and continuous pressure on the few existing remnants.

The largest remnants of the Atlantic Forest in northeastern Brazil are in the state of Bahia, mainly n the southern portion of the state. These moist forests are considered centers of endemism for many biological groups (Silva & Casteleti 2003), including mammals (Coimbra-Filho & Câmara 1996). Among mammals, bats have been particularly neglected during the field inventories undertaken in southern Bahia. Nevertheless, Neotropical bats represent one of the most diverse groups of mammals, comprising nearly half of the number of mammal species in a given area (Voss & Emmons 1996). The ecological importance of bats is reflected in their key role in tropical ecosystems. For instance, they exploit a variety of food items, such as leaves, fruits, nectar, pollen, insects, fishes, small vertebrates, blood (Findley 1999) and, even nutrient rich fig seed (Nogueira & Peracchi 2005). Unfortunately, the lack of basic information about bat species distribution and diversity in most tropical areas, including the forest remnants of southern Bahia, make it difficult to establish conservation strategies for bat species, some of which are already recognized as threatened (Aguiar & Taddei 1995).

The bat fauna of Bahia has been poorly studied. Early scientific expeditions registered few species for Bahia. Schinz (1821) described *Artibeus obscurus* in Vila Viçosa and Spix (1823) described *Tonatia bidens* and *Promops nasutus*. At about this time also Maximilian von Wied-Neuwied (1826) published the first reports for the state of *Artibeus jamaicensis* and *Anoura caudifer*. Later on, Toldt (1908) first reported the presence of *Glossophaga soricina* for the state of Bahia and Osgood (1915) described *Eptesicus diminutus* based on a specimen from São Marcelo, Rio Preto.

Most published records from Bahia are based on revisions of museum specimens. Earlier taxonomic summaries were provided by Lima (1926) and Vieira (1942, 1955), who summarized reports from the state. Systematic reviews including specimens from Bahia were also carried out by Eger (1974) for *Eumops*, and LaVal (1974) for *Myotis*. LaVal (1974) also described *Rhogeessa hussoni*, which is known from Suriname and Bahia. Additional reports also came from museum exemplars included in publications of Sanborn (1932), Vieira (1942, 1955), Carter & Dolan (1978), including *Lonchophylla mordax*, *Peropteryx macrotis*, *Noctilio leporinus*, *Desmodus rotundus*, *Eumops bonariensis*, and *Carollia brevicauda*.

The most recent inventories for the state reported *Lichonyceris obscura* for Salvador (Taddei & Pedro 1993), *Molossops mattogrossensis* for Irecê (Sazima & Taddei 1976), and *Glyphonycteris daviesi* for Jussari, southern Bahia (Gregorin & Rossi *in press*). Additionally, the records from Gregorin & Mendes (1999) of *Peropteryx macrotis*, *Chrotopterus auritus*, and *Lionycteris spurrelli* in the caves of Diamantina further expanded the knowledge of the Bahia bat fauna.

Here, we report the results of bat surveys in a variety of habitats present in the southern state of Bahia. Our main goals were: 1) to assess the bat faunas along the Atlantic forest of southern Bahia, and 2) to provide an updated bat species list for the state of Bahia.

## Material and Methods

### 1. Study area

The southern tip of the state of Bahia, together with northern Espírito Santo state, forms the "Hiléia baiana", which possesses a physiognomy with structural and floristic similarities to the Amazonian forest (Thomas et al 1998). The forest can be classified as tropical lowland rainforest (Oliveira-Filho & Fontes 2000), harboring tall vegetation, which is characterized by its stratification in lower, canopy and emergent layers, abundant in epiphytes, ferns, bromeliads and lianas (Thomas et al 1998).

Southern Bahia still supports several forest patches partly due to the peculiarities of cocoa farming, the most important regional agricultural product. Following a traditional system known as "cabruca", the cacao (*Theobroma cacao* L., Sterculiaceae) shrubs are planted under the native forest canopy, resulting in a thinned, thought still stratified forest. Less than 10% of the native trees from the original forest are left for shade, and consequently, many species of birds and mammals continue to occur in this disturbed habitat (Alves 1990). The actual forest cover observed in southern Bahia is, therefore, a mosaic of native forest patches, including primary and secondary growth forests, and areas of shade cacao plantations, mostly under the cabruca system. The latter habitat represented nearly 40% of the forest cover in 1990 (May & Rocha 1996).

### 2. Bat sampling in southern Bahia

The data resulted from several different inventories performed in 14 southern Bahian municipalities from 1986 to 2002, including systematic and sporadic surveys (Figure 1). Systematic surveys comprising standardized sampling procedures were carried out from 1998 to 2002, including caves

and forest habitats in seven southern Bahian municipalities. The cave surveys were mostly conducted along the karst region of the Pardo River valley, comprising an area of about 50 km$^2$, located in the municipalities of Mascote (15º33'47" S; 39º18'09" W ), Pau-Brasil (15º27'51" S ; 39º39'04" W ) and Santa Luzia (15º25'46" S; 39º20'03" W). Most of the forest cover remaining in the area is scattered in small patches of secondary forests and cabrucas surrounded by a matrix dominated by pastures and other open areas. In these municipalities, bats were sampled in 12 selected caves with mist nets (2.5 x 6 m ) placed in the mouth of the caves for five hours after sunset. Each cave was sampled once a month, from April 1997 to March 1999, totaling 24 sampling nights for each cave or 288 nights for the entire inventory.

Forest habitats, including mature stands, secondary vegetation and areas of shade cacao plantations under the cabruca system were sampled from 1998 to 2002 in three different inventories located in the municipalities of Ilhéus, Itapebi and Una, with a detailed sampling procedure described as follows:

**2.1 Ilhéus:** Bat survey included three forest fragments (< 300 ha) and five areas of cabrucas. In each sampling area a 100 m long transect was established and a set of eight 2.5-meter high, ground mist nets of twelve (2), nine (2) and six meter long (4) remained open for five hours after sunset. The placement of mist nets was repeated for several sample nights. Three forest fragments and three cabrucas were sampled during four non-consecutive nights, while the two remaining areas of cabruca were sampled during two and five non-consecutive nights each, rendering a total of 31 sampling nights for Ilhéus.

**2.2 Itapebi:** This area represents the contact zone between humid and mesophytic broadleaf forest. Most of the forest remnants are small and scattered, distributed in a matrix dominated by pastures and other open areas. In this landscape, bats were sampled in a 8 ha cabruca, connected to a large, 650 ha primary forest fragment. This cabruca was sampled during 12 non-consecutive nights using a set of five mist nets (2 x 12 m and 3 x 9 m long) that remained open for five hours after sunset.

**2.3 Una:** This municipality is famous for harboring one of the largest forest remnants in northeastern Brazil, and at least 11 000 ha of a mosaic of primary forest patches are officially protected by the only biological reserve in the state of Bahia (Una Biological Reserve). In the Una region, bat sampling was carried out as a part of the RestaUna Project, a biodiversity assessment designed to investigate the response of several groups of plants and animals facing habitat fragmentation in southern Bahia (www.restauna.org.br). Bats in Una were sampled in 36 areas including 12 small fragments of mature forests (60-100 ha), 12 large fragments of mature forests (>1.000 ha), six patches of early secondary growth and six areas of shade cacao plantation under the cabruca system. In each area a 100 m-long transect was established and bats were sampled from 1997 to 2000, using the same sampling unit described for the Ilhéus study, with eight 2.5-meter high, ground mist nets of twelve (2), nine (2) and six (4) meters long remaining open for five hours after sunset, placed during four non-consecutive nights in each area (Faria 2006). A more detailed description of the experimental design can be found in Pardini (2004).

From 1986 to 1997, a series of sporadic, non-standardized bat inventories were conducted in the municipalities of Belmonte (15º51'47" S; 38º52'58" W), Canavieiras (15º40'30" S; 38º56'50" W), Ilhéus (14º47'20" S; 39º02'58" W ), Igrapiuna (13º49'35" S; 39º08'32" W), Itabuna (14º47'08" S; 39º16'49" W), Itamaraju (17º02'21" S; 39º31'52" W), Itapebi (15º57'03" S; 39º32'02" W), Porto Seguro (16º26'59" S; 39º03'53" W), Potiraguá (15º35'41" S; 39º52'36" W), Una (15º17'36" S; 39º04'31" W) and Valença (13º22'13" S; 39º04'23" W). In Itabuna, sampling was resumed represented by a single individual captured while roosting in an urban residence, while in Potiraguá, a cave named "Toca-do-urubu" was sampled during one night using the same procedure described above for the Pardo River valley. Bat surveys in the remaining municipalities included collections in forest and agricultural areas. Each sampling night included one mist net (2.5 x 9 m) open from sunset to five hours latter, placed along trails or close to bat day roosts, such as over bridges and water pipes or near the entrance of hollow trees. The municipality of Ilhéus was sampled during six nights, Belmonte and Porto Seguro during four nights, Itamaraju for two nights and Canavieiras, Igrapiuna, Pau Brasil, Una and Valença for a single night each.

## 3. Bat identification

The taxonomy used herein follows Simmons (2005), except for the species *Artibeus jamaicensis*, where we accepted *Artibeus planirostris* as the valid name following the revision of Lim et al (2004). Bats were collected, fixed in formaldehyde, preserved in 70% alcohol and vouchers were deposited in the Coleção de Mamíferos "Alexandre Rodrigues Ferreira", of the Universidade Estadual de Santa Cruz (UESC), Ilhéus, Bahia, Brazil. Bats were first identified following the identification key of Vizotto & Taddei (1973) and the reference collection of UESC, and were then sent to V. Taddei for identification at the Laboratório de Quirópteros, at UNESP in São José do Rio Preto. Additionally, specimens were sent to the American Museum of Natural History (AMNH) and to the National Museum of Natural History (USNM) in the U.S.

## Results

After 16 years of bat surveys in southern Bahia, a total of 6576 captures, were obtained from samples taken from roosts, caves, forests and agricultural habitats. We

recorded bats of seven families, 40 genera and 59 species. Most species belonged to the family Phyllostomidae (46 species), followed by Emballonuridae (5 species), Molossidae (3 species), Vespertilionidae (2 species), Natalidae (1 species), Noctilionidae (1 species) and Thyropteridae (1 species) (Table 1). *Carollia perspicillata*, the most netted species, was found in all southern Bahian localities except Itabuna, and *Glossophaga soricina* was taken in 11 of the 14 municipalities. Most of the captures (4444) and bat species (48) were reported from the systematic surveys undertaken in the forest mosaics. Systematic surveys in caves accounted for 1771 captures and 20 species, while 24 species from 361 captures were obtained by sporadic sampling in the forests, agricultural habitats and day roosts. In spite of the smaller sampling effort, some bat species were only reported when emerging from caves (*Peropterix kappleri, Diphylla ecaudata, Mimon bennettii, Tonatia bidens* and *Natalus stramineus*) or other types of day roosts such as residences (*Diclidurus albus, Molossus molossus* and *Molossus rufus*) and bridges (*Rhynchonycteris naso*).

Our records from Southern Bahia added 29 new species to the previous list of 49 species for the state: *Peropteryx kappleri, Saccopteryx bilineata, Anoura geoffroyi, Choeroniscus minor, Lampronycteris brachyotis, Lonchorhina aurita, Micronycteris hirsuta, M. microtis, M. minuta, M. schmidtorum, Mimon bennettii, M. crenulatum, Phylloderma stenops, Phyllostomus discolor, Tonatia saurophila, Trinycteris nicefori, Carollia brevicauda, Rhinophylla pumilio, Sturnira tildae, Artibeus cinereus, A. gnomus, Chiroderma villosum, Platyrrhinus recifinus, Pygoderma bilabiatum, Uroderma bilobatum, Vampyressa pusilla, Vampyrodes caraccioli, Cynomops planirostris* and *Molossus rufus*. Among these species, nine represent first records for northeastern Brazil (*L. brachyotis, M. hirsuta, M. microtis, M. bennettii, T. nicefori, C. brevicauda, A. gnomus, V. pusilla* and *V. caraccioli*) and one (*V. caraccioli*) the first report for eastern Brazil.

## Discussion

### 1. Bat surveys in the southern Bahia Atlantic rainforest

Studies including different sampling techniques and a variety of habitats can give a more reliable picture of the local bat faunas (Fenton et al 1992, Voss & Emmons 1996, Simmons & Voss 1998, Bernard & Fenton 2003, Sampaio et al 2003). Due to the higher sampling effort, most of the species and captures were obtained from standard sampling methods carried out using mist nets in forest mosaics, and most of the species were Phyllostomid bats, which are more often caught with this sampling technique. If the data was limited to sampling from ground mist nets, excluding the sporadic surveys in day roosts, the species list would drop from 59 to 55 species, as *Diclidurus albus, Rhynchonycteris naso, Molossus molossus* and *M. rufus* were sampled exclusively by roost inventory.

The surveys in caves resulted in the records of species associated with these specific day roosts, such as *Peropteryx kapleri, Diphylla ecaudata, Tonatia bidens, Natalus stramineus*, and *Macrophyllum macrophyllum*. To our knowledge, this study also revealed the first report of *Artibeus obscurus* and *Thyroptera tricolor* roosting in caves. Additionally, some species known to be distributed largely on a regional scale may require, or prefer, specific day roosts or other habitat requirements that make them locally rare or absent. Sampaio et al (2003) argued that the lack of some species from intensive surveys near Manaus, northern Brazil, might be explained by the absence of caves (e.g. for *N. stramineus*) or large water bodies (for *M. macrophyllum* and noctilionids). Similarly, the lack of caves can explain the absence of *N. stramineus*, which are known to roost in caves, from samples in the southern Bahian forest mosaic (Gregorin & Mendes 1999, Taddei & Uieda 2001).

Sampling bias may also explain the apparent rarity of *Lonchorhina aurita* in forest areas. This species is a gleaning insectivore, widely distributed in tropical forests (Voss & Emmons 1996) but scarcely represented in museum collections due to its low capture rates. This species is reported to roost in caves and mines in highly variable densities, with colonies from 12 up to 500 individuals (see Lassieur & Wilson 1989). However, its well-developed sonar system allows ready detection and avoidance of mist nets, making this species particularly difficult to sample (Lassieur & Wilson 1989). From a total of 4.438 captures obtained from systematic mist netting in southern Bahian forest mosaics, only a single individual of *L. aurita* was netted in the cabruca of Itapebi. On the other hand, samples taken from caves at the Pardo River valley revealed the presence of large colonies (up to 100 individuals) of *L. aurita* distributed in 11 out of 12 sampling caves (Santos 2001), with a total captures of 370 individuals, showing that its status is highly influenced by sampling procedure and the technique applied during inventories.

After 16 years of sampling, a rich bat assemblage can be recognized as inhabiting a variety of habitats in southern Bahia. Our records represent significant range extensions for some species. The Glossophaginae *Choeroniscus. minor* and the stenodermatinae *Pygoderma. bilabiatum* previously were registered only in northeastern Brazil, in the state of Pernambuco (Souza et al 2004). Our report emphasizes their occurrence in the forests of southern Bahia. The records of *T. saurophila* increase the range of this species to the Atlantic forest, from northern (Willians et al 1995, Voss & Emmons 1996, Bernard 1997, Nogueira et al 1999) and mid-western Brazil (Willians et al 1995) where it has been reported in northeastern Brazil in the state of

Pernambuco (Willians et al 1995). However, the report of *Vampyrodes. caraccioli,* a phyllostomid well known from Central America and northern South America, is the most striking range extension in this study. The southern limits of the distribution of *V. caraccioli* were, until now, in Bolivia, in the States of Beni and La Paz (Anderson 1997), and northern Brazilian Amazonia, in Pará State (Thomas 1920, Vieira 1955, Handley 1967, Piccinini 1974, Bernard 2001). The report from Una, southeastern Bahia, extends its distribution by over 3 000 km.

## 2. Bats from Bahia state: species list and distribution

The bat fauna of Bahia is a mix of species recorded from other regions in Brazil, particularly from the south, southern and northeastern areas. Interestingly, our records include species reported in the moist forests of northern Brazil and in the Atlantic rainforest of the Hiléia Baiana (southern Bahia and northern of Espírito Santo state), but not in between, which corresponds to the Cerrado biome. Additionally, these species are not known from other better-sampled Brazilian states in southeastern or southern Brazil. Examples of these species are *Lichonycteris obscura* (Taddei & Pedro 1993, Zortéa et al 1998), *Glyphonycteris daviesi* (Gregorin & Rossi *in press*), *M. hirsuta* (Esbérard 2004), *T. nicefori* (Peracchi & Albuquerque 1986, 1993), *C. brevicauda* (Peracchi & Albuquerque 1993), *R. pumilio* (Peracchi & Albuquerque 1993, Pedro & Passos 1995, Zortéa 1995), and, from the current study, *V. caraccioli*. For all these species, a discontinuous distribution pattern may represent sampling bias rather than a truly disjunct distribution, because central Brazil is much less sampled than the Atlantic forest areas (L. Aguiar. pers. comm.). For instance, the geographic distribution of the small Stenodermatinae *Artibeus gnomus,* followed the same pattern, previously reported in northern Brazil, in the states of Amazonas (Voss & Emmons 1996, Bernard 1997, 2001) and Pará (Handley 1987), and in Espírito Santo state (Aguiar et al 1995), in the east. More recently, it was also reported in Mato Grosso state, in the Cerrado biome and in mid-western Brazil (Gonçalvez & Gregorin 2004). With an increasing sampling effort in the vast Cerrado biome in mid-western Brazil, other species will probably show a more continuous distribution from the north to mid-west and the east along the Atlantic forest limits.

When combined, the previous species list compiled from Tavares et al (in press), the recently described species of *Xeronycteris vieirai* (Gregorin & Ditchfield 2005) and our records elevate the bat fauna of Bahia to 78 species, 50 genera and eight of the nine bat families reported to occur in Brazil. The number of species in Bahia is higher than the state of Rio de Janeiro, probably the most intensively sampled state in Brazil with an updated list of 71 bat species (Esberárd & Bergallo *in press*), and the same number of species has been reported for the state of Minas Gerais (V. Tavares pers. com.). However, the species lists for these three states are very likely to be incomplete and clearly biased towards the family Phyllostomidae. For instance, 86% of the documented species in Bahia are Phyllostomid bats, while the remaining eight bat families comprise nearly 50% of the species reported in Brazil (Marinho-Filho & Sazima 1998).

The state of Bahia represents the fifth largest state in Brazil, encompassing nearly 7% of the national territory (564 692.67 km$^2$) and 36.6 % of the northeastern region. Bahia is characterized by an amazing heterogeneity of landscapes and habitats, with an east-west gradient from the moist Atlantic forest to more xeric physiognomies that characterize the Caatinga Biome. Nevertheless, most of the information on bat species in Bahia comes from surveys located within the limits of the Atlantic forest, with the vast majority of the state simply not being covered by previous studies. Certainly a more precise picture of the bat fauna in the state of Bahia can be achieved only by undertaking further inventories carried out with complementary sampling techniques and covering a greater variety of the physiognomies and habitats that characterizes the state.

## 3. Conservation remarks.

Our results show that the mosaic comprising caves, forests, and agricultural habitats in the southern state of Bahia harbors a rich bat fauna, including vulnerable species such as *Platyrrhinus recifinus*. Linked to our results, and the probable ecological dependency of bat species to original habitats, it is crucial to note that the native forest cover remaining in the state is sharply reduced to 5-7% of its original extent and is currently highly fragmented (Thomas *et. al.* 1998). Furthermore, most of the forest cover still present in southern Bahia, and usually computed as native forest ( SOS Mata Atlântica & INPE 1993) is, in fact, shade cacao plantation under the cabruca system (May & Rocha 1996). Although some cabrucas can harbor rich bat assemblages, it has been shown that many bat species reported in cabrucas are dependent on the native forest remnants still present nearby these agroforests (see Faria 2006, Faria & Baumgarten *in press*, Faria et al 2006). Therefore, although in this paper we do not intend to document direct threats to the local bat assemblage, we call attention to the urgent measures that should be taken in order to preserve the remaining forest remnants in an attempt to contribute to the preservation of local biodiversity.

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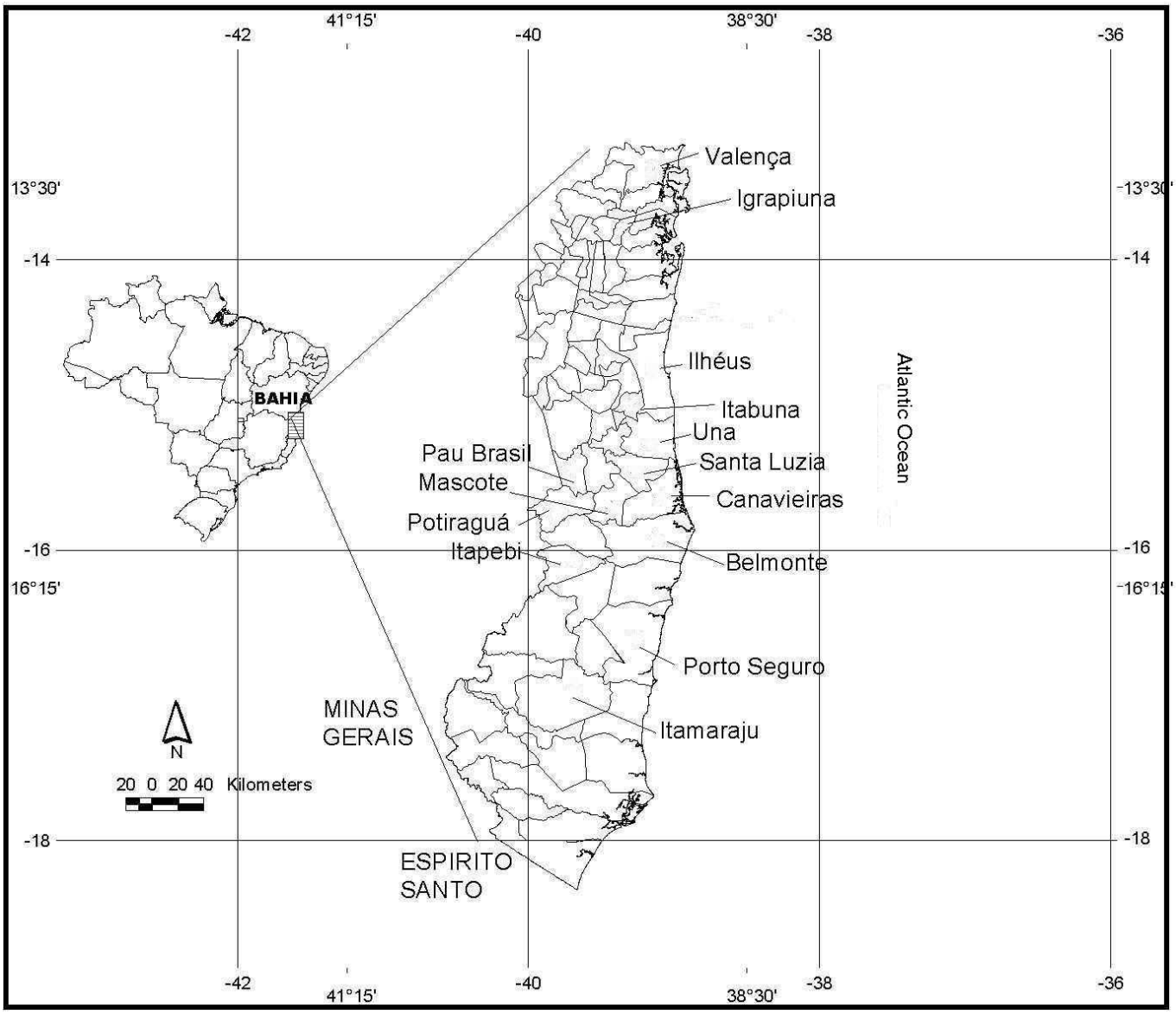


*Figure 1. Map showing the location of the 14 municipalities sampled in southern Bahia from 1986 to 2002. Geographical position of the Municipalities: Belmonte (15º 51' 47"S ; 38º 52' 58" W ), Canavieiras (15º 40' 30"S ; 38º 56' 50" W ), Ilhéus (14º 47' 20"S ; 39º 02' 58" W ), Igrapiuna (13º 49' 35"S ; 39º 08' 32" W ), Itabuna (14º 47' 08"S ; 39º 16' 49" W ), Itamaraju (17º 02' 21"S ; 39º 31' 52" W ), Itapebi (15º 57' 03"S ; 39º 32' 02" W ), Mascote (15º 33' 47"S ; 39º 18' 09" W ), Pau Brasil (15º 27' 51"S ; 39º 39' 04" W ), Porto Seguro (16º 26' 59"S ; 39º 03' 53" W ), Potiraguá (15º 35' 41"S ; 39º 52' 36" W ), Santa Luzia (15º 25' 46"S ; 39º 20' 03" W ), Una (15º 17' 36"S ; 39º 04' 31" W ) and Valença (13º 22' 13"S ; 39º 04' 23" W ).*

*Table 1. Species of bats recorded from 14 municipalities located within the limits of the Atlantic rainforest from southern Bahia state, Brazil, including sporadic surveys in forests, agricultural mosaics and day roosts and systematic surveys conducted in caves and forest mosaics. The table also brings the bat species reported previously for the Bahia state, compiled from Tavares et al (in press) and Gregorin & Ditchfield (2005). Municipalities acronyms are, in order of appearance: Belmonte (BEL), Canavieiras (CAN), Igrapiuna (IGR), Ilhéus (ILH), Itamaraju (ITA), Itabuna (ITB), Porto Seguro (POS), Potiraguá (POT), Una (UNA) and Valença (VAL); the municipalities of Mascote, Pau Brasil and Santa Luzia being assigned together as Pardo River valley (PRV) and Itapebi as (ITP).*

| **Bat Species** | **Sporadic Surveys** | | | | | | | | | | **Systematic Surveys** | | | | **Records for Bahia** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Forests, agricultural mosaics and day roosts** | | | | | | | | | | **Caves** | **Forest Mosaics** | | | |
| | BEL | CAN | IGR | ILH | ITA | ITB | POS | POT | UNA | VAL | PRV | ITP | ILH | UNA | |
| **Family Emballonuridae Gervais, 1955** | | | | | | | | | | | | | | | |
| *Diclidurus albus* Wied-Neuwied, 1820 | | | | | | X* | | | | | | | | | X |
| *Peropteryx kappleri* Peters, 1867 | | | | | | | | X | | | X | | | | |
| *Peropteryx macrotis* (Wagner, 1843) | | | | | | | | | | | | | X | | X |
| *Rhynchonycteris naso* (Wied-Neuwied, 1820) | X* | | | X* | | | | | | | | | | | X |
| *Saccopteryx bilineata* (Temminck, 1838) | X | | | | | | | | | | X | | X | X | |
| **Family Noctilionidae Gray, 1821** | | | | | | | | | | | | | | | |
| *Noctilio albiventris* Desmarest, 1818 | | | | | | | | | | | | | | | X |
| *Noctilio leporinus* (Linnaeus, 1758) | | | | X | | | | | | X | | | | | X |
| **Family Phyllostomidae Gray, 1825** | | | | | | | | | | | | | | | |
| **Subfamily Desmodontinae Bonaparte, 1845** | | | | | | | | | | | | | | | |
| *Desmodus rotundus* (E. Geoffroy, 1810) | | | | | | | | X | | | X | | X | X | X |
| *Diphylla ecaudata* Spix, 1823 | | | | | | | | | | | X | | | | X |
| **Subfamily Glossophaginae Bonaparte, 1845** | | | | | | | | | | | | | | | |
| *Anoura caudifer* (E. Geoffroy, 1818) | | X | | X | | | | | X | | X | | X | | X |
| *Anoura geoffroyi* Gray, 1838 | | | | | | | | | | | | | | X | |
| *Choeroniscus minor* (Peters, 1868) | | | | | | | | | | | | | X | X | X |
| *Glossophaga soricina* (Pallas, 1766) | X | | X | X | X | | X | X | X | | X | X | X | X | X |
| *Lichonycteris obscura* Thomas, 1895 | | | | | | | | | | | | | X | X | X |

*Continued*

| Bat Species | Sporadic Surveys | | | | | | | | | | Systematic Surveys | | | | Records for Bahia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Forests, agricultural mosaics and day roosts | | | | | | | | | | Caves | Forest Mosaics | | | |
| | BEL | CAN | IGR | ILH | ITA | ITB | POS | POT | UNA | VAL | PRV | ITP | ILH | UNA | |
| *Lionycteris spurelli* Thomas, 1913 | | | | | | | | | | | | | | | X |
| *Lonchophylla mordax* Thomas, 1903 | | | | | | | | | X | | | X | | X | X |
| *Xeronycteris vieirai* Gregorin & Ditchfield, 2005 | | | | | | | | | | | | | | | X |
| **Subfamily Phyllostominae Gray, 1825** | | | | | | | | | | | | | | | |
| *Chrotopterus auritus* (Peters, 1856) | | | | | | | | | | | X | | | X | |
| *Glyphonycteris daviesi* (Hill, 1964) | | | | | | | | | | | | | | | X |
| *Lampronycteris brachyotis* (Dobson, 1879) | | | | | | | | | | | | | | X | |
| *Lonchorhina aurita* Tomes, 1863 | | | | X | | | | | | | X | X | | | |
| *Lophostoma brasiliense* Peters, 1866 | | | | | | | | | | | | | | X | X |
| *Lophostoma silvicolum* d'Orbigny, 1836 | | | | | | | | | | | | | | X | X |
| *Macrophyllum macrophyllum* (Schinz, 1821) | | | | | | | | | | X* | X | | | | X |
| *Micronycteris hirsuta* (Peters, 1869) | | | | | | | | | | | | | | X | |
| *Micronycteris microtis* Miller, 1898 | | | | | | | | | | | | | X | X | |
| *Micronycteris minuta* (Gervais, 1856) | | | | | | | | X | | | | | X | | |
| *Micronycteris schmidtorum* Sanborn, 1935 | | | | | | | | | | | | | X | X | |
| *Mimon bennettii* (Gray, 1838) | | | | | | | | | | | X | | | | |
| *Mimon crenulatum* (E. Geoffroy, 1803) | | | | X | | | | | | | | | X | X | |
| *Phylloderma stenops* Peters, 1865 | | | | | | | | | | | | | | X | |
| *Phyllostomus discolor* Wagner, 1843 | | | X | X | | | | | | | | | X | X | |
| *Phyllostomus elongatus* (E. Geoffroy, 1810) | | | | X | | | | | | | | | X | X | X |
| *Phyllostomus hastatus* (Pallas, 1767) | | | | X | | | | | X | | X | | X | X | X |
| *Tonatia bidens* (Spix, 1823) | | | | | | | | | | | X | | | | X |
| *Tonatia saurophila* Koopman and Williams, 1951 | | | | | | | | | | | | | | X | |
| *Trachops cirrhosus* (Spix, 1823) | | | | | | | | | | | X | | X | X | X |
| *Trinycteris nicefori* (Sanborn, 1949) | | | | | | | | | | | | X | | X | |
| **Subfamily Carolliinae Miller, 1924** | | | | | | | | | | | | | | | |
| *Carollia brevicauda* (Schinz, 1821) | | | | | | | | | | | | | X | X | |
| *Carollia perspicillata* (Linnaeus, 1758) | X | X | X | X | X | | X | X | X | X | X | X | X | X | X |
| *Rhinophylla pumilio* Peters, 1865 | | | | X | | | X | | X | | | X | X | X | |

*Continued*

| Bat Species | Sporadic Surveys | | | | | | | | | | Systematic Surveys | | | | Records for Bahia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Forests, agricultural mosaics and day roosts | | | | | | | | | | Caves | Forest Mosaics | | | |
| | BEL | CAN | IGR | ILH | ITA | ITB | POS | POT | UNA | VAL | PRV | ITP | ILH | UNA | |
| **Subfamily Stenodermatinae Gervais, 1856** | | | | | | | | | | | | | | | |
| *Sturnira lilium* (Geoffroy, 1910) | | | X | X | | | | | X | | | | X | X | X |
| *Sturnira tildae* de la Torre, 1959 | | | | | | | | | | | | | X | X | |
| *Artibeus fimbriatus* Gray, 1838 | | | | | | | | | | | | | X | X | X |
| *Artibeus planirostris* (Spix, 1823) | | | | | | | | | | | | X | X | X | X |
| *Artibeus lituratus* (Olfers, 1818) | | | | X | X | | | | | | X | X | X | X | X |
| *Artibeus obscurus* (Schinz, 1821) | | X | | X | | | | | | | X | X | X | X | X |
| *Artibeus cinereus* (Gervais, 1855) | | | | X | | | | | | | | X | X | X | |
| *Artibeus gnomus* Handley, 1987 | | | | | | | | | | | | X | X | X | |
| *Chiroderma villosum* Peters, 1860 | | | | | | | | | | | | | X | X | |
| *Platyrrhinus helleri* (Peters, 1866) | | | | | | | | | | | | | | | X |
| *Platyrrhinus lineatus* (E. Geoffroy, 1810) | X | | | X | | | | | | | X | | X | X | X |
| *Plathyrrhinus recifinus* (Thomas, 1901) | | | | | | | | | | | | | X | X | |
| *Pygoderma bilabiatum* (Wagner, 1843) | | | | | | | | | | | | X | | | |
| *Uroderma bilobatum* Peters, 1866 | | | | | | | | | | | | X | X | X | |
| *Vampyressa pusilla* (Wagner, 1843) | | | | | | | | | | | | | X | X | |
| *Vampyrodes caraccioli* (Thomas, 1889) | | | | | | | | | | | | | | X | |
| **Family Furipteridae Gray, 1866** | | | | | | | | | | | | | | | |
| *Furipterus horrens* (F. Cuvier, 1828) | | | | | | | | | | | | | | | X |
| **Family Thyropteridae Spix, 1823** | | | | | | | | | | | | | | | |
| *Thyroptera discifera* (Lichtenstein & Peters 1855) | | | | | | | | | | | | | | | X |
| *Thyroptera tricolor* Spix, 1823 | | | | X | | | | | | | X | | | X | X |
| **Family Natalidae Gray, 1866** | | | | | | | | | | | | | | | |
| *Natalus stramineus* Gray, 1838 | | | | | | | | | | | X | | | | X |
| **Family Molossidae Gervais, 1855** | | | | | | | | | | | | | | | |
| *Cynomops planirostris* (Peters, 1866) | | | | | | | | | | | | | | X | |
| *Eumops auridipendulus* (Shaw, 1800) | | | | | | | | | | | | | | | X |
| *Eumops bonariensis* (Peters, 1874) | | | | | | | | | | | | | | | X |
| *Molossops temminckii* (Burmeister, 1854) | | | | | | | | | | | | | | | X |

*Continued*

| Bat Species | Sporadic Surveys | | | | | | | | | | Systematic Surveys | | | | Records for Bahia |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Forests, agricultural mosaics and day roosts | | | | | | | | | | Caves | Forest Mosaics | | | |
| | BEL | CAN | IGR | ILH | ITA | ITB | POS | POT | UNA | VAL | PRV | ITP | ILH | UNA | |
| *Molossops matogrossensis* Vieira, 1942 | | | | | | | | | | | | | | | X |
| *Molossus molossus* (Pallas, 1766) | X* | | | X* | | | | | | | | | | | X |
| *Molossus rufus* E. Geoffroy, 1805 | X* | | | X* | | | | | | | | | | | |
| *Nyctinomops laticaudatus* (E. Geoffroy, 1805) | | | | | | | | | | | | | | | X |
| *Promops nasutus* (Spix, 1823) | | | | | | | | | | | | | | | X |
| **Family Vespertilionidae Gray, 1821** | | | | | | | | | | | | | | | |
| *Eptesicus brasiliensis* (Desmarest, 1819) | | | | | | | | | | | | | | X | X |
| *Eptesicus diminutus* Osgood, 1915 | | | | | | | | | | | | | | | X |
| *Lasiurus ega* (Gervais, 1855) | | | | | | | | | | | | | | | X |
| *Roghessa hussoni* Genoways & Baker 1996 | | | | | | | | | | | | | | | X |
| *Roghessa tumida* Allen, 1866 | | | | | | | | | | | | | | | X |
| *Myotis albescens* (E. Geoffroy, 1806) | | | | | | | | | | | | | | | X |
| *Myotis nigricans* (Schinz, 1821) | | | | X | | | | X | X | | X | | X | X | X |
| *Myotis riparius* Handley, 1960 | | | | | | | | | | | | | | | X |
| TOTAL OF SPECIES | 7 | 3 | 4 | 20 | 3 | 1 | 4 | 6 | 8 | 3 | 19 | 14 | 32 | 43 | 49 |
| TOTAL OF CAPTURES | 49 | 11 | 19 | 198 | 13 | 1 | 16 | 20 | 46 | 8 | 1751 | 133 | 1719 | 2592 | |

* Bat species sampled exclusively in day roosts during sporadic surveys