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RESEARCH ARTICLE
TAXONOMIC CATALOG OF THE BRAZILIAN FAUNA

The taxonomic catalog of the Brazilian fauna: biodiversity and geographical distribution of Triatominae (Hemiptera: Reduviidae) in Brazil

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ABSTRACT. The members of the subfamily Triatominae (Heteroptera, Reduviidae) are important because they feed on vertebrate blood, acting as vectors of *Trypanosoma cruzi* (Chagas, 1909), the protozoan that causes Chagas disease or American trypanosomiasis. There are currently 158 species, 155 extant and three extinct species, within 18 genera and five tribes in Triatominae. The sustainable control of the vector transmission of Chagas disease closely relies on the availability of data on the triatomine species present in a specific region, their distribution patterns, the natural infection rate of *T. cruzi*, synanthropic tendencies, and ecobiological characteristics. The taxonomic catalog of the Brazilian fauna (CTFB) is an online platform available at http://fauna.jbrj.gov.br, which brings taxonomic information on Brazilian fauna. Based on information from the platform, in the present paper, a checklist of genera and 64 currently known Brazilian species is given, as well as updated geographic distribution information. We provide a summary of each species' public health importance, drawing from relevant literature.

KEY WORDS. Chagas disease vectors, taxonomy.

INTRODUCTION

Chagas disease, caused by the parasite *Trypanosoma cruzi* (Chagas, 1909) (Kinetoplastida: Trypanosomatidae), is widespread in Latin America, where the disease remains an important public health problem. The parasite is mostly transmitted by the feces of obligatory hematophagous insects of the subfamily Triatominae (Hemiptera: Reduviidae), commonly known as kissing bugs, conenose bugs, pitus, and "vinchucas", while in Brazil they are mainly referred to as "barbeiros". An extensive list of vernacular names for Triatominae was published by Schofield and Galvão (2009) and expanded by Guhl and Aufderheide (2010). Currently, there are 158 triatomine species described in the world, 64 of them are found in Brazil (Alevi et al. 2021, Oliveira Correia et al. 2022, Gil-Santana et al. 2022, Tellez-Rendon et al. 2023, Zhao et al. 2023, Campos et al. 2024). The Taxonomic Catalog of the Brazilian Fauna (CTFB) is an initiative involving the efforts of researchers in several institutions. It is an online platform available at http://fauna.jbrj.gov.br, including the scientific names applied to the fauna recorded from Brazil, and it is constantly updated to include new published or new recorded data as, valid names, synonyms, homonyms, unavailable names, geographical records, etc.

Although Brazil was declared free from Chagas disease transmission by the main domiciliar vector, *Triatoma infestans* (Klug, 1834), human acute cases are still being registered based on transmission by native triatomine species. Indeed, the biological cycle, ecological aspects, geographical distribution, and vector competence differ according to the species.

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Therefore, for a better understanding of transmission risk, it is very important to know the species that are involved in the transmission of disease to humans (Sousa et al. 2023).

An enormous number of publications have been published since the discovery of the disease by Carlos Chagas in 1909, and thousands of them are on insect vectors. Due to the limited therapeutic options, most control efforts have focused on the elimination of triatomine vectors in domiciliary environments, usually through the application of insecticides and housing improvements (Dias et al. 2002). As there are differences in vectorial capacity among triatomines, the correct identification of species is the key step for vector surveillance and control programs (Gourbiére et al. 2012). A lot of earlier works have been done on the taxonomy and biogeography of the triatomines (Galvão 2021), standing out the revision by Lent and Wygodzinsky (1979) as a landmark in the taxonomy of this group. Galvão et al. (2003) updated the taxonomic changes and added the new distribution data. Galvão et al. (1998) and Carcavallo et al. (1999) provided several maps showing the geographical distribution and altitudinal and latitudinal dispersion of all American triatomine species. More recently, the use of ecological niche modeling (ENM) has allowed predicting possible new occurrences and identifying other regions for triatomine occurrences (Gurgel-Gonçalves et al. 2012b). Most triatominae species are found in the Neotropical and Nearctic regions between parallels 42°N and 46°S; a few species are found in East Asia and on the coast of Australia. One species, *Triatoma rubrofasciata* (De Geer, 1773), is tropicopolitan, and nine species of *Triatoma* occur in southern and southeastern Asia and northern Australia. The genus *Linshcosteus* Distant, 1904 is the only one restricted to the Indian subcontinent (Galvão et al. 2003, Zhao et al. 2023).

From an epidemiological point of view, studies on the geographic distribution of these vectors are crucial for understanding the epidemiologic aspects of *T. cruzi* transmission and must be considered to guide control and monitoring of the disease. After the successful control of the vectors in the last decades, the geographical distribution of the domiciliated species has been significantly reduced, on the other hand, new records of wild species are increasing (Alevi et al. 2021). Due to the rapid progress in molecular, morphometrical, and breeding studies as well as field collection of this subfamily in the last decades, some taxonomic status have changed and new species have been established (Alevi et al. 2021). In the present paper, the authors update all valid taxa of the Brazilian Triatominae and their geographical distribution.

MATERIAL AND METHODS

The geographic distribution data of triatomine from Brazil has been updated since Galvão et al. (2003) and Galvão (2014). Records of triatomine occurrences were obtained from an exhaustive review of bibliographic literature on geographical distribution, including public information available on platforms such as Data-Tri, CTFB, Species Link, and the Global Biodiversity Information Facility (GBIF). New data from several publications after 2003 and the examination of specimens were added here. The distributions cited below are exclusively relative to Brazilian states.

Figures of species have been incorporated to facilitate the recognition of certain characteristics or general aspects. All depicted specimens are living, with the majority observed in their natural habitats, and their images were captured by contributors from the iNaturalist platform, including the author Cleber Galvão (Table 1). The identification of these specimens was confirmed by the authors; however, in numerous instances, prior identifications provided by platform contributors were also considered. In most cases, these earlier identifications were wholly or partially consistent with the authors' own.

RESULTS

In the Brazilian territory, a remarkable diversity of triatomines unfolds, encompassing representatives from ten out of the eighteen currently recognized genera. Up to the present moment, we have identified 64 out of the 158 known species, as detailed in Table 2. Within this context, we present a comprehensive analysis of the geographical distribution, and distinctive characteristics associated with each of these species, designated as relevant to public health, along with pertinent observations.

List of Brazilian triatomine species, their geographical distribution (among Brazilian states), and public health importance (whenever known)

Alberproseniini Martínez & Carcavallo, 1977

Alberprosenia Martínez & Carcavallo, 1977

Alberprosenia malheiroi Serra, Atzingen & Serra, 1980

Distribution. Pará.

Public health importance. No *T. cruzi* infection was found in any specimens (Carcavallo et al. 1995).

Remarks. *Alberprosenia malheiroi* has been collected in palm-trees of forests and the ecotopes associated with bats

Table 1. Authors and Inaturalist links of the photographs presented.

Figure	Species	Photographer	Inaturalist link
1	*Rhodnius brethesi*	Cleber Galvão	
2	*Rhodnius nasutus*	Cleber Galvão	
3	*Rhodnius neglectus*	Vinicius R. de Souza	https://www.inaturalist.org/observations/98595561
4	*Eratyrus mucronatus*	Pedro Taucce	https://www.inaturalist.org/observations/180748687
5	*Panstrongylus lenti*	Thales	https://www.inaturalist.org/observations/63171722
6	*Panstrongylus megistus*	Diogo Luiz	https://www.inaturalist.org/observations/37507934
7	*Panstrongylus tibiamaculatus*	Cleber Galvão	
8	*Triatoma carcavalloi*	Cleber Galvão	
9	*Triatoma b. brasiliensis*	Thiago Zanetti	https://www.inaturalist.org/observations/157302238
10	*Triatoma petrocchiae*	Frederico Acaz Sonntag	https://www.inaturalist.org/observations/62085646
11	*Triatoma rubrovaria*	Jef Vizentin-Bugoni	https://www.inaturalist.org/observations/65444185
12	*Triatoma sherlocki*	Cleber Galvão	
13	*Triatoma vitticeps*	Robson Zampaulo	

Table 2. Distribution of the 64 known species of triatomines in the 27 federal units of Brazil. The last row shows the total number of species recorded in each federal unit, and the last column indicates the overall number.

Species	AC	AL	AM	AP	BA	CE	DF	ES	GO	MA	MG	MS	MT	PA	PB	PE	PI	PR	RJ	RN	RO	RR	RS	SE	SP	SC	TO	Total number of states where the species has been reported
Alberprosenia malheroi														†														1
Belminus laportei														†														1
Cavernicola lenti			†																									1
C. pilosa			†		†			†		†	†	†	†	†				†							†		†	11
Eratyrus mucronatus	†		†	†					†	†			†	†							†	†					†	10
Microtriatoma borbai								†	†				†					†	†						†			6
M. trinidadensis			†										†	†													†	4
Panstrongylus diasi					†		†	†	†	†	†	†	†							†					†		†	11
P. geniculatus	†	†	†	†	†	†	†	†	†	†	†	†	†	†		†	†	†	†		†	†		†	†		†	23
P. guentheri												†	†															2
P. lenti					†				†																		†	3
P. lignarius	†		†	†					†	†			†	†							†						†	9
P. lutzi		†			†	†					†				†	†	†			†				†				9
P. megistus	†	†			†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†		†	†	†	†	†	24
P. rufotuberculatus	†		†										†	†							†	†					†	7
P. tibiamaculatus		†			†			†			†					†		†	†					†	†	†		10
P. tupynambai																							†					1
Parabelminus carioca																			†									1
P. yurupucu					†																							1
Psammolestes coreodes												†	†															2
P. tertius		†			†	†	†		†	†	†		†	†	†	†	†	†		†				†	†		†	17
Rhodnius amazonicus			†	†										†														3
R. brethesi			†																									1
R. domesticus		†			†			†		†	†						†	†	†					†	†	†		11
R. marabaensis														†														1
R. montenegrensis	†		†																		†	†						4
R. nasutus					†	†				†					†	†	†			†								7
R. neglectus	†				†		†		†	†	†	†	†	†	†	†	†	†			†			†	†		†	17
R. paraensis			†											†														2
R. pictipes	†		†	†						†		†	†	†			†				†	†					†	11
R. robustus	†		†	†						†			†	†			†				†	†					†	10
R. stali	†											†									†							3
Triatoma arthurneivai											†																	1
T. bahiensis					†																							1
T. baratai												†																1

Continues

Species	AC	AL	AM	AP	BA	CE	DF	ES	GO	MA	MG	MS	MT	PA	PB	PE	PI	PR	RJ	RN	RO	RR	RS	SE	SP	SC	TO	Total number of states where the species has been reported
T. brasiliensis		■			■	■			■	■					■	■	■			■				■			■	11
T. carcavalloi																							■					1
T. circummaculata																							■					1
T. costalimai					■		■		■		■	■	■														■	7
T. deaneorum									■				■															2
T. delpontei												■											■					2
T. infestans					■																		■					2
T. jatai						■																					■	2
T. juazeirensis					■											■												2
T. jurbergi													■															1
T. klugi																							■					1
T. lenti					■				■																			2
T. maculata																						■						1
T. matogrossensis												■																1
T. melanica					■						■																	2
T. melanocephala					■										■	■				■				■				5
T. oliveirai																							■					1
T. petrocchiae					■	■									■	■				■								5
T. pintodiasi																							■					1
T. platensis																							■					1
T. pseudomaculata		■			■	■	■		■	■	■	■	■		■	■	■			■				■			■	15
T. rubrofasciata		■			■	■				■				■	■	■			■	■				■	■			11
T. rubrovaria																							■					1
T. sherlocki					■																							1
T. sordida	■				■		■		■	■	■	■	■			■	■	■					■		■	■	■	15
T. vandae												■	■															2
T. vitticeps					■			■			■								■									4
T. williami									■			■	■															3
T. wygodzinskyi											■														■			2
Total number of species reported per state	11	9	13	6	26	8	8	8	16	16	16	17	22	16	10	14	12	9	8	10	9	7	12	11	12	4	18	

or birds. The nymphs and adults of this species fed well on pigeons and bats but not on rats, mice, or hamsters in the laboratory (Carcavallo et al. 1995).

Bolboderini Usinger, 1944

Belminus Stål, 1859

Belminus laportei Lent, Jurberg & Carcavallo, 1995

Distribution. Pará.

Remarks. This species has been rarely encountered and therefore, poorly studied (Galvão 2014).

Microtriatoma Prosen & Martínez, 1952

Microtriatoma borbai Lent & Wygodzinsky, 1979

Distribution. Espírito Santo, Goiás, Mato Grosso, Rio de Janeiro, São Paulo, Paraná.

Public health importance. This is a sylvatic species that inhabits mammal burrows (rodents, marsupials) but refuses to feed on pigeons, chickens, mice, or humans in the laboratory. However, it has been known to be naturally infected by *T. cruzi* (Lent and Wygodzinsky 1979).

Remarks. In a study conducted by Gurgel-Gonçalves et al. (2012a), a female of *M. borbai* was discovered among 2,154 triatomine specimens collected from *Mauritia flexuosa* L.f. (Arecales: Arecaceae), a type of palm tree, in various locations across Alto Garça, Mato Grosso state, Brazil. The researchers suggested that the presence of *M. borbai* in *M. flexuosa* may be linked to the existence of the white-eared opossum, *Didelphis albiventris* Lund, 1840 (Marsupialia: Didelphidae), within these palm trees. *Microtriatoma borbai* in the state of Espírito Santo, Brazil, was found in a hybrid eucalyptus plantation in Aracruz (Gil-Santana et al. 2021).

Microtriatoma trinidadensis (Lent, 1951)

Distribution. Amazonas, Mato Grosso, Pará and Tocantins.

Public health importance. In Bolivia, this species was found in domestic and peridomestic environments (De La Riva et al. 2001).

Remarks. This species can feed on opossum in the wild and feed on mice under laboratory conditions (Miles et al. 1981). Specimens of this species from Bolivia and Colombia were considered to be a separate species, *M. mansosotoi* Prosen & Martínez, 1952. Lent and Wygodzinsky (1979) established the latter as a junior synonym of *M. trinidadensis*.

Parabelminus Lent, 1943

Parabelminus carioca Lent, 1943

Distribution. Rio de Janeiro.

Public health importance. *Parabelminus carioca* was found infected with *T. cruzi* (Lent and Wygodzinsky 1979).

Remarks. It has been found on a palm tree (*Attalea indaya* (Mart.) Burret; Arecaceae) among its frond where opossums (*Didelphis marsupialis aurita*) were obtaining shelter (Lent and Wygodzinsky 1979).

Parabelminus yurupucu Lent & Wygodzinsky, 1979

Distribution. Bahia.

Public health importance. In the laboratory, nymphs fed on mice. No reports of infection with *T. cruzi* (Lent and Wygodzinsky 1979). As the species is rare, it has no importance as the vectors of Chagas disease.

Remarks. Most specimens collected were found in epiphytic bromeliads, which in some cases contained rodent nests, and frogs and geckos also occurred (Lent and Wygodzinsky 1979).

Cavernicolini Usinger, 1944

Cavernicola Barber, 1937

Cavernicola lenti Barrett & Arias, 1985

Distribution. Amazonas.

Public health importance. The nymphs feed readily on man, mice and chickens in the laboratory (Barrett and Arias 1985). It was already found infected with *T. cruzi*.

Remarks. The adults are extremely active when disturbed and the eggs are fixed singly in narrow crevices. This species is associated with *Rhipidomys* sp. (Rodentia) and lesser spear-nosed bat *Phyllostomus elongatus* (Barrett and Arias 1985).

Cavernicola pilosa Barber, 1937

Distribution. Amazonas, Bahia, Espírito Santo, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraná, São Paulo and Tocantins.

Public health importance. It is occasionally found in human dwellings (Oliveira et al. 2007, Gil-Santana et al. 2014).

Remarks. This species has been found closely associated with bats, in caves or hollow trunks of trees (Lent and Wygodzinsky 1979). It was found at latitudes between 9°15'N and 23°18"S, and altitudes ranging from 140 to 1160 masl. The eggs of this triatomine were found glued on a mouse in the laboratory, which suggests that the bug's dispersal occurs through eggs fixed on host hairs (Oliveira et al. 2007).

Rhodniini Pinto, 1926

Psammolestes Bergroth, 1911

Psammolestes coreodes Bergroth, 1911

Distribution. Mato Grosso and Mato Grosso do Sul.

Remarks. This species is sylvatic and often inhabits nests of Furnariidae birds (Lent and Wygodzinsky 1979, Marti et al. 2014), occasionally it can find in peridomestic habitat such as chicken house but has never been found infected with *T. cruzi* (Lent and Wygodzinsky 1979). This species has eggs of oval shape without the presence of the collar (Oliveira et al. 2023).

Psammolestes tertius Lent & Jurberg, 1965

Distribution. Alagoas, Bahia, Ceará, Distrito Federal, Goiás, Mato Grosso, Maranhão, Minas Gerais, Pará (Historical record and needs to be confirmed), Paraiba, Paraná, Pernambuco, Piauí, Rio Grande do Norte, São Paulo, Sergipe and Tocantins.

Public health importance. This species has been found naturally infected with *T. cruzi*, but without relevant role as vectors (Barreto and Albuquerque 1969).

Remarks. Like its two congeners, this species is also found frequently in nests of birds of the family Furnariidae (Lent and Wygodzinsky 1979).

Rhodnius Stål, 1859

Rhodnius amazonicus Almeida, Santos & Sposina, 1973

Distribution. Amazonas, Amapá, Pará.

Public health importance. In Amapá, this species was found invading a domiciliar environment in a rural area. However, no natural infection has been reported so far (Galeno et al. 2023).

Remarks. This is a sylvatic and very rare species, described based on a female specimen and synonymized by Lent and Wygodzinsky (1979) with *R. pictipes*. After discovery

of some specimens of this genus from French Guiana and the examination of the female holotype of *R. amazonicus*, Bérenger and Pluot-Sigwalt (2002) revalidated this species. A comparative morphological study between. *R. pictipes, R. stali* and a pair of *R. amazonicus* captured in Breves, PA, Brazil was conducted by Rosa et al. (2017), which also contributed to the phenotypic distinction between these two species.

Rhodnius brethesi Matta, 1919

Fig. 1

Distribution. Amazonas.

Public health importance. It is a sylvatic species often associated with palm tree *Leopoldina piassaba*. However, as it has an attacking behavior and was found naturally infected with *T. cruzi*, this triatomine has been considered as a vector of Chagas disease (Coura et al. 1994, Freitas et al. 2012).

Remarks. The colour patterns of the pronotum is variable, especially the medial pronotal band (Lent and Wygodzinsky 1979, Freitas et al. 2012).

Rhodnius domesticus Neiva & Pinto, 1923

Distribution. Alagoas, Bahia, Espírito Santo, Maranhão, Minas Gerais, Paraná, Piauí, Rio de Janeiro, Santa Catarina, São Paulo, Sergipe (this occurrence was recorded for *R. zeledoni*, currently a synonym of *R. domesticus* – Oliveira-Correia et al. 2024).

Public health importance. Although its name could suggest that it would be a domestic species, it is sylvatic and has been found in human habitations only in isolated instances. Free-living populations have been found mainly in rodent or marsupial nests in epiphytic bromeliads, and occasionally in hollow trees (Lent and Wygodzinsky 1979, Guarneri et al. 1998). It has been found naturally infected with *T. cruzi* and *T. rangeli*, but of less importance as a vector (Corrêa-do-Nascimento et al. 2020).

Remarks. The life cycle of this species has been studied in the laboratory by Guarneri et al. (1998).

Rhodnius marabaensis Souza et al., 2016

Distribution. Pará

Public health importance. Unknown.

Remarks. Regarding the biology of *R. marabaensis*, the species biological cycle occurred under laboratory conditions at temperatures and humidity of 24 °C and 63%, respectively. *Rhodnius marabaensis* exhibited an emergence rate of 46.7% and a total biological cycle of 193 days (the mean time required for emergence (25.1 days), 1st nymphal instar (19.4 days), 2nd nymphal instar (22.1 days), 3rd nymphal instar (26.2 days), 4th nymphal instar (29.3 days), and 5th nymphal instar (70.9 days) (Olaia et al. 2021).

Rhodnius montenegrensis Rosa et al., 2012

Distribution Acre, Amazonas, Rondônia, Roraima.

Public health importance. It was found infected with *T. cruzi* and *T. rangeli*, separately, and with infection with both protozoans in Brazilian state of Rondônia (Meneguetti et al. 2014, Bilheiro et al. 2018). In addition to Brazil, Menezes et al. (2022) collected *R. montenegrensis* infected with *T.cruzi* in Bolivia.

Rhodnius nasutus Stål, 1859

Fig. 2

Distribution. Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte.

Public health importance. *R. nasutus* is one of the main vectors in northeastern Brazil. It can be occasionally found in human dwellings, chicken coops, and corrals. This species may feed on birds, poultry, and goats and is also very aggressive toward man (Lima and Sarquis 2008). This vector is naturally found mixed infected with *T. cruzi* and *T. rangeli* (Dias 2007, 2014b).

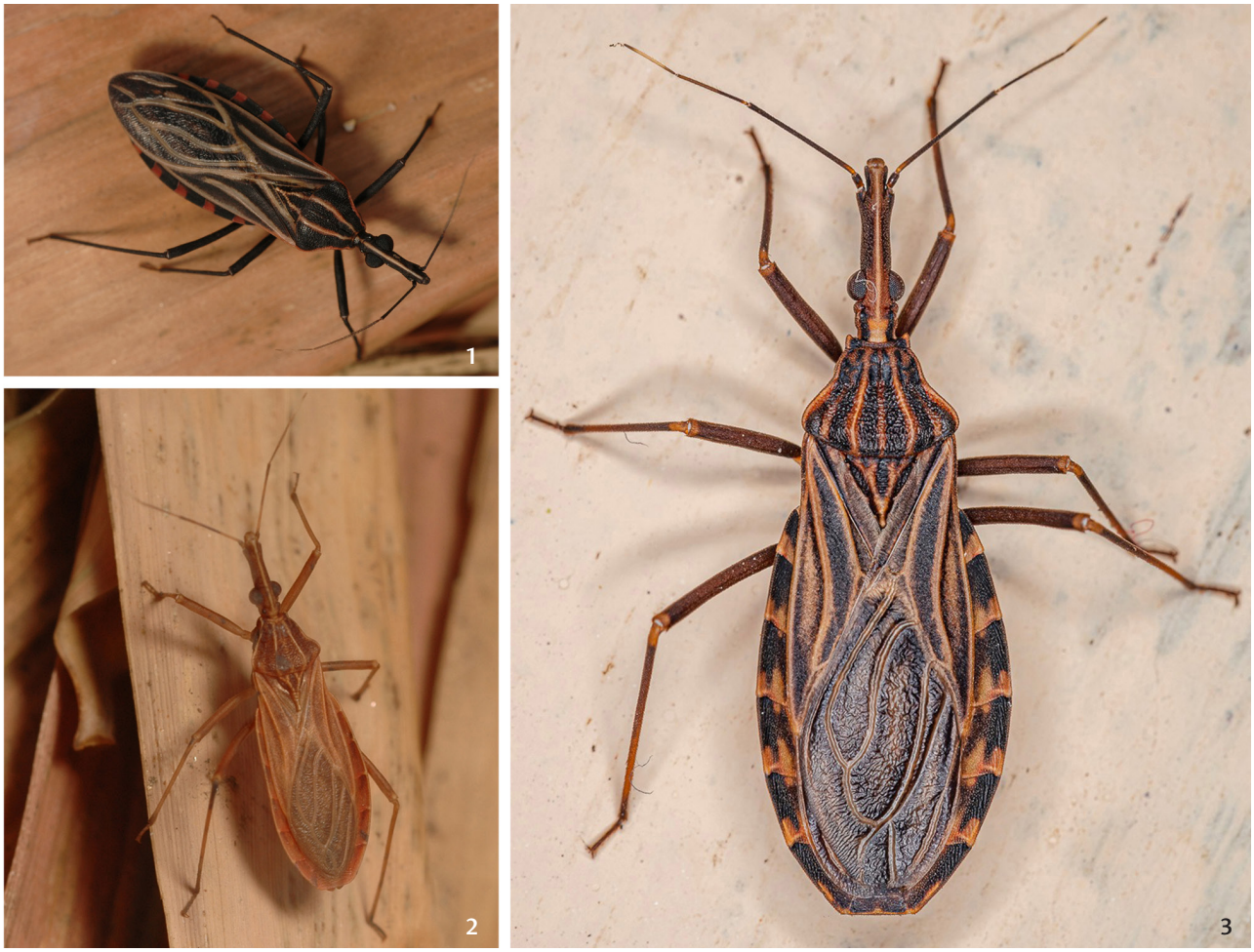
Remarks. This species shows chromatic polymorphic; mostly adults are brown with paler and blackish markings, rarely nearly totally black (Dias et al. 2014a). This species is associated with many species of palm trees: *Copernicia prunifera*, *Attalea maripa*, *A. speciosa*, *A. phalerata*, *Mauritia flexuosa*, *Syagrus oleracea*, *Acrocomia intumescens*, and *Astrocaryum aculeatum* (Dias et al. 2008, 2014b), and *Licania rigida* trees (Lima and Sarquis 2008).

Rhodnius neglectus Lent, 1954

Fig. 3

Distribution. Acre, Bahia, Distrito Federal, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraíba, Pará (this occurrence was recorded for *R. milesi*, currently a synonym of *R. neglectus* – Campos et al. 2024), Paraná, Pernambuco, Piauí, Rondônia (this occurrence was recorded for *R. milesi*, currently a synonym of *R. neglectus* – Campos et al. 2024), São Paulo, Sergipe and Tocantins.

Public health importance. This species has been found naturally infected by both *T. cruzi* and *T. rangeli*. It is primarily a sylvatic species but can occasionally be found in human houses, chicken coops, pigeon coops, and in other peridomestic situations. In recent decades, adult specimens infected by



Figures 1–3. Triatominae, live individuals, dorsal view: (1) *Rhodnius brethesi*; (2) *Rhodnius nasutus*; (3) *Rhodnius neglectus*.

T. cruzi have invaded houses in central Brazil, maintaining the risk of disease transmission (Garcia-Zapata et al. 1985, Gurgel-Gonçalves and Cuba Cuba 2009).

Remarks. The natural populations are generally associated with palm trees, including *Orbignya martiana*, *Acrocomia macrocarpa*, *Mauritia vinifera*, and *Scheelea phalerata*, *Livistona australis*. Sometimes it is encountered in birds' nests and in hollow trees (Lent and Wygodzinsky 1979, Gurgel-Gonçalves et al. 2003, Gurgel-Gonçalves and Cuba Cuba 2009, Carvalho et al. 2014).

Rhodnius paraensis Sherlock, Guitton & Miles, 1977

Distribution. Amazonas and Pará.

Public health importance. It was found naturally infected by *T. cruzi* (Lent and Wygodzinsky 1979).

Remarks. This is a sylvatic species, has been found in nests of the rodent *Echimys chrysurus* (Lent and Wygodzinsky 1979) and was collected under light trap (Bérenger et al. 2009).

Rhodnius pictipes Stål, 1872

Distribution. Acre, Amapá, Amazonas, Maranhão, Mato Grosso, Mato Grosso do Sul, Pará, Piauí, Rondônia, Roraima and Tocantins

Public health importance. This species is a sylvatic species with a widespread distribution in South America, naturally infected by *T. cruzi* and *T. rangeli* (Rocha et al. 1994). It is associated with birds, bats, marsupials, rodents, lizards and sometimes into the human habitations and feed on bats, dogs, pigs, marsupials, humans, poultry (Lent and Wygodzinsky 1979).

Remarks. It has been collected on palm trees, including *Acrocomia sclerocarpa*, *Copernitia australis, Orbignya speciosa*, *Jessenia policarpa*, *Maximiliana regia*, *Scheelea* spp., *Attalea* sp., and on epiphytic bromeliads (*Aechmea* sp.) (Miles et al. 1983). The biology of this species has been studied under laboratory conditions by Rocha et al. (1994).

Rhodnius robustus Larrousse, 1927

Distribution. Acre, Amazonas, Amapá, Maranhão, Mato Grosso, Pará, Piauí (This occurrence needs to be confirmed as it was based on secondary data in the manuscript by Gurgel-Gonçalves et al. 2008), Rondônia, Roraima and Tocantins.

Public health importance. This species can be found in sylvatic, peridomiciliar and domiciliar environments, and has been considered as an important vector of Chagas disease. It is associated with rodents, marsupials, bats and birds and feeds on rodents, marsupials, bats, lizards, frogs, and humans (Lent and Wygodzinsky 1979). It is naturally mixedly infected by *T. cruzi* and *T. rangeli* (Dias et al. 2014b) and is an extradomestic vector of Chagas disease in western Venezuela (Feliciangeli et al. 2002).

Remarks. It has been collected on palm trees (*Attalea maracaibensis*, *Scheelea* sp., *Acrocomia sclerocarpa*, *Maximiliana regia*, *Orbignya speciosa*, *Mauritia* sp.) and on epiphytic bromeliads (*Aechmea* sp.) (Lent and Wygodzinsky 1979). The feeding behavior of this species was studied by Rubio et al. (2013) under laboratory conditions.

Rhodnius stali Lent, Jurberg & Galvão, 1993

Distribution. Acre, Mato Grosso do Sul and Rondônia.

Public health importance. This species is mainly sylvatic, but it can be found in peridomestic and domestic environments, and it is able to establish colonies in domiciliar and peridomiciliar habitats in Bolivia (Matias et al. 2003). It was found naturally infected with *T. cruzi* (Menezes et al. 2023).

Remarks. The palm tree of *Attalea phalerata* represents an important sylvatic ecotope of this species, but it can be collected on other palms, such as *Astrocaryum murumuru* and *Oenocarpus bataua*, and in chicken coop (Justi et al. 2010). In the Pantanal region, this species was found in palm trees and in coati nests, living in sympatry with *Triatoma sordida* (Santos et al. 2019).

Triatomini Jeannel, 1919

Eratyrus Stål, 1859

Eratyrus mucronatus Stål, 1859

Fig. 4

Distribution. Acre, Amazonas, Amapá, Goiás, Maranhão, Mato Grosso, Pará, Rondônia, Roraima and Tocantins.

Public health importance. It has been found naturally infected with *T. cruzi* (Dujardin et al. 2000). It was found in intra- and peridomiciliar environments and attracted by lights (Lent and Wygodzinsky 1979, Valencia Telleria 1990, Noireau et al. 1995, Molina et al. 2000, Soto Vivas et al. 2001).

Remarks. It lives naturally in hollow trees inhabited by bats (Lent and Wygodzinsky 1979) or porcupines (Gaunt and Miles 2000). This species has been found feeding on spiders (Miles et al. 1981).

Panstrongylus Berg, 1879

Panstrongylus diasi Pinto & Lent, 1946

Distribution. Bahia, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Rio Grande do Norte (this occurrence in need of confirmation), São Paulo and Tocantins.

Public health importance. This species is sylvatic and sometimes can be found in dwellings (Garcia-Zapata et al. 1985), but no natural infection by *T. cruzi* has been reported.

Remarks. It can be attracted by lights, but nothing is known for its biology.

Panstrongylus geniculatus (Latreille, 1811)

Distribution. Acre, Amapá, Amazonas, Alagoas, Bahia, Ceará, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rondônia, Roraima, São Paulo, Sergipe and Tocantins.

Public health importance. It is one of the most widely distributed triatomines in South and Central America (Lent and Wygodzinsky 1979, Leite et al. 2007). Although this sylvatic species is rarely found inside dwellings (Dujardin et al. 2000, Depickère et al. 2012), recently, it has been reported as domiciled, posing a risk of Chagas disease transmission (Valente et al. 1999, Patterson et al. 2009, Reyes-Lugo 2000).

Remarks. It has been collected in dry and humid wild habitats, and it can feed on marsupials, rodents, armadillos, bats, birds, and pigs (Valente et al. 1999, Patterson et al. 2009, Sandoval-Ruiz et al. 2012).

Panstrongylus guentheri Berg, 1879

Distribution. Mato Grosso, Mato Grosso do Sul.

Public health importance. Sylvatic species, associated with rodents and didelphids. Although accidentally captured in dwellings and peridomestically among firewood, it has never colonized houses so far. It has been found infected with *T. cruzi* (Lent and Wygodzinsky 1979).

Remarks. This triatomine prefers living in habitats with a relative humidity of <50% (Carcavallo et al. 1994).

Panstrongylus lenti Galvão & Palma, 1968

Fig. 5

Distribution. Bahia, Goiás and Tocantins.

Remarks. It is the smallest species of *Panstrongylus* (Lent and Wygodzinsky 1979).

Panstrongylus lignarius (Walker, 1873)

Distribution. Acre, Amapá, Amazonas, Goiás, Maranhão, Mato Grosso, Pará, Rondônia and Tocantins.

Public health importance. This species can be found in sylvatic, peridomestic and domestic environments, sometimes showing high infestation rates (Cuba Cuba et al. 2007, Paula et al. 2013).

Remarks. This vector can feed on marsupials, spiny rats, anteaters, bats, toucans, chickens, rabbits and pigeons (Patterson et al. 2009).

Panstrongylus lutzi (Neiva & Pinto, 1923)

Distribution. Alagoas, Bahia, Ceará, Minas Gerais, Paraíba, Pernambuco, Piauí, Rio Grande do Norte and Sergipe.

Public health importance. This species is a sylvatic species associated with armadillos (Dasypodidae) (Dias-Lima et al. 2003), but it is increasingly likely to invade and colonize in peridomiciliar and domiciliar habitats, usually with high infection rates for *T. cruzi* (Garcia et al. 2005). It can feed on birds, rodents, opossum, armadillo, horse, cats and humans (Caranha et al. 2006).

Panstrongylus megistus (Burmeister, 1835)

Fig. 6

Distribution. Acre, Alagoas, Bahia, Ceará, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Rondônia, Santa Catarina, São Paulo, Sergipe and Tocantins.

Public health importance. This is the first triatomine to be recognized as a vector of Chagas disease (Chagas 1909) and the fourth vector in importance of this disease (WHO 2020). It is striking that some authors of the first half of past century stated that it was an exclusive domestic species (e.g., Brumpt 1936), although it was primarily native from the Brazilian forests, where it is commonly found. It was considered as the main domestic vector in Brazil before 1930s when it started to be progressively replaced by *T. infestans*. However, following the success of the control program in the southern cone, *T. infestans* was eliminated in many areas (Dias and Schofield 1999), and *P. megistus* initiated a new process of invasion and domiciliation in several states of Brazil. It is currently considered to be the main domestic vector of Chagas disease in the central, eastern, and southeastern regions of Brazil (Patterson et al. 2009, Castro et al. 2018). It feeds on the blood of mammals, including rodents, opossums, and humans (Lent and Wygodzinsky 1979, Pires et al. 2002a).

Remarks. The bionomics of this vector is relatively well-studied (Pires et al. 2002a, 2002b, 2004).

Panstrongylus rufotuberculatus (Champion, 1899)

Distribution. Acre, Amazonas, Mato Grosso, Pará, Rondônia, Roraima and Tocantins.

Public health importance. This sylvatic species rarely colonizes the peri- and intradomiciliary habitats, mainly associated with armadillos and bats (Patterson et al. 2009) and some authors believe that its risk of transmission is very limited (Salazar-Schettino et al. 2010). However, in the Andean countries, this triatomine shows a strong tendency to colonize human dwellings and is an important vector (Dujardin et al. 1998a, Wolff and Castillo 2002, Traviezo-Valles et al. 2008, Patterson et al. 2009). It is also having an increasing potential as a vector, since it was demonstrated a synanthropic tendency, wide distribution and trophic eclecticism in northwestern Peru (Cuba Cuba et al. 2007).

Remarks. It has been collected between 50 and 630 meters above sea level (Salazar-Schettino et al. 2010). This species can be attracted by light (Salomon et al. 1999).

Panstrongylus tibiamaculatus (Pinto, 1926)

Fig. 7

Distribution. Alagoas, Bahia, Espírito Santo, Minas Gerais, Paraná, Pernambuco, Rio de Janeiro, Santa Catarina, São Paulo and Sergipe.

Public health importance. It has been found naturally infected with *T. cruzi* (Takeda et al. 1976).

Remarks. *Panstrongylus tibiamaculatus* is a widespread sylvatic species and usually found on bromeliads, near or in the nests of the marsupials (Lent and Wygodzinsky 1979). The biology of this species in the laboratory has been reported by Rodrigues et al. (2007). Recently, it was transferred from *Triatoma* to *Panstrongylus*, based on chromosomal and phylogenetic characteristics by Bittinelli et al. (2023), a fact to be kept in mind when consulting previous literature about this species (formerly, *Triatoma tibiamaculata*).

Panstrongylus tupynambai Lent, 1942

Distribution. Rio Grande do Sul.

Public health importance. This species feeds on birds, rodents, reptiles, dogs and humans (Patterson et al. 2009). It is sylvatic, and adults can be occasionally found in houses, and was found naturally infected with *T. cruzi* (Lent and Wygodzinsky 1979).

Remarks. This species generally inhabits rupestrian and subterranean ecotopes, like rockpiles semi-buried in humid soil, as well as rodent and reptile burrows (Salvatella 1986, Martins et al. 2006).

Triatoma Laporte, 1832

Triatoma arthurneivai Lent & Martins, 1940

Distribution. Minas Gerais.

Public health importance. This species is mainly found in sylvatic environments, and occasionally peridomiciliar habitats. Although the experimental infection by *T. cruzi* was easily obtained (Forattini et al. 1968) and natural infection has been found (Barretto and Ribeiro 1981), this triatomine is not important as vectors to human (Lent and Wygodzinsky 1979).

Remarks. This species could be misidentified as *T. wygodzinskyi* in Brazil, because of the morphological similarity between them (Carbajal-de-la-Fuente et al. 2011). The developmental cycle under the name of *T. arthurneivai*, reported by Juarez (1970), is attributed for the *T. wygodzinskyi* as pointed by Carbajal-de-la-Fuente (2010). This species can be attracted by light trap (Dias et al. 2011).

Triatoma bahiensis Sherlock & Serafim, 1967

Distribution. Bahia.

Remarks. Despite inhabiting wild environments, described as uncertain in the description by Sherlock and Serafim (1967), the species has been found in peri- and intradomiciliary areas through active surveillance searches; this species is present in the Chapada Diamantina region as reported in the redescription (Mendonça et al. 2016).

Triatoma baratai Carcavallo & Jurberg, 2000

Distribution. Mato Grosso do Sul.

Remarks. *Triatoma baratai* is a sylvatic species morphologically similar to *Triatoma williami* Galvão, Souza & Lima, 1965. The holotype was collected under the light at a cave entrance (Carcavallo and Jurberg 2000). The female was described in 2012, along with a key for the group of correlated species by Obara et al. (2012).

Triatoma brasiliensis Neiva, 1911

Fig. 9

Distribution. Alagoas, Bahia, Ceará, Maranhão, Goiás, Paraíba, Perambuco, Piauí, Rio Grande do Norte, Sergipe and Tocantins.

Public health importance. This species is the fifth major vector of Chagas disease (WHO 2020). Since the success of *T. infestans* control in Brazil, *T. brasiliensis* has been considered currently the most important vector of Chagas disease in the semiarid areas of northeastern Brazil (Costa et al. 2013, 2014).

Remarks. The status of subspecies and species of the *T. brasiliensis* complex was disputed for many years (Lent and Wygodzinsky 1979, Costa et al. 2013). Some multidisciplinary studies, such as morphology (Costa et al. 1997a, 2009), biology (Costa and Marchon-Silva 1998), ecology (Costa et al. 1998, 2002, 2014, Valença-Barbosa et al. 2014), breeding and genetics (Costa et al. 2003, Alevi et al. 2014), and molecular biology (Costa et al. 1997b, Monteiro et al. 2004, Harry et al. 2009), were carried out on this species searching to confirm the existence of a species complex including two subspecies: *T. b. brasiliensis* and *T. b. macromelasoma* (Costa et al. 2013).

Triatoma carcavalloi Jurberg, Rocha & Lent, 1998

Fig. 8

Distribution. Rio Grande do Sul.

Remarks. This species is currently in sympatry with *T. rubrovaria*, *T. circummaculata* and *Triatoma pintodiasi* with which it also shares morphological characteristics (Santos-Mallet et al. 2008, Jurberg et al. 2013).

Triatoma circummaculata (Stål, 1859)

Distribution. Rio Grande do Sul.

Public health importance. It is a sylvatic species and was found naturally infected with *T. cruzi,* but without epidemiological importance yet.

Remarks. *Triatoma circummaculata* has been collected in the rock piles with two other morphologically similar species, *T. carcavalloi*, *T. pintodiasi* and *T. rubrovaria* (Blanchard, 1846) (Jurberg et al. 2013).

Triatoma costalimai Verano & Galvão, 1958

Distribution. Bahia, Distrito Federal, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais and Tocantins.

Public health importance. *Triatoma costalimai* is a sylvatic species associated with reptiles, rodents, and primates. Experimentally, this species can be infected with *T. cruzi*, but none of the wild-caught bugs was found infected.

Figures 4–9. Triatominae, live individuals: (4) *Eratyrus mucronatus*; (5) *Panstrongylus lenti* (6) *Panstrongylus megistus*; (7) *Panstrongylus tibiamaculatus*; (8) *Triatoma carcavalloi;* (9) *Triatoma brasiliensis brasiliensis*.

Remarks. Nymphs of *T. costalimai* were common among outcrops of eroded grey limestone (Schofield et al. 1980). The life cycle of this species has been studied under laboratory condition by Isac et al. (2000).

Triatoma deaneorum Galvão, Souza & Lima, 1967

Distribution. Goiás and Mato Grosso.

Public health importance. Some specimens including types were collected in rural houses, but the sylvatic habits of this species are unknown. It has no epidemiological importance yet (Galvão et al. 2001).

Remarks. Lent and Wygodzinsky (1979) suspected that *T. deaneorum* might represent a hybrid between *T. williami* and *T. infestans*.

Triatoma delpontei Romaña & Abalos, 1947

Distribution. Rio Grande do Sul and Mato Grosso do Sul.

Public health importance. *Triatoma delpontei* is an ornithophilic sylvatic species (Salvatella Agrelo et al. 1993) and occasionally adults can be found in peridomestic habitats and in houses. It has been found naturally infected by *T. cruzi* (Lent and Wygodzinsky 1979) but has no epidemiological importance.

Remarks. It is associated with parrots (*Myiopsitta monacha*). The life cycle of this triatomine was studied in the laboratory by Silva et al. (1994).

Triatoma infestans (Klug, 1834)

Distribution (previously to the success of control program). Alagoas, Bahia, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Sul, São Paulo, Santa Catarina, Sergipe and Tocantins.

Public health importance. This species was the most important vector and the primary vector of *T. cruzi* to humans in South America, as it easily colonizes the domiciliary habitat (Pereira et al. 2006). For about half of all Chagas disease cases, *T. infestans* was the responsible vector (Bargues et al. 2006). Since 1960s some regular national and regional programmes, especially against Chagas disease have been conducted in Brazil, Argentina, Venezuela, Chile, and Uruguay. Especially the regional program of the Southern Cone countries initiated in 1991 has led to the interruption of vector-borne transmissions to humans in Chile, Uruguay, Brazil, eastern Paraguay, and parts of Argentina and greatly reduced populations in many Latin American countries (Schofield et al. 2006, Dias 2007), but the wild population of this species is still a risk for the disease return (Noireau et al. 1995, Buitrago et al. 2010, 2013, Ceballos et al. 2011, Brenière et al. 2013).

Remarks. The melanic form found in peridomiciliar environments in Misiones has been considered a subspecies of *T. infestans* and later raised to species rank as *Triatoma melanosoma* (Martínez et al. 1987, Lent et al. 1994). Studies using several methods confirmed that *T. melanosoma* was a chromatic variant of *T. infestans* (Noireau et al. 2000, Monteiro et al. 1999, Gumiel et al. 2003, Bargues et al. 2006, Ceballos et al. 2011). This vector is well studied, and hundreds of papers have been published about many aspects of this species especially using molecular methods (Monteiro et al. 1999, Bargues et al. 2006, Ceballos et al. 2011, Torres-Pérez et al. 2011, Rosas et al. 2011, Brenière et al. 2013). The eggs of this triatomine can be parasited by *Aprostocetus asthenogmus* (Waterston, 1915) (Hymenoptera, Eulophidae, Tetrastichinae) under laboratory conditions (Santos et al. 2014). It has been more than eight years since cases of reinfestation have not been found in the areas of Bahia and Rio Grande do Sul.

Triatoma jatai Gonçalves, Teves-Neves, Santos-Mallet, Carbajal-de-la-Fuente & Lopes, 2013

Distribution. Ceará, Tocantins.

Public health importance. *Triatoma jatai* was collected on rock outcrops in the wild environment. The invasion of dwellings was recorded more recently (Gonçalves et al. 2013). None natural infection with *T. cruzi* has been reported.

Remarks. This species morphologically resembles *T. costalimai* (Galvão 2014).

Triatoma juazeirensis Costa & Felix, 2007

Distribution. Bahia and Pernambuco.

Public health importance. *Triatoma juazeirensis* is a vector of *T. cruzi* (de la Fuente 2008) and lives in sylvatic and domiciliar environments (Costa and Felix 2007, Almeida et al. 2012).

Remarks. This species is closely related to *T. sherlocki*. Almeida et al. (2012) reported that those two species can mate in laboratory condition and produce intermediate hybrids.

Triatoma jurbergi Carcavallo, Galvão & Lent, 1998

Distribution. Mato Grosso.

Public health importance. *Triatoma jurbergi* is a sylvatic species, it can naturally be infected with *T. cruzi* (Lorosa et al. 2003), but without risk of epidemiological importance yet.

Remarks. The species shares morphological similarities with *T. guazu*, which is currently synonymous with *Triatoma williami* (Carcavallo et al. 1998).

Triatoma klugi Carcavallo, Jurberg, Lent & Galvão, 2001

Distribution. Rio Grande do Sul.

Public health importance. *Triatoma klugi* is sylvatic and lives in cracks of cliff face, but can be experimentally infected by both *T. cruzi* and *T. rangeli* (Emmanuelle-Machado et al. 2002).

Remarks. The life cycle of this species was studied under laboratory conditions by Emmanuelle-Machado et al. (2002).

Triatoma lenti Sherlock & Serafim, 1967

Distribution. Bahia and Goiás.

Remarks. The species has previously been found infected with the protozoan *Trypanosoma cruzi* and is considered a potential vector of Chagas disease (Sherlock and Guitton 1974). The species is found in rocky ground with mammal shelters, such as houses and corrals (Sherlock and Serafim 1967, Lent and Wygodzinsky 1979).

Triatoma maculata (Erichson, 1848)

Distribution. Roraima.

Public health importance. *Triatoma maculata* has a wide range of sylvatic ecotopes including hollow trees, under bark, bird nests and palm tree crowns; it can frequently colonize peridomestic environments, such as in chicken houses, pigeon coops, and corrals, and occasionally can be found in domestic habitats. It is commonly found infected with *T. cruzi*, and is an important vector of Chagas disease, and the second in importance in Venezuela (Lent and Wygodzinsky 1979)

Remarks. García-Alzate et al. (2014) found that individuals of the domestic habitat showed significant reductions in wing size and variations in morphological characteristics associated with flying, in relation to the peridomestic and wild habitats. The bionomic characters of this species have been studied under laboratory conditions by Luitgards-Moura et al. (2005). This species was also found colonizing the urban environment in Boa Vista, Roraima (Ricardo-Silva et al 2016).

Triatoma matogrossensis Leite & Barbosa, 1953

Distribution. Mato Grosso do Sul.

Public health importance. *Triatoma matogrossensis* is a sylvatic species and can be found in peridomiciliar and domiciliar habitats. It was reported invading human dwellings and might act as a vector of Chagas disease (Noireau et al. 2002).

Remarks. This species is morphologically similar to *T. vandae* and other members in *matogrossensis* subcomplex (Gardim et al. 2013). The influence of pigeon and rabbit blood-meals on egg laying, egg hatching and the life span of this bug has been studied under laboratory conditions by Marassá et al. (1998) and the sialotranscriptome was reported by Assumpção et al. (2012)

Triatoma melanica Neiva & Lent, 1941

Distribution. Bahia and Minas Gerais.

Public health importance. *Triatoma melanica* is a sylvatic species and was considered to be important in the maintenance of the wild cycle of *Trypanosoma cruzi* (Costa 1999).

Remarks. This species was described by Neiva and Lent (1941) as a subspecies of *T. brasiliensis*. Lent and Wygodzinsky (1979) recognized it as one of melanic forms of *T. brasiliensis*. After carefully studying the *Triatoma brasiliensis* complex using many approaches, including morphology (Costa et al. 1997a, Freitas et al. 2008), isoenzymes (Costa et al. 1997b), biological data, and ecological data (Costa et al. 1998), hybrid cross (Costa et al. 2003), and molecular data (Monteiro et al. 2004), Costa et al. (2006) elevated it to species status.

Triatoma melanocephala Neiva & Pinto, 1923

Distribution. Bahia, Paraíba, Pernambuco, Rio Grande do Norte and Sergipe.

Public health importance. *Triatoma melanocephala* is a sylvatic triatomine, usually found amongst bromeliads; occasionally found in houses (Lent and Wygodzinsky 1979, Sherlock and Guitton 1980). Although it is known to be infected by *Trypanosoma cruzi* it has no epidemiological importance as the species is rare in number.

Remarks. It takes about 350 days to develop from egg to adult in the laboratory (Sherlock and Guitton 1980).

Triatoma oliveirai (Neiva, Pinto & Lent, 1939)

Distribution. Rio Grande do Sul.

Remarks. *Triatoma oliveirai* is a sylvatic species living amongst rocks and associated with caviid rodents, such as Brazilian guinea pig *Cavia aperea* (Galvão, 2014). This species was redescribed by Barcellos and Grazia (1989) in a study that addressed the redescription with a study of the genitalia.

Triatoma petrocchiae Pinto & Barreto, 1925

Fig. 10

Distribution. Bahia, Ceará, Paraíba, Pernambuco and Rio Grande do Norte.

Remarks. *Triatoma petrocchiae* is a sylvatic species living in rocky outcrops in arid conditions and often associated with rock cavy *Kerodon rupestris.* This species is very similar to *T. brasiliensis* in morphology, but they showed to be reproductively isolated (Espínola 1971) and genetically different (Monteiro et al. 1998).

Triatoma pintodiasi Jurberg, Cunha & Rocha, 2013

Distribution. Rio Grande do Sul.

Remarks. This is a sylvatic species, morphologically similar to *T. circummaculata* (Galvão 2014).

Triatoma platensis Neiva, 1913

Distribution. Rio Grande do Sul.

Public health importance. *Triatoma platensis* is a sylvatic and ornitophilic species. It can be found in the nests of furnariid bird (Salvatella et al. 1991, Turienzo and Di Iorio 2014, Marti et al. 2014) and occasionally in peridomestic habitats, such as in hens' coop. The natural infection of *T. platensis* by *T. cruzi* was reported (Lent and Wygodzinsky 1979, Marti et al. 2014).

Remarks. This species is closely related to *T. delpontei*, *T. rubrovaria*, and *T. infestans*. It can be fertile with *T. delpontei* and occasionally natural hybrids of *T. infestans* x *T. platensis* were found in places of their occurrence (Abalos 1948, Lent and Wygodzinsky 1979, Ronderos et al. 1980). Crocco et al. (2010) reported that *T. platensis* defecates quickly after feeding.

Triatoma pseudomaculata Corrêa & Espínola, 1964

Distribution. Alagoas, Bahia, Ceará, Distrito Federal, Goiás, Maranhão, Minas Gerais, Mato Grosso, Mato Grosso do Sul, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe and Tocantins.

Public health importance. This species has been collected in the bird nests, hollow trees and under bark; frequently found in peridomiciliar environments in the semi-arid ("caatinga") environments (Carcavallo et al. 1999) and it is able to feed on cockroaches (Freitas et al. 2005, Pontes et al. 2011). It has been found naturally infected by *T. cruzi*, but this species occurs in low numbers and was not considered an important vector of Chagas disease before 1980s (Lent and Wygodzinsky 1979). However, this species is in the process of domiciliation (De Assis et al. 2007) and it can present a high natural *T. cruzi* infection rate (Sarquis et al. 2004). One case of *T. cruzi* transmission by this species to a woman was reported in Ceará State (Diotaiuti 2009). So, this species is becoming more important as a vector at recent years.

Remarks. This species is morphologically very similar to *T. maculata*, both being regarded as the same species until 1964 (Lent and Wygodzinsky 1979). Belisário et al. (2007) showed no differences in reproduction patterns, and they are able to cross, generating infertile hybrids. However, in the same year, Santos et al. (2007) performed an enzymatic, morphometric and cytogenetic comparison of them and stated that both species belong to distinct evolutionary lineages.

Triatoma rubrofasciata (De Geer, 1773)

Distribution. Alagoas, Bahia, Ceará, Maranhão, Pará, Paraíba, Pernambuco, Rio de Janeiro, Rio Grande do Norte, São Paulo and Sergipe.

Public health importance. *Triatoma rubrofasciata* has been recorded in a wide range of peridomiciliary and domiciliary habitats, such as houses, livestock pens, woodpiles, and under lights, especially in association with rats. Although natural infection with *T. cruzi* has been reported in many cases (Lucena and Magalhães Netto 1939, Dias and Neves 1943), and it has been known to colonize human habitations in many parts of the world, it is not commonly an active vector of Chagas disease (Lent and Wygodzinsky 1979). However, it is usually the vector of *T. conorhini* (Donovan, 1909) that infects *Rattus rattus* since this triatomine is in close association with rats (Lent and Wygodzinsky 1979). It is not highly anthropophilic, but bites by this species can cause dermatitis and anaphylactic shock (Arnold and Bell 1944, Wang and Peng 2006).

Remarks. This species is the type species of the genus *Triatoma* and the only known triatomine with a cosmopolitan distribution. The biology of this species has been studied under laboratory conditions (Braga et al. 1998, Cortéz and Gonçalves 1998, Braga and Lima 1999).

Triatoma rubrovaria (Blanchard, 1846)

Fig. 11

Distribution. Rio Grande do Sul.

Public health importance. *Triatoma rubrovaria* is a sylvatic species living mainly among exfoliate rocks and occasionally can be found in peridomiciliar and domiciliar environments. Since the control of *T. infestans*, this species has an increasing of domiciliary and peridomiciliary invasion and may be a highly competent vector of *T. cruzi* in some areas (Almeida et al. 2000).

Remarks. The genetic variability of this species has been reported by Pacheco et al. (2007). Almeida et al. (2000, 2002a, 2002b, 2003, 2005) have conducted a series of studies on the bionomics, ecology and invasion process of this triatomine. It can feed on a wide variety of vertebrate and invertebrate hosts (Salvatella et al. 1994, 1995).

Triatoma sherlocki Papa, Jurberg, Carcavallo, Cerqueira & Barata, 2002

Fig. 12

Distribution. Bahia.

Public health importance. *Triatoma sherlocki* is a sylvatic species in process of domiciliation. It has been found naturally infected with *T. cruzi* and is a potential vector of it.

Remarks. This species can be experimentally crossed with *T. lenti*, but the extremely reduced fertility observed in the F_2 hybrids confirmed the specific status of the species (Mendonça et al. 2014). Correia et al. (2013) also reported that *T. sherlocki* male × *T. lenti* female pairs failed to produce hybrids, however all other crosses of *T. sherlocki* and tested members of *T. brasiliensis* species complex (*T. brasiliensis*, *T. melanica*, and *T. juazeirensis*), as well as backcrosses, produced viable offspring through the third generation.

Triatoma sordida (Stål, 1859)

Distribution. Acre, Bahia, Distrito Federal, Goiás, Mato Grosso, Mato Grosso do Sul, Maranhão, Minas Gerais, Paraná, Pernambuco, Piauí, Rio Grande do Sul, Santa Catarina, São Paulo and Tocantins.

Public health importance. *Triatoma sordida* has a wide range of sylvatic ecotopes, including woodpiles, hollow trees, under bark, and in nests of many species of wild birds (Lent and Wygodzinsky 1979). It is frequently colonized peridomestic habitats especially chicken coops and have been increasingly reported from houses.

Remarks. This species is currently most frequently captured in the peridomestic environment in Brazil, particularly in areas where *T. infestans* has been eliminated (Diotaiuti et al. 1995, Pereira et al, 2006, Monteiro et al. 2009).

Triatoma vandae Carcavallo, Jurberg, Rocha, Galvão, Noireau & Lent, 2002

Distribution. Mato Grosso and Mato Grosso do Sul.

Remarks. *Triatoma vandae* is a sylvatic species, morphologically similar to *T. jurbergi* (Galvão 2014).

Triatoma vitticeps (Stål, 1859)

Fig. 13

Distribution. Bahia, Espírito Santo, Minas Gerais and Rio de Janeiro.

Public health importance. *Triatoma vitticeps* is a sylvatic species associated with rodent and opossum (Lent and Wygodzinsky 1979) and can be found frequently in peridomiciliar and occasionally in domiciliar environments. Although it has high rate of natural infection with *T. cruzi* (Dias et al. 1989, Santos et al. 2006) and it is in the domiciliation process (Moreira and Spata 2002), this species has low vector potential, due principally to the relatively long interval between feeding and defecation (Santos et al. 2006). It has been of secondary importance in *T. cruzi* transmission to man (Dias et al. 1989, Santos et al. 2005).

Remarks. The life cycle (Gonçalves et al. 1988), feeding and defection behaviours (Gonçalves et al. 2000, Santos et al. 2006), and starvation ability (Gonçalves et al. 1989, Moreira and Spata 2002) of this species have been studied under laboratory condition. The experimental parasitism of eggs of this species by *Aprostocetus asthenogmus* has been reported by Santos et al. (2014).

Triatoma williami Galvão, Souza & Lima, 1965

Distribution. Goiás, Mato Grosso and Mato Grosso do Sul.

Public health importance. *Triatoma williami* is a sylvatic species and have been collected in dwellings. It has been found naturally infected by *T. cruzi* (Lent and Wygodzinsky 1979, Arrais-Silva et al. 2011, Andrade-Neto et al. 2012, Martins et al. 2022).

Remarks. The life cycle of this species under laboratory conditions has been reported by Silva et al. (1997). Recently *T. guazu* was sinonomized with *T. williami* (Oliveira Correia et al. 2022).

Triatoma wygodzinskyi Lent 1951

Distribution. Minas Gerais, São Paulo.

Public health importance. *Triatoma wygodzinskyi* is a sylvatic species and occasionally found in dwellings. It is a rupicolous species without epidemiological importance (Carbajal-de-la-Fuente et al. 2010).

Remarks. This species is morphologically very similar to *T. arthurneivai*, and the identification of the latter species has led to confusion with *T. wygodzinskyi* in Brazil (Carbajal-de-la-Fuente et al. 2011). The biology of *T. wygodzinskyi* has been reported by Carbajal-de-la-Fuente et al. (2010). Due

Figures 10–13. Triatominae, live individuals: (10) *Triatoma petrocchiae* (11) *Triatoma rubrovaria* (12) *Triatoma sherlocki*; (13) *Triatoma vitticeps*.

to the mentioned misidentification, the developmental cycle previously attributed to the name *T. arthurneivai*, as reported by Juarez (1970), must be, in fact, considered as that of *T. wygodzinskyi*, as pointed out by Carbajal-de-la-Fuente (2010).

DISCUSSION

Upon scrutinizing diversity patterns, a fascinating revelation unfolds, with 42 out of the 64 recorded species found exclusively in Brazil. Leading the roster of biodiversity is the state of Bahia, boasting a richness of 26 distinct species, closely followed by Mato Grosso with 22. Conversely, Amapá (6) and Santa Catarina (4) emerge with the lowest recorded species counts (Table 2). In the checklist published by Galvão et al. (2003), 58 species were reported for Brazil, distributed across a total of 219 state occurrences. Compared to current data, there has been an increase of 109 state occurrences. This information is crucial from both a biodiversity perspective and in terms of entomological surveillance, particularly considering the group's role as vectors of pathogens.

Remarkably, certain species, such as *P. geniculatus* and *P. megistus*, demonstrate their adaptability by spanning over 20 Brazilian states and at least three distinct biomes, showcasing a remarkable capacity for ecological versatility. The

prevalence of diverse species in Bahia could be attributed to the state's myriad biomes and eco-regions, encompassing the Cerrado, Caatinga, and Atlantic Forest. These diversity patterns also shed light on the states requiring more thorough sampling of triatomine fauna, particularly Amapá, Roraima, and Santa Catarina. When we compare these data with the scenario presented by Galvão et al. (2003) and Galvão (2014), we realize that the reality remains unchanged.

The captivating realm of Triatominae shared here (64 species) likely only scratches the surface of the total varieties that inhabit or have recently inhabited the Brazilian territory. This compelling perspective is primarily grounded in the predominantly random collection of these insects, as, until now, there have been limited efforts dedicated to extensive and intensive surveys specifically aimed at uncovering their presence in Brazil. Many of these specimens find their way to collections and laboratories passively, reflecting the remarkable ability of some species to invade and colonize domestic environments. The intense destruction of natural areas, often in remote regions, adds an extra layer of challenge, making the search for these insects not only difficult but also unpredictable within the context of an intriguing biological narrative.

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