



## Taxonomy and Systematic

# Checklist of butterflies (Lepidoptera: Papilionoidea) of an urban area of Caatinga-Atlantic Forest ecotone in Bahia, Brazil

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### EntomoBrasilis 14: e959 (2021)

#### Edited by:

Alberto Moreira Silva-Neto

#### Article History:

Received: 29.vii.2021

Accepted: 09.ix.2021

Published: 07.x.2021

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#### Funding agencies:

↳ Conselho Nacional de Desenvolvimento Científico e Tecnológico

**Abstract.** The butterfly inventories carried out in urban landscapes in Bahia are still scarce. Urban areas with remnants of native vegetation in association with ornamental plants can provide several resources that are favorable for the development and shelter of various animal species, including insects, even with the high anthropization that occurs in these environments. In this work, we aim to investigate the urban fauna of butterflies at the Campus of the Universidade Estadual de Feira de Santana (UEFS), an area of Caatinga-Atlantic Forest ecotone located in the municipality of Feira de Santana, Bahia, Brazil. Monthly samplings were carried out with entomological net and standardized traps with different attractive baits, between May 2019 and January 2020, in addition to review of the material previously deposited at the Entomological Collection Prof. Johan Becker located at the Zoology Museum of the UEFS (MZFS). In total, 114 species of Papilionoidea were recorded, with Nymphalidae being the richest family (45 species), followed by HesperIIDae (32), Lycaenidae (21), Pieridae (10), Papilionidae (3) and Riodinidae (3). Thirteen species are new records for Bahia and eight species are new records for Northeast Brazil. The results demonstrate the extreme relevance of the conservation and preservation of urban green areas for the maintenance of butterflies species and, consequently, the associated insect fauna.

**Keywords:** Conservation; New records; Semiarid; Species list; Urbanization.

Papilionoidea is one of 43 superfamilies of Lepidoptera (Insecta) that comprises the insects popularly known as butterflies (MITTER *et al.* 2017). There are about 18,000 species of butterflies in the world (ESPELAND *et al.* 2018), distributed in seven families: Papilionidae, HesperIIDae, Pieridae, Riodinidae, Lycaenidae, Nymphalidae and Hedylidae (REGIER *et al.* 2009; MUTANEN *et al.* 2010; HEIKKILÄ *et al.* 2011; ESPELAND *et al.* 2018). Although approximately 3,500 species of butterflies are documented in Brazil (MIELKE *et al.* 2021; CARNEIRO 2021; LEVISKI & CASAGRANDE 2021; CASAGRANDE *et al.* 2021; DUARTE & ROBBINS 2021; DOLIBAINA *et al.* 2021; LOURIDO & DUARTE 2021), the knowledge on this group of insects is heterogeneous, with most inventories carried out in the south and southeast regions of the country (SANTOS *et al.* 2008). One of the first lists of butterflies for the northeast region of Brazil was provided by BATES (1867), followed by some works carried out in the 20th century (D'ALMEIDA 1935; CARVALHO & CARVALHO 1939, 1941; CARDOSO 1949; CARVALHO & FREITAS 1960; ALVARENGA 1962; SILVA 1967; KESSELRING & EBERT 1979; GARCIA *et al.* 1990) with a substantial increase in recent decades (FREITAS 2003, 2004; NOBRE *et al.* 2008; VASCONCELOS *et al.* 2009; ZACCA 2009; ZACCA *et al.* 2011; PALUCH *et al.* 2011, 2016; NOBRE *et al.* 2012; ZACCA & BRAVO 2012; KERPEL *et al.* 2014; LIMA & ZACCA 2014; MARTINS *et al.* 2017; RAFAEL *et al.* 2017; PEREIRA *et al.* 2018; MELO *et al.* 2019; VASCONCELOS *et al.* 2019; VILA-VERDE & PALUCH 2020; VILA-VERDE *et al.* 2020).

Urban areas with remnants of native vegetation in association with ornamental plants can provide several resources that are favorable for the development and shelter of various animal species (RODRIGUES *et al.* 1993). However, the intense urbanization that occurs in these environments can

significantly interfere in the richness of invertebrate species and, specifically, of butterflies in a given urban landscape (RUSZCZYK 1999). Studies carried out on the butterfly fauna in urban areas in Brazil (i. e. BIENZANKO 1938; MIELKE 1995; PINHEIRO *et al.* 2008; BONFANTI *et al.* 2011; SILVA *et al.* 2012; SOARES *et al.* 2012; LEMES *et al.* 2015; MARTINS *et al.* 2017; PÉREZ *et al.* 2017, 2019) have shown that the remaining vegetation can carry a considerably high species richness and play important roles in maintaining local biodiversity. The higher vegetation richness in urban landscapes the greater the permanence of individuals in a given area, attracting new populations of butterflies as well (RUSZCZYK & NASCIMENTO 1999; BONFANTI *et al.* 2011).

However, butterfly inventories carried out in urban landscapes in Bahia are still scarce. The study of VASCONCELOS *et al.* (2009) pioneered the investigation of butterflies in a fragment of dense Ombrophilous forest in the Metropolitan Park of Pituacu, Salvador, where it was catalogued 70 species of butterflies using both entomological net (144 sample-hours) and Van Someren-Rydon trap (VRS – 180 trap-hours). More recently, VILA-VERDE & PALUCH (2020), also using the same methods but higher sample effort (150 sample-hours for entomological net and 1,088 VRS trap-hours), performed an inventory in an urban fragment of dense Ombrophilous forest in Porto Seguro that results in 228 species recorded.

Considering the facts above and the scarcity of studies in urban fragments in Bahia, the main objective of this study was to carry out an inventory of butterflies in a fragmented urban area of the Caatinga-Atlantic Forest ecotone located on the Campus of the Universidade Estadual de Feira de

Santana (UEFS), Bahia, Brazil, using different sampling methods in order to evaluate the species richness and document potential anthropogenic impacts on these insects in the study area.

## MATERIAL AND METHODS

**Study area.** The Campus of the Universidade Estadual de Feira de Santana (UEFS) (Figure 1), an area of Caatinga-Atlantic Forest ecotone, is located in the northern region of the municipality of Feira de Santana, Bahia (12°16'00" S 38°58'00" W). It has 1,096,741.67 m<sup>2</sup> of area with mixed elements of remnants of Deciduous Forest, Semideciduous and Caatinga, with intense afforestation of herbaceous-shrubby size (OLIVEIRA et al. 2008), in addition to gardens, lawns, part of the region's native vegetation and anthropized areas in different successional stages (FERREIRA 2009) (Figure 2). Feira de Santana has a variable climate between sub-humid and dry (THORNTHWAITE & MATHER 1955), with rainfall and average annual temperature of 848 mm and 24 °C, respectively. In summer, monthly averages reach 27 °C while in the winter it reaches 21 °C (DINIZ et al. 2008).

**Sampling.** Based on their food preferences, butterflies can be classified as nectarivores or frugivores, the latter feeding on fermented fruits, plant exudates, animal droppings or decaying carcasses (DeVRIES 1987). It allows the use of distinct sampling methods and, in the present study conducted in the pre-existing trails at the UEFS Campus (Figure 1), we used entomological net and Van Someren-Rydon traps in a period of four consecutive days per month between May 2019 and January 2020. Sampling with entomological net was performed by one person walking along the trails by around 5 hours per day, totaling approximately 180 sample-hours. The sampling was non-systematized and performed with the aim to capture the nectarivores butterflies. For traps sampling, we selected five sample units at the UEFS Campus (Figure 1, red circles with numbers) and placed three traps on each one, each trap with different types of attractive baits, spaced at least 10 m apart and attached to trees or shrubs with a height of at least 1 m from the ground, totaling 15 traps. The baits used were: (1) standard mixture of ripe, almost rotten banana with sugarcane juice fermented for 48 h; (2) decaying pork rib; (3) dog feces. The baits were exposed during four days at each unit, totaling approximately 650 trap-hours, with periodic review every 24 h, with replacement of the banana bait and the dog feces.

To complement the list of butterfly species sampling in the present study and have a better idea about the diversity of this group of insects in the Campus, we also reviewed and considered additional specimens deposited at MZFS that were collected in previous non-published studies.

**Specimens identification and preparation for deposit in entomological collection.** For both methods, the specimens that could not be identified in the field were captured and transported in entomological envelopes to the Laboratório de Sistemática de Insetos (LASIS) at UEFS, where they were adequately mounted, labeled and identified through specialized bibliography (i.e., BROWN-JR 1992; SANTOS et al. 2014; ORLANDIN et al. 2020) and consultation to specialists (listed in the Acknowledgment section). The taxonomic nomenclature follows LAMAS (2004), MIELKE (2005) and WAHLBERG et al. (2009), with subsequent modifications (MURILLO-RAMOS et al. 2018; NÚÑEZ et al. 2019; CONG et al. 2019). After being identified, the specimens were listed and deposited at the Entomological Collection Prof. Johann Becker of the Zoology Museum of the Universidade Estadual de Feira de Santana (MZFS).

## RESULTS AND DISCUSSION

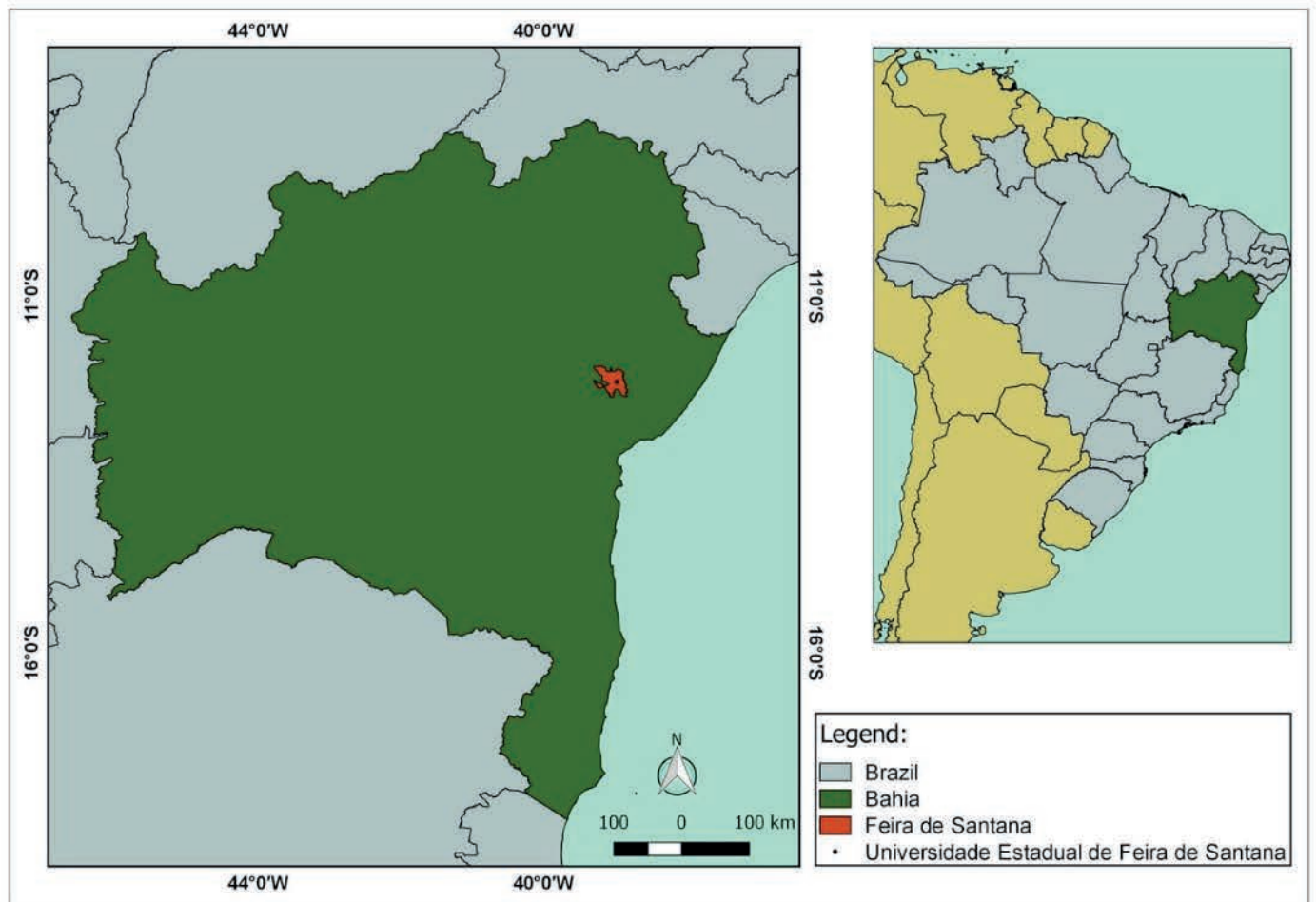
During the sampling period, 640 specimens were sampled at the UEFS Campus totaling 96 species of butterflies (Table 1). An additional lycaenid species, *Atlides polybe* (Linnaeus, 1763), was only registered by photo. Most of the species sampled were captured with an entomological net (86 species; 363 specimens) (Figure 3), while only 10 species (277 specimens) were captured with attractive baits in traps. Seven species were captured using both collection methods, namely: *Agraulis vanillae maculosa* (Stichel, [1908]), *Callicore sorana sorana* (Godart, [1824]), *Hamadryas amphinome amphinome* (Linnaeus, 1767), *Hamadryas februa februa* (Hübner, [1823]), *Hamadryas feronia feronia* (Linnaeus, 1758), *Opsiphanes invirae pseudophilon* Fruhstorfer, 1907 and *Pharneuptychia pharnabazos* (Bryk, 1953) (Table 1). *Hamadryas f. februa* was collected in traps with all three types of bait, while *Fountainea halice moretta* (H. Druce, 1877) was found exclusively in traps with dog feces bait and the *O. invirae pseudophilon*, *Hypna clytemnestra forbesi* (Godman & Salvin, 1884) and *C. s. sorana* were collected only in banana bait traps. The species *P. pharnabazos*, *Fountainea glycerium cratais* (Hewitson, 1874), *H. f. feronia* and *H. a. amphinome* were found in both banana bait traps and decaying pork rib bait traps. Although *A. vanillae maculosa* has been recorded in the trap with decaying pork ribs bait, individuals of this species feed on nectar and its occurrence in the trap is considered occasional, since only members of Satyrinae, Biblidinae, Charaxinae and some Nymphalinae are considered frugivorous (FREITAS et al. 2014).

Considering the results of our sampling together with the 17 species of butterflies (179 specimens) previously deposited at MZFS, a total of 114 butterfly species were found at UEFS Campus (Table 1). Nymphalidae was the most representative family (45 species), followed by Hesperidae (32), Lycaenidae (21), Pieridae (10), Papilionidae (3) and Riodinidae (3). Individuals of Hedyliidae were not observed at the UEFS Campus.

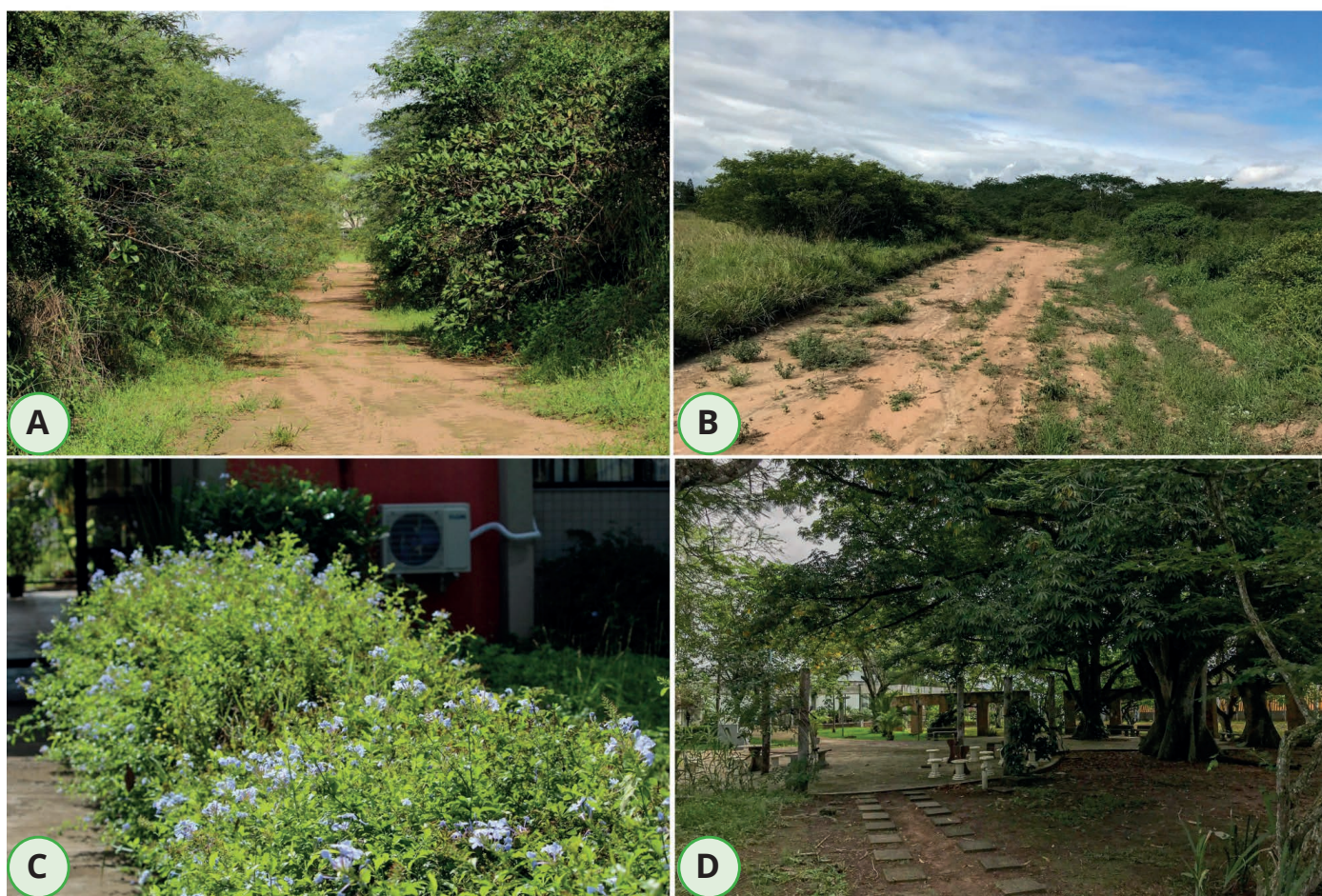
Most recorded species of Nymphalidae have a wide geographic distribution and have already been listed in previous studies in Bahia (VASCONCELOS et al. 2009; ZACCA et al. 2011; OLIVEIRA 2012; ZACCA & BRAVO 2012; LIMA & ZACCA 2014; PALUCH et al. 2016; VILA-VERDE & PALUCH 2020; VILA-VERDE et al. 2020). In general, Nymphalidae is the most representative family in Brazilian butterflies inventories of short duration and with low sampling effort (FRANCINI et al. 2011), a reflection for being one of the groups with the highest number of species in the Neotropical region (BROWN-JR. & FREITAS 1999, 2000) and because most species are easily observed and captured in the field. However, two species were first records to Bahia and to the Northeast Brazil (Table 1): *Actinote pallescens* Jordan, 1913 and *Anartia amathea roeselia* (Eschscholtz, 1821). The record of *A. pallescens* increases the geographic distribution limit further north of the country since this species was only known at Rio de Janeiro and Minas Gerais (PALUCH 2006).

Seven species of Hesperidae constitute unprecedented records to Bahia, namely: *Chiothion asychis autender* (Mabille, 1891), *Cybaenes warreni* (AG Weeks, 1901), *Heliopyrgus domicella* (Erichson, [1849]), *Pompeius amblyspila* (Mabille, 1898), *Burnsius orcynoides* (Giacomelli, 1928), *Quinta cannae* (Herrich-Schäffer, 1869) and *Synale hylaspses* (Stoll, 1781). *Chiothion asychis autender*, *C. warreni*, *H. domicella*, *P. orcynoides* and *S. hylaspses* are new records for the Northeast Brazil (Table 1).

In Lycaenidae, the two species of Polyommatae recorded in the present study (Table 1) have a wide geographic distribution, being commonly captured in faunal studies in Brazil. On the other hand, of the sampled Theclinae species, three constitute new records to Bahia, namely: *Calycopis*



**Figure 1.** Maps showing the study area with the municipality of Feira de Santana (highlighted in orange) and the UEFS Campus (yellow line), and the unit samples where the fifteen Van Someren Rydon traps were placed. Photo: Google Earth.



**Figure 2.** Phytophysiognomies of the trails sampled from the collection points and vegetation of the UEFS Campus. **A-B** – broad view of the primary vegetation; **C** – ornamental plants; **D** – recreation area with some ornamental and fruit plants.

*janerica* (C. Felder, 1862), *Michaelis jebus* (Godart, [1824]) and *Rekoa marius* (Lucas, 1857). The species *C. janerica* was the only new record to the Northeast Brazil (Table 1).

Most Pieridae species have a wide geographic distribution and have already been recorded in previous surveys carried out in Bahia (ZACCA *et al.* 2011; OLIVEIRA 2012; ZACCA & BRAVO 2012; LIMA & ZACCA 2014; PALUCH *et al.* 2016; VILA-VERDE & PALUCH 2020), thus, having no new records to the State (Table 1).

The species of Papilionidae recorded in this work have a wide geographic distribution in Brazil, in addition to being considered quite common in urban and anthropogenic areas (LEMES *et al.* 2015). *Battus polydamas polydamas* (Linnaeus, 1758), *Heraclides thoas brasiliensis* (Rothschild & Jordan, 1906) and *Heraclides anchisiades capys* (Hübner, [1809]) had already been recorded in previous studies in Bahia (ZACCA *et al.* 2011; OLIVEIRA 2012; ZACCA & BRAVO 2012; LIMA & ZACCA 2014; PALUCH *et al.* 2016; VILA-VERDE & PALUCH 2020) and, therefore, there are no new records for the State (Table 1).

The richness of Riodinidae was relatively low when compared to other studies previously carried out in Bahia (VASCONCELOS *et al.* 2009; ZACCA *et al.* 2011; OLIVEIRA 2012; ZACCA & BRAVO 2012; LIMA & ZACCA 2014; PALUCH *et al.* 2016; VILA-VERDE & PALUCH 2020; VILA-VERDE *et al.* 2020). This fact may be linked to the difficult visualization of individuals in the field, in addition to their susceptibility to anthropized environments (SOARES *et al.* 2012). However, *Ariconias glaphyra* (Westwood, 1851) was recorded for the first time to Bahia (Table 1).

In general, several species of butterflies found in this study have more generalist habits being adapted to highly anthropized areas and easily found in urban environments (BROWN-JR. 1992; SOARES *et al.* 2012; LEMES *et al.* 2015), such

as *Ascia monuste orseis* (Godart, 1819), *Dynamine agacles agacles* (Dalman, 1823), *Marpesia petreus* (Cramer, 1776), *H. thoas brasiliensis*, *A. amathea roeselia*, *B. p. polydamas*, *Eurema a. albula* (Cramer, 1775), *H. f. februa*, *Heliconius erato phyllis* (Fabricius, 1775), *Junonia e. evarete* (Cramer, 1779), *Burnsius orcus* (Stoll, 1780) and *Siproeta stelenes meridionalis* (Fruhstorfer, 1909).

In addition to the building constructions at the Campus that, by itself generates several impacts to the local biodiversity, during our study we noticed several other anthropic actions with the potential to interfere in the richness of butterflies found in this area, such as the removal/cutting of flowering plants (which are a source of food for floral visiting nectarivores), constant pruning of trees, improper disposal of residues and garbage inside the forest, deforestation of areas for construction of buildings and the presence of domestic animals (Figure 4). It is noteworthy to mention that near to the study area there is also a body of water (Lagoa da Pindoba) with the potential to help maintain the local diversity of butterflies, since the remaining riparian forests can also offer food resources. However, the intense anthropogenic impacts caused in this Lagoon can effect the butterfly communities through habitat loss, as highlighted by FREITAS (2010) on the importance of riparian forests.

When considering the size of the study area (about 110 ha), the relatively low sampling effort and the anthropogenic impacts, the butterfly richness at the UEFS Campus can be considered expressive when compared to other inventories carried out in Bahia using similar methodologies (see comparative table in VILA-VERDE & PALUCH 2020), exceeding, for example, that found in the Parque Metropolitano de Pituçu in Salvador (VASCONCELOS *et al.* 2009). Therefore, it is recommended that stricter measures be taken in relation

**Table 1.** Checklist of Papilionoidea species found at the Campus of the Universidade Estadual de Feira de Santana (UEFS), Feira de Santana, Bahia, Brazil, with respective numbers of specimens sampled and revised at the MZFS collection. Sampling methods: R - entomological network; A - traps with banana baits fermented with sugar cane juice (A1), dog feces (A2) and decaying pork rib (A3); MZFS - Specimens previously deposited at the UEFS Zoology Museum (MZFS); new records for Bahia (<sup>A</sup>); new records for Northeast Brazil (<sup>B</sup>); photographic record only (<sup>C</sup>).

Táxons (114)	R	A1	A2	A3	MZFS
<b>Papilionidae (3)</b>					
<b>Papilioninae (3)</b>					
<i>Battus polydamas polydamas</i> (Linnaeus, 1758)	3				
<i>Heraclides anchisiades capys</i> (Hübner, [1809])	2				
<i>Heraclides thoas brasiliensis</i> (Rothschild & Jordan, 1906)	3				
<b>Pieridae (10)</b>					
<b>Coliadinae (9)</b>					
<i>Anteos clorinde</i> (Godart, [1824])					7
<i>Anteos menippe</i> (Hübner, [1818])					5
<i>Phoebis statira statira</i> (Cramer, 1777)	4				
<i>Eurema agave agave</i> (Cramer, 1775)	8				
<i>Eurema albula albula</i> (Cramer, 1775)	12				
<i>Eurema elathea elathea</i> (Cramer, 1777)	11				
<i>Phoebis philea philea</i> (Linnaeus, 1763)					23
<i>Phoebis marcellina</i> (Cramer, 1777)	3				
<i>Pyrisitia nise tenella</i> (Boisduval, 1836)	6				
<b>Pierinae (1)</b>					
<i>Ascia monuste orseis</i> (Godart, 1819)	4				
<b>Lycaenidae (21)</b>					
<b>Theclinae (19)</b>					
<i>Arawacus ellida</i> (Hewitson, 1867)	2				
<i>Aubergina vanessoides</i> (Prittwitz, 1865)					18
<i>Atlides polybe</i> (Linnaeus, 1763) <sup>C</sup>					
<i>Calycopis janeirica</i> (C. Felder, 1862) <sup>A, B</sup>	2				
<i>Electrostrymon endymion</i> (Fabricius, 1775)	4				
<i>Michaelis jebus</i> (Godart, [1824]) <sup>A</sup>	2				
<i>Ministrymon una</i> (Hewitson, 1873)	5				
<i>Pseudolycaena marsyas</i> (Linnaeus, 1758)	7				
<i>Rekoa marius</i> (Lucas, 1857) <sup>A</sup>	2				
<i>Rekoa palegon</i> (Cramer, 1780)	1				
<i>Strymon astiocha</i> (Prittwitz, 1865)	3				
<i>Strymon bazochii</i> (Godart, [1824])	8				
<i>Strymon bubastus</i> (Stoll, 1780)	9				
<i>Strymon crambusa</i> (Hewitson, 1874)					15
<i>Strymon mulucha</i> (Hewitson, 1867)	2				
<i>Strymon rufofusca</i> (Hewitson, 1877)	6				
<i>Strymon ziba</i> (Hewitson, 1868)	3				
<i>Tmolus echion</i> (Linnaeus, 1767)					7
<i>Ziegleria syllis</i> (Godman & Salvin, 1887)					16
<b>Polyommatainae (2)</b>					
<i>Hemiargus hanno</i> (Stoll, 1790)	7				
<i>Leptotes cassius</i> (Cramer, 1775)	3				
<b>Riodinidae (3)</b>					
<b>Riodininae (3)</b>					
<i>Ariconias glaphyra</i> (Westwood, 1851) <sup>A</sup>					30
<i>Aricoris campestris</i> (Bates, 1868)	3				

To be continued...

Table 1. Continue...

Táxons (114)	R	A1	A2	A3	MZFS
<i>Juditha azan</i> (Westwood, 1851)	1				
<b>Nymphalidae (45)</b>					
<b>Heliconiinae (7)</b>					
<i>Actinote pallescens</i> Jordan, 1913 <sup>A, B</sup>	1				
<i>Agraulis vanillae maculosa</i> (Stichel, [1908])	11			1	
<i>Dione juno juno</i> (Cramer, 1779)	3				
<i>Eueides aliphera aliphera</i> (Godart, 1819)	2				
<i>Eueides isabella dianasa</i> (Hübner, [1806])	2				
<i>Euptoieta hegesia meridiania</i> Stichel, 1938	11				
<i>Heliconius erato phyllis</i> (Fabricius, 1775)	5				
<b>Nymphalinae (6)</b>					
<i>Anartia amathea roeselia</i> (Eschscholtz, 1821) <sup>A, B</sup>	4				
<i>Anartia jatrophae jatrophae</i> (Linnaeus, 1763)	6				
<i>Chlosyne lacinia saundersii</i> Doubleday & Hewitson, 1849	5				
<i>Historis odius dious</i> Lamas, 1995	3				
<i>Junonia evarete evarete</i> (Cramer, 1779)	6				
<i>Siproeta stelenes meridionalis</i> (Fruhstorfer, 1909)	2				
<b>Biblidinae (12)</b>					
<i>Biblis hyperia nectanabis</i> (Fruhstorfer, 1909)	4				
<i>Callicore sorana sorana</i> (Godart, [1824])	2	10			
<i>Dynamine agacles agacles</i> (Dalman, 1823)	1				
<i>Dynamine postverta postverta</i> (Cramer, 1779)	3				
<i>Eunica macris macris</i> (Godart, [1824])	2				
<i>Eunica tatila bellaria</i> (Herrich-Schäffer, [1855])	11				
<i>Hamadryas amphinome amphinome</i> (Linnaeus, 1767)	2	53		3	
<i>Hamadryas februa februa</i> (Hübner, [1823])	4	65	3	4	
<i>Hamadryas feronia feronia</i> (Linnaeus, 1758)	2	68		1	
<i>Mestra hersilia hypermestra</i> (Hübner, [1825])	4				
<i>Pyrrhogyra neaerea susarion</i> Fruhstorfer, 1912	3				
<i>Temenis laothoe bahiana</i> Fruhstorfer, 1907	4				
<b>Danainae (5)</b>					
<i>Danaus erippus</i> (Cramer, 1775)	5				
<i>Danaus gilippus gilippus</i> (Cramer, 1775)	4				
<i>Episcada hymenaea hymenaea</i> (Prittwitz, 1865)	2				
<i>Lycorea halia discreta</i> Haensch, 1909	1				
<i>Mechanitis lysimnia nesaea</i> Hübner, [1820]	4				
<b>Charaxinae (4)</b>					
<i>Fountainea halice moretta</i> (Druce, 1877)			3		
<i>Fountainea glycerium cratais</i> (Hewitson, 1874)		12		1	
<i>Hypna clytemnestra forbesi</i> (Cramer, 1777)		7			
<i>Zaretis isidora</i> (Cramer, 1779)					1
<b>Satyrinae (7)</b>					
<i>Caligo illioneus illioneus</i> (Cramer, 1775)					1
<i>Hermeuptychia</i> aff. <i>hermes</i>					1
<i>Opsiphanes invirae pseudophilon</i> Fruhstorfer, 1907	2	4			
<i>Pharneuptychia innocentia</i> (C. Felder & C. Felder, 1867)	2				
<i>Pharneuptychia pharnabazos</i> (Bryk, 1953)	4	40		2	
<i>Taygetis laches</i> (Fabricius, 1793)	1				

To be continued...

Table 1. Continue...

Táxons (114)	R	A1	A2	A3	MZFS
<i>Ypthimoides affinis</i> (Butler, 1867)					4
<b>Libytheinae (1)</b>					
<i>Libytheana carinenta carinenta</i> (Cramer, 1777)	1				
<b>Cyrestinae (2)</b>					
<i>Marpesia chiron</i> (Fabricius, 1775)	1				
<i>Marpesia petreus</i> (Cramer, 1776)	4				
Limentidinae (1)					
<i>Adelpha iphicleola leucates</i> Fruhstorfer, 1915	1				
<b>Hesperiidae (32)</b>					
<b>Eudaminae (9)</b>					
<i>Aguna asander asander</i> (Hewitson, 1867)	3				
<i>Chioides catillus catillus</i> (Cramer, 1779)	2				
<i>Cogia calchas</i> (Herrich-Schäffer, 1869)					14
<i>Entheus priassus pralina</i> Evans, 1952					12
<i>Polygonus leo pallida</i> (Röber, 1925)					5
<i>Typhedanus undulatus</i> (Hewitson, 1867)	5				
<i>Urbanus dorantes dorantes</i> (Stoll, 1790)	6				
<i>Urbanus procne</i> (Plötz, 1880)	7				
<i>Urbanus proteus proteus</i> (Linnaeus, 1758)	5				
<b>Hesperiinae (14)</b>					
<i>Callimormus corades</i> (Felder, 1862)					9
<i>Callimormus saturnus</i> (Herrich-Schäffer, 1869)	2				
<i>Cymaenes distigma</i> (Plötz, 1882)	4				
<i>Corticea</i> sp.	1				
<i>Cymaenes tripunctus theogenes</i> (Capronnier, 1874)	4				
<i>Cymaenes warreni</i> (A.G. Weeks, 1901) <sup>A, B</sup>	2				
<i>Hylephila phyleus</i> (Drury, 1773)	4				
<i>Niconiades xanthaphes</i> Hübner, [1821]	1				
<i>Nyctelius nyctelius</i> (Latreille, [1824])	3				
<i>Panoquina fusina viola</i> Evans, 1955	1				
<i>Pompeius amblyspila</i> (Mabille, 1898) <sup>A</sup>	3				
<i>Pompeius pompeius</i> (Latreille, [1824])	5				
<i>Quinta cannae</i> (Herrich-Schäffer, 1869) <sup>A</sup>	1				
<i>Synale hylaspes</i> (Stoll, 1781) <sup>A, B</sup>	2				
<b>Pyrginae (9)</b>					
<i>Chiothion asychis autender</i> (Mabille, 1891) <sup>A, B</sup>	1				
<i>Gesta gesta</i> (Herrich-Schäffer, 1863)	7				
<i>Heliopetes arsalte</i> (Linnaeus, 1758)	5				
<i>Heliopetes macaira</i> (Reakirt, [1867])	7				
<i>Heliopyrgus domicella</i> (Erichson, [1849]) <sup>A, B</sup>	4				
<i>Burnsius orcus</i> (Stoll, 1780)	11				
<i>Burnsius orcynoides</i> (Giacomelli, 1928) <sup>A, B</sup>	1				
<i>Chirgus veturius</i> (Plötz, 1884)	5				
<i>Zopyrion evenor thania</i> (Evans, 1953)					11

to the preservation of the green areas at the UEFS Campus, in order to conserve the butterfly populations found there. The results of this study corroborate the extreme relevance of these small green fragments in urban environments and bring unprecedented records of butterfly species to the State, thus increasing the knowledge about lepidoptero fauna in Northeastern Brazil.

## ACKNOWLEDGMENTS

CD thanks CNPq for the Scientific Initiation scholarship (process #149703/2019-8). To Laboratório de Sistemática de Insetos (LASIS) and UEFS for the infrastructure. To the researchers Dr. André V.L. Freitas and MSc. Luísa Lima e Mota (UNICAMP), Dr. Olaf H. H. Mielke and Dr. Ricardo R. Siewert



**Figure 3.** Some of the most commonly found butterfly species on the UEFS Campus: **A** - *Urbanus proteus*; **B** - *Mechanitis lysimnia nesaea*; **C** - *Phoebis statira statira*; **D** - *Strymon rufofusca*.



**Figure 4.** **A** - Intensive pruning of feeding source to butterflies on UEFS Campus; **B** - Accumulation of garbage at various points on pre-existing trails.



(UFPR) and Dr. Ronaldo B. Francini (UNISANTOS) for the identifications and/or confirmation of some species.

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