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Taxonomy and Systematics

New records of Ulidiidae (Diptera: Tephritoidea) from state of Mato Grosso do Sul, Brazil

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Abstract. This study was conducted in an urban fragment of Cerrado (savannah formation) in the municipality of Campo Grande, Mato Grosso do Sul (MS), Brazil. McPhail traps, with sugarcane extract, were used along one year with the goals to sampling ulidiids flies. As results were presented new occurrences for four genera and seven species of uliidids for MS. Besides sampled four species belongs from three genera previous known from MS. The fauna of uliidids from MS increasing in 140% and 100% the number of the species and genera, respectively. Actually, the fauna of ulidiids from MS is represented by 12 species into eight genera.

Keywords: Checklist; Cerrado; McPhail trap; Picture-winged flies; Urban fragment.

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Brazil is one of the richest countries in the world in terms of biodiversity (OECD 2015; Butler 2016). The state of Mato Grosso do Sul (MS), located in the Central-West of Brazil, has most of its territory within the Cerrado biome (savannah formation), a biodiversity hotspot due to its high number of endemic species of plants and vertebrates (Myers *et al.* 2000).

Although, the Cerrado is considered a hotspot of biodiversity to plants and vertebrates, this biome is underrepresented, either in scientific collections as in literature, concerning entomological surveys (Lamas *et al*. 2023). Despite this gap in the knowledge of insects from Cerrado, the dipterous fauna of this biome, together Pantanal and Amazon Forest, were recently sampled in the project SISBIOTA-DIPTERA (Lamas *et al*. 2023). Lamas *et al* (2023) presented from the MS state, which includes the biomes of Cerrado and Pantanal, 281 and 770 new records of genera and species of dipterous respectively, besides the description of 46 new species and of two new genera (Lamas *et al*. 2023).

The adults of ulidiids are attracted by decaying matter as hydrolyzed proteins, feces, carrions and composts, as fermented sugar cane, used as attractive in this study (Kameneva & Barraclough 2021). Although, the larval habitats of most species remain unknown, larva of some species are known to be saprophagous of animals and plants, including some pests of plants of economic importance (Kameneva & Korneyev 2010; Kameneva & Barraclough 2021).

The adults of the family can be recognized by the following combination of characters: dipterous of medium size, yellow to brown or black, some groups with metallic blue or green sheen; frons with one or two orbital setae, frontal seta absent; katepisternum with outstanding seta, anepimeron with one to five subequal setulae, without outstanding bristle; wings with a pattern of dark spots or bands, vein C with humeral break, vein Sc complete, vein R_1 dorsally setulose or bare, cell cup often with posteroapical angular extension; legs usually without rows of spine or setae; females with telescopic ovipositor and males with long phallus concealed in membranous pocket on ventral side of abdomen (Buck *et al.* 2009; Kameneva & Korneyev 2010; Kameneva & Barraclough 2021).

Ulidiidae is one of the eleven families that comprising the Tephritoidea (Han & Ro 2016). The family has a worldwide distribution, with 733 species across 121 genera (Kameneva 2024a). Ulidiidae is divided into two subfamilies and seven tribes: Otitinae with the tribes Cephaliini, Myennidini, and Otitini; and Ulidiinae with the tribes Lipsanini, Pterocallini, Seiopterini, and Ulidiini (Kameneva & Barraclough 2021).

According to Mello (2024a), the Brazilian fauna of ulidiids comprises 64 species across 32 genera. However, prior to this work, only five Ulidiidae species were recorded from the state of MS: *Notogramma cimiciforme* Loew, 1868 (Tepedino *et al.* 2017); *Plagiocephalus lobularis* Wiedemann, 1830 (Vasconcelos *et al.* 2019); *Pterocalla* sp. (Lamas *et al.* 2023); *Xanthacrona bipustulata* Wulp, 1899; and *Xanthacrona tripustulata* Enderlein, 1921 (Soares *et al.* 2018). Lamas *et al.* (2023) reported the occurrence of five genera and nine species in the state of MS, although they did not assign formal names to them. These occurrences correspond to a preliminary result of the records present here.

Based on a sampling of dipterous in an urban fragment of Cerrado, we recorded for the first time four genera and seven species of Ulidiidae from Mato Grosso do Sul, increasing

in 140% and 100% the number of the species and genera registered for the state, respectively. We also provided a habitus photograph from all the collected species and remarks about biology and number of species in the World and Brazil for each genus sampled.

MATERIAL AND METHODS

Study area. This study was conducted in the Reserva Particular do Patrimônio Natural da Universidade Federal de Mato Grosso do Sul (RPPN/UFMS), an urban fragment of Cerrado, located in Campo Grande, Mato Grosso do Sul, Brazil (-20.510111; -54.615528) (Figures 1-4). The RPPN/UFMS covers an area of 50 hectares and is characterized by a Cwa climate, according to the classification of Köppen (1931), with an annual average temperature of 22.7 °C and annual average rainfall of 122 mm (EMBRAPA-ESALQ 2013).

The phytophysiognomy of the study area consist of three types of vegetation: upper stratum with trees between 10-18 m; medium stratum with shrubs and trees between 3-10 m; and herbaceous stratum with trees up to three meters (Assunção *et al.* 2011; Rodrigues *et al.* 2019).

Insect sampling. The sampling of the insects was conducted using of 10 McPhail traps distributed throughout the RPPN/

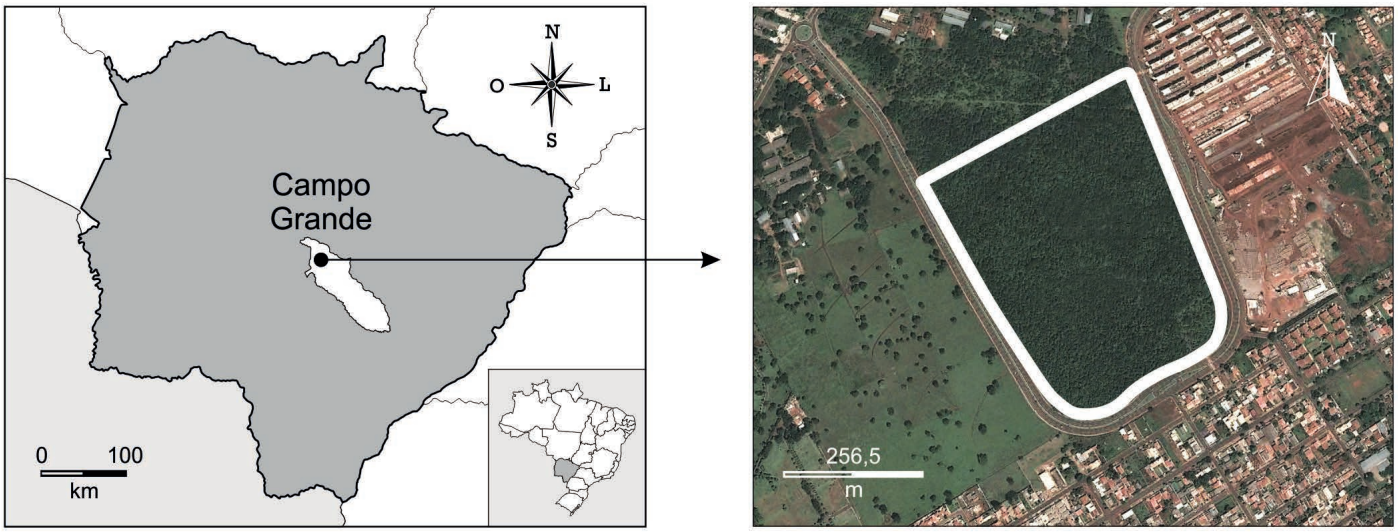


Figure 1. Study Area. Map of Mato Grosso do Sul State, Brazil and satellite photo of RPPN/UFMS. Modified from Rodrigues *et al.* (2019).

Figures 2-5. Photos of the RPPN/UFMS. Figure 2: urban fragment of Cerrado (savanna formation); Figure 3: typical vegetation of the RPPN/UFMS; Figure 4: Lake of RPPN/UFMS; Figure 5: McPhail traps used to sample the Ulidiidae (Diptera, Tephritoidea) from RPPN/UFMS.

UFMS. The traps were set monthly from August 2018 to July 2019, for five days each month. The McPhail traps were made from transparent plastic bottles measuring 34.5 cm in high with a volume capacity of two liters. Three holes were made around the diameter of the bottle to allow the flies to enter, and two yellow adhesive tapes were attached above and below the holes (Figure 5). Approximately 500 mL of sugarcane extract was used per trap to attract the flies. The extract was prepared two days before use to allow for fermentation.

The traps were placed at least 20 m apart and suspended from tree branches at a height of 1.5 m above ground. The sampled insects were transferred to the Laboratory of Diptera Systematics, at the Universidade Federal de Mato Grosso do Sul (LSD/UFMS), Campo Grande, Brazil. After sorting, pinning, identifying, and photographing, the specimens were deposited at the Coleção Zoológica da Universidade Federal de Mato Grosso do Sul (ZUFMS) under voucher numbers ZUFMS-DIP1346-1496. The last author holds collection permission number 51805-2 SISBIO/ICMBIO.

Identification. Subfamily, tribes, and genera were determined using the key by Kameneva & Korneyev (2010). Species were identified using the following identification keys: Hendel (1909a) for *Acrosticta* Loew, 1868; Hendel (1909b) for *Euxesta* Loew, 1868; Steyskal (1963) for *Notogramma* Loew, 1868; Kameneva (2004b) for *Paragorgopis* Giglio-Tos, 1893; Vasconcelos *et al*. (2019) for *Plagiocephalus* Wiedemann, 1830; Hendel (1909c), Enderlein (1921), Speiser (1929), Curran (1934), Blanchard (1938), Hering (1941), and Capoor (1954) for *Pterocerina* Hendel, 1909. Additionally, Soares *et al.* (2018) provided the diagnosis for the species of *Xanthacrona* Wulp, 1898.

Records Presentation. The list of species names is organized in alphabetical order according to their hierarchical classification (subfamily, tribe, genus, and species names). The list includes references for the original description of each taxon, the type locality of the species, and their respective distribution, with the records for the Brazilian states between in parentheses. This format follows the checklist by Riccardi *et al.* (2022). Remarks about the biology, number of species for the genus and for Brazil are inform after the relation of species for each genus.

RESULTS

After 12 months of sampling, 151 Ulidiidae specimens (73 males, 72 females, and six of undetermined sex due to the postabdomen damaged) were recognized, belonging to one subfamily, two tribes, seven genera, and eleven species. Below is a list of the sampled taxa and the studied material. Table 1 presents the number of specimens sampled for each species per month. Taxa recorded for the first time in MS are marked with an asterisk (*).

Ulidiidae Macquart, 1835

Ulidiinae Macquart, 1835

Lipsanini Enderlein, 1938

Acrosticta Loew, 1868: 293. Type species: *Acrosticta scrobiculata* Loew, 1868 (subsequent designation).

Acrosticta scrobiculata Loew, 1868: 293. Type locality: Brazil. Distribution: Brazil (Mato Grosso do Sul), El Salvador, Guyana, Mexico, Peru, West indies (Figure 6).

Studied material: two females, 17-21.ix.2018 [ZUFMS-DIP01372, 1373]; two females, 16-18.x.2018 [ZUFMS-DIP01375, 1376]; one female, 18-20.x.2018 [ZUFMS-DIP01374]; one male, and three females, 26-28.xi.2018 [ZUFMS-DIP01377-1380]; two females, 22-24.xii.2018 [ZUFMS-DIP01447, 1496]; one female, 26-28.i.2019 [ZUFMS-DIP01367].

Remarks: *Acrosticta* is a genus actually composed by 15 species distributed from USA to Argentina (Steyskal 1965, 1968, Kameneva & Korneyev 2022). The Brazilian fauna is represented by two species (Mello 2024a).

Euxesta Loew, 1868: 297. Type species: *Ortalis notata* Wiedemann, 1830 (subsequent designation).

Euxesta eluta Loew, 1868: 312. Type locality: Cuba. Distribution: Argentina, Barbados, Bolivia, Brazil[1] (Mato Grosso do Sul), Chile, Costa Rica, Cuba, Guatemala, Mexico, Paraguay, Peru, Puerto Rico, Trinidad and Tobago, USA (Figure 7).

[1]Although there was a previous record of the species from Brazil (Steyskal, 1968), their location of occurrence was not specified.

Studied material: one female, and one sex undetermined 17-19.ix.2018, [ZUFMS-DIP01368, 1369]; two females, 27-29.vii.2019 [ZUFMS-DIP01388, 1495].

Euxesta sororcula (Wiedemann, 1830: 463). Type locality: Brazil. Distribution: Argentina, Bolivia, Brazil (Distrito Federal, Mato Grosso do Sul), Colombia, Costa Rica, Guatemala, Honduras, Mexico, Peru (Figure 8).

Studied material: one male, and three females, 17-19.ix.2018 [ZUFMS-DIP01419-1422]; three females, 17-21.ix.2018 [ZUFMS-DIP01431, 1432, 1494]; three males, and four females, 27-29.vii.2019 [ZUFMS-DIP01433-1439]; two males, and two females, 27-31.vii.2019 [ZUFMS-DIP01423-1426].

Remarks: *Euxesta* is a large genus with more than 90 species distributed in Americas and Oceania, with some species accidentally introduced into Europe and Asia (Kameneva & Korneyev 2010). Actually, the Brazilian fauna is represented by 14 species (Mello 2024a). Larvae of the two species recorded here are known to infest ear corn (Martos-Tupes 1982; Huepe *et al*. 1986).

Notogramma Loew, 1868: 289. Type species: *Notogramma cimiciformis* Loew, 1868 (monotypy).

Notogramma cimiciforme Loew, 1868: 289. Type locality: Cuba. Distribution: Brazil (Mato Grosso do Sul), Colombia, Cuba, Ecuador, Guyana, Jamaica, Mexico, Panama, Peru, USA, Venezuela (Figure 9).

Studied material: two females, 15-17.viii.2018 [ZUFMS-DIP01418, 1493].

Remarks: *Notogramma* is actually composed by four species distributed through USA to Chile (Kameneva & Korneyev 2010; Mello *et al.* 2024). From Brazil is recognized only the species *N. cimiciforme* (Mello 2024a). Species of the genus have been reared from rooting tomatoes, immatures coconuts, banana, liver, wild tubers, *Solanum* fruits, watermelon, and fruits of *Attalea* palms (Steyskal 1963, 1991).

Pterocallini Loew, 1868

Paragorgopis Giglio-Tos, 1893: 12. Type species: *Paragorgopis maculata* Giglio-Tos, 1893: 12 (monotype).

Paragorgopis euryale Kameneva, 2004: 640. Type locality: Costa Rica, Limón, Sector Cerro Cocori, Fca de E. Rojas. Distribution: Bolivia, Brazil (Distrito Federal, Mato Grosso do Sul), Costa Rica, Panama, Peru (Figure 10).

Studied material: one female, 17-19.ix.2018 [ZUFMS-DIP01446]; one female, 26-28.x.2018 [ZUFMS-DIP01350]; one female, 20-22.xii.2018 [ZUFMS-DIP01346]; one female, 25-27.iii.2019 [ZUFMS-DIP01361]; one male, 27-29.iii.2019

Table 1. Number of specimens of each species per month of sampled.

Species/Months	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	Total
Acrosticta scrobiculata	0	2	3	4	2	1	0	0	0	0	0	0	**12**
Euxesta eluta	0	2	0	0	0	0	0	0	0	0	0	2	**4**
Euxesta sororcula	0	7	0	0	0	0	0	0	0	0	0	11	**18**
Notogramma cimiciforme	2	0	0	0	0	0	0	0	0	0	0	0	**2**
Paragorpopis euryale	0	1	1	0	1	0	0	2	2	3	1	3	**14**
Plagiocephalus lobularis	0	0	0	1	0	0	0	0	0	0	0	0	**1**
Pterocerina paradoxa	3	2	7	0	0	1	1	0	2	6	1	1	**24**
Pterocerina psidii	0	0	1	0	1	0	0	0	0	0	0	0	**2**
Xanthacrona bipustulata	17	5	6	0	0	2	1	2	3	4	3	27	**70**
Xanthacrona tripustulata	0	0	0	0	0	0	0	1	0	0	0	2	**3**
Xanthacrona tuberosa	0	0	0	0	0	0	0	0	0	0	0	1	**1**
Total	**22**	**19**	**18**	**5**	**4**	**4**	**2**	**5**	**7**	**13**	**5**	**47**	**151**

[ZUFMS-DIP01360]; two females, 24-26.iv.2019 [ZUFMS-DIP01362-1363]; one male, and two females 27-29.v.2019 [ZUFMS-DIP01364-1366]; one male, 24-26.vi.2019 [ZUFMS-DIP01349]; one male, 27-29.vii.2019 [ZUFMS-DIP01351]; one male, and one female 29-31.vii.2019 [ZUFMS-DIP01370, 1371].

Remarks: *Paragorgopis* currently has 11 species distributed from Mexico to Brazil (Kameneva 2004b). From Brazil is record only the species *P. euryale* (Mello 2024a).

Plagiocephalus Wiedemann, 1830. Type species: *Plagiocephalus lobularis* Wiedemann, 1830 (monotypy).

Plagiocephalus lobularis Wiedemann, 1830: 15. = *Ophryoterpnomyia zikani* Capoo, 1954 = *Eupterocerina conjuncta* Blanchard, 1938 = *Paragoniaeola tanycephala* Blanchard, 1938. Type locality: Brazil. Distribution: Argentina, Brazil (Ceará, Goiás, Mato Grosso do Sul, Paraná, Pernambuco, Rio de Janeiro, Santa Catarina, São Paulo), Paraguay (Figure 11).

Studied material: one female, 26-28.xi.2018 [ZUFMS-DIP01492].

Remarks: *Plagiocephalus* is a genus currently with three species distributed from Mexico to Argentina (Vasconcelos *et al*. 2019). The Brazilian fauna is represented by two species (Mello 2024a).

Pterocerina Hendel, 1909: 41. Type species: *Pterocerina fenestrata* Hendel, 1909 (subsequent designation).

Pterocerina paradoxa Hering, 1941: 200**.** Type locality: Brazil, Santa Catarina, Seara, Nova Teotônia. Distribution: Brazil (Mato Grosso do Sul, Santa Catarina) (Figure 12).

Studied material: two females, 13-15.viii.2018 [ZUFMS-DIP01488, 1489]; one male, 15-17.viii.2018 [ZUFMS-DIP01490]; one female, 17-19.ix.2018 [ZUFMS-DIP01449]; one male, 19-21.ix.2018 [ZUFMS-DIP01352]; two males, and five females, 18-20.x.2018 [ZUFMS-DIP01481-1487]; one female, 26-28.i.2019 [ZUFMS-DIP01475]; one female, 26-28.ii.2019 [ZUFMS-DIP01491]; one male, 22-24.iv.2019 [ZUFMS-DIP01353]; one female, 24-26.iv.2019 [ZUFMS-DIP01450]; three males, and three females, 27-29.v.2019 [ZUFMS-DIP01354-1359]; one male, 26-28.vi.2019 [ZUFMS-DIP01348]; one male, 27-31.vii.2019 [ZUFMS-DIP01347].

Pterocerina psidii Capoor, 1954: 208. Type locality: Brazil, Rio de Janeiro, Mendes. Distribution: Brazil (Mato Grosso do Sul, Rio de Janeiro) (Figure 13).

Studied material: one male, 18-20.x.2018 [ZUFMS-DIP01478]; one male, 22-24.xii.2018 [ZUFMS-DIP01448].

Remarks: *Pterocerina* is a genus actually composed by 29 species distributed from Mexico to Brazil (Steyskal 1968; Evenhuis & Pape 2024). The Brazilian fauna is composed by four species (Mello 2024a).

Xanthacrona Wulp, 1899. Type species: *Xanthacrona bipustulata* Wulp, 1898 (subsequent monotypy).

Xanthacrona bipustulata Wulp, 1899: 393. Type locality: Mexico, Sinaloa, Presidio de Mazatlan. Distribution: Argentina, Bolivia, Brazil (Acre, Amazonas, Espírito Santo, Maranhão, Mato Grosso do Sul, Pará, Rondônia, São Paulo), Colombia, Cuba, Jamaica, Mexico, Panama, Paraguay, Peru, Puerto Rico, USA (Figure 14).

Studied material: 14 males, and one female, 13-15.viii.2018 [ZUFMS-DIP01455-1469]; two males, 15-17.viii.2018 [ZUFMS-DIP01473, 1474]; one male, and one female, 17-19.ix.2018 [ZUFMS-DIP01479, 1480]; two males, and one female, 17-21.ix.2018 [ZUFMS-DIP01470-1472]; one male, 16-18.x.2018 [ZUFMS-DIP01382]; three males, and two females, 18-20.x.2018 [ZUFMS-DIP01381, 1384, 1452-1454]; two females, 26-28.i.2019 [ZUFMS-DIP01440, 1444]; one male, 26-28.ii.2019 [ZUFMS-DIP01383]; two males, 27-29.iii.2019 [ZUFMS-DIP01386, 1387]; two females, and 1 sex undetermined, 24-26.iv.2019 [ZUFMS-DIP01385, 1476, 1477]; one male, and two females, 27-29.v.2019 [ZUFMS-DIP01389, 1390, 1399]; one female, 31.v.2019 [ZUFMS-DIP01445]; one male, and one female, 24-26.vi.2019 [ZUFMS-DIP01401, 1402]; one female, 26-28.vi.2019 [ZUFMS-DIP01400]; three males, and one female, 27-29.vii.2019 [ZUFMS-DIP01427-1430]; 18 males, four females, and one sex undetermined 27-31.vii.2019 [ZUFMS-DIP01391-1398,1403-1417].

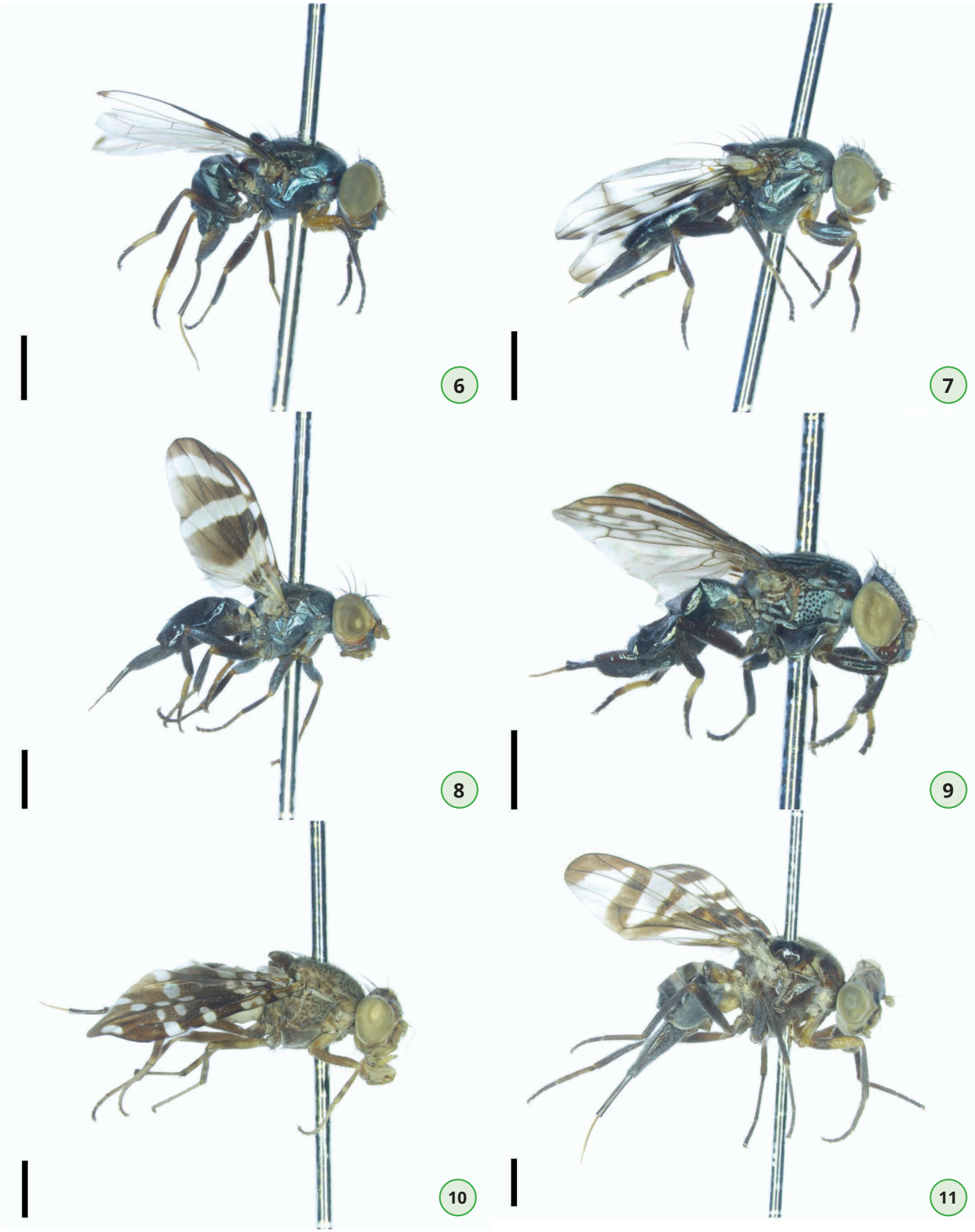
Xanthacrona tripustulata Enderlein, 1921: 212. Type locality: Paraguay. Distribution: Brazil (Acre, Bahia, Mato Grosso do Sul, Pará), Paraguay (Figure 15).

Studied material: one female, 27-29.vii.2019 [ZUFMS-DIP01441]; one female, 27-31.vii.2019 [ZUFMS-DIP01442]; one male, 27-29.iii.2019 [ZUFMS-DIP01443].

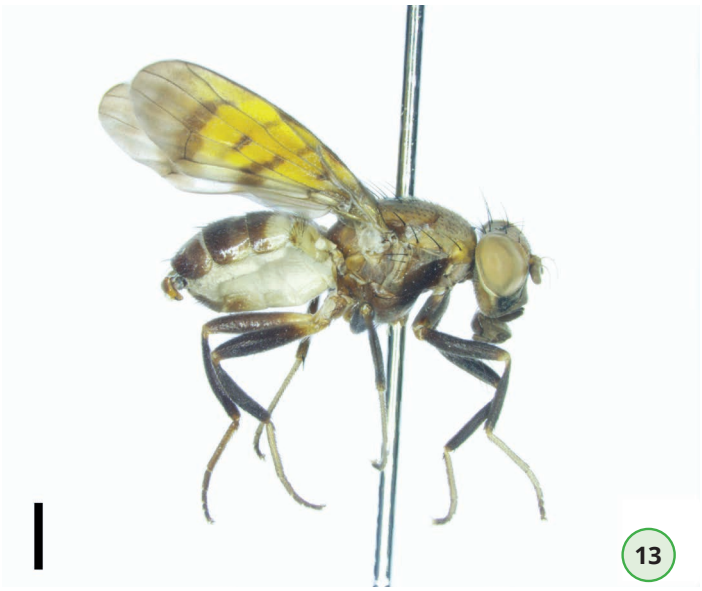
Xanthacrona tuberosa Cresson, 1908: 97. Type locality: Suriname, Paramaribo. Distribution: Bolivia, Brazil (Amazonas, Mato Grosso do Sul, Pará, Santa Catarina, São Paulo), Colombia, Costa Rica, French Guiana, Mexico, Suriname, Trinidad and Tobago (Figure 16).

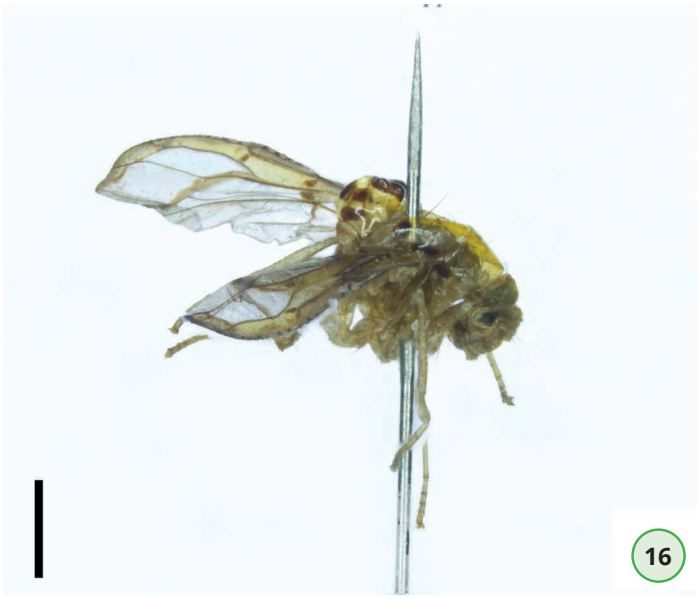
Studied material: one sex undetermined, 27-29.vii.2019 [ZUFMS-DIP01451].

Remarks: *Xanthacrona* is a genus composed by five species distributed from USA to Brazil (Soares *et al*. 2018). The five species are recorded for Brazil (Soares *et al*. 2018; Mello 2024a). Adults of the species *X. bipustulata* and *X. tripustulata*



Figures 6-16. Specimen from the sampled species in habitus, lateral view. Figure 6: *Acrosticta scrobiculata* Loew, 1868. Figure 7: *Euxesta eluta* Loew,1868. Figure 8: *Euxesta sororcula* (Wiedemann, 1830). Figure 9: *Notogramma cimiciforme* Loew, 1868. Figure 10: *Paragorgopis euryale* Kameneva, 2024. Figure 11: *Plagiocephalus lobularis* Wiedemann, 1830.





Figures 12-16. Specimen from the sampled species in habitus, lateral view. Figure 12: *Pterocerina paradoxa* Hering, 1941. Figure 13: *Pterocerina psidii* Capoor, 1954. Figure 14: *Xanthacrona bipustulata* Wulp, 1899. Figure 15: *Xanthacrona tripustulata* Enderlein, 1921. Figure 16: *Xanthacrona tuberosa* Cresson, 1908.

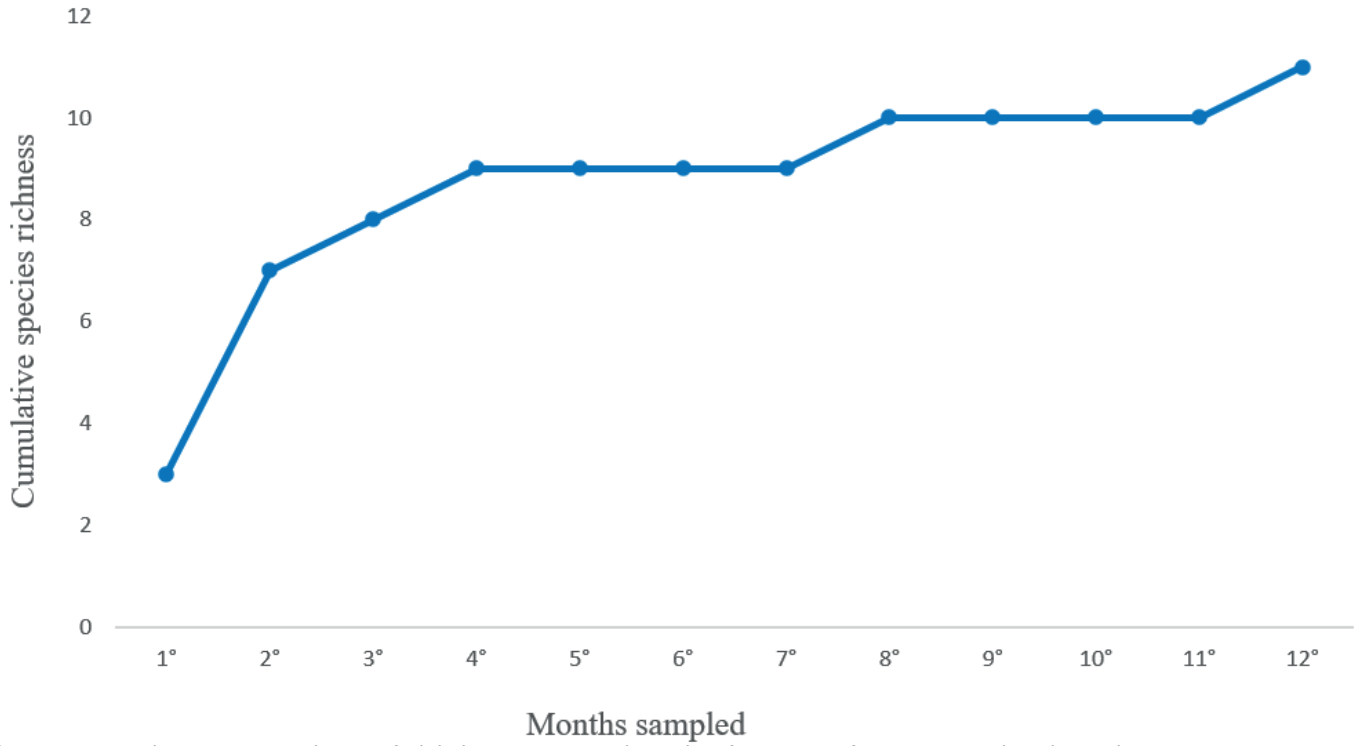


Figure 17. Cumulative species richness of Ulidiidae (Diptera: Tephritoidea) from state of Mato Grosso do Sul, Brazil.

were sampled on dog's corpses as part of the studies of Rodrigues *et al*. (2019, 2024).

Figure 17, presents the cumulative species richness.

DISCUSSION

Four previously recorded Ulidiidae species from MS: *N. cimiciforme*, *P. lobularis*, *X. bipustulata*, and *X. tripustulata* (Tepedino *et al.* 2017; Vasconcelos *et al.* 2019; Soares *et al.* 2018) were sampled in this study, along with seven new species records: *A. scrobiculata*, *E. eluta*, *E. sororcula*, *P. euryale*, *P. paradoxa*, *P. psidii*, and *X. tuberosa*. In addition to the new species occurrences, the genera *Acrosticta*, *Euxesta*, *Paragorgopis*, and *Pterocerina* are recorded in Mato Grosso do Sul for the first time. All the taxa sampled in this study are previously known in Brazil (Mello 2024a).

Regarding the genera sampled in this study, except for *Xanthacrona*, which has three species (*X. bipustulata*, *X. tripustulata*, and *X. tuberosa*) and *Euxesta* (*E. eluta* and *E. sororcula*), and *Pterocerina* (*P. paradoxa* and *P. psidii*) which have two species, all other genera are represented by just one species. The most abundant species are *X. bipustulata* and *P. paradoxa*, with 70 and 24 specimens, respectively. Conversely, the least abundant species are *P. lobularis* and *X. tuberosa*, each with just one specimen sampled.

The months with the highest abundance were July and August, with 47 and 22 specimens, respectively. The least abundant months were February, with two specimens, and December and January, both with four specimens. The months with the highest species richness were July and September, with seven and six species, respectively; the lowest richness occurred in February and November, both with two species. Considering abundance and richness, the most diverse months were July and September, which are traditionally drier in the study area.

The study area (RPPN/UFMS) has recently been subject of several Diptera fauna studies. These include the first record of Ropalomeridae sampled from dog corpses (Rodrigues *et al.* 2019), new records of Sarcophagidae for MS (Toma *et al.* 2020), the first record of *Xanthaciura* Hendel, 1914 (Tephritidae) associated with Aristolochiaceae flowers (Rodrigues *et al.* 2022), and the type locality for a recently described species of Platystomatidae, *Senopterina canina* Rodrigues, Carvalho & Mello, 2024 (Rodrigues *et al.* 2024).

The sampling conducted in a small fragment of Cerrado (savanna formation), covering 50 hectares and surrounded by an urban environment, reveals a relatively high species richness for the family. This is particularly notable when compared to the previously known four species from MS, which now totals eleven species. The cumulative curve of species richness, showing an upward trend, indicates that more Ulidiidae species are likely to be found in this area. Applying this finding to the entire MS region, with its rich biomes of Cerrado and Pantanal, suggest a significant potential increase in the number of species recorded for the state and possibly for the country.

These conclusions align with the recent arguments of Mello (2024b) regarding the Pyrgotidae fauna of Uruguay, a dipterous family phylogenetically related to Ulidiidae (Korneyev 1999; Wiegmann *et al.* 2011; Han & Ro 2016). This underscores the urgent need for governmental public policies to fund research based on the South American Diptera fauna.

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TAXONOMIC AUTHORITIES

Acrosticta Loew, 1868, *Acrosticta scrobiculata* Loew, 1868, *Euxesta* Loew, 1868, *Euxesta eluta* Loew, 1868, *Notogramma* Loew, 1868, *Notogramma cimiciforme* Loew, 1868, and Pterocallini Loew, 1868 in Loew (1868); *Euxesta sororcula* (Wiedemann, 1830) in Wiedemann (1830a); Lipsanini Enderlein, 1938 in Enderlein (1938); *Paragorgopis* Giglio-Tos, 1893, in Giglio-Tos (1893); *Paragorgopis euryale* Kameneva, 2004 in Kameneva (2004a); *Plagiocephalus* Wiedemann, 1830, and *Plagiocephalus lobularis* Wiedemann, 1830 in Wiedemann (1830b); *Pterocerina* Hendel, 1909 in Hendel (1909c); *Pterocerina paradoxa* Hering, 1941 in Hering (1941); *Pterocerina psidii* Capoor, 1954 in Capoor (1954); Ulidiinae Macquart, 1835 in Macquart (1835); *Xanthacrona* Wulp, 1899, and *Xanthacrona bipustulata* Wulp, 1899 in Wulp (1899); *Xanthacrona tripustulata* Enderlein, 1921 in Enderlein (1921); and *Xanthacrona tuberosa* Cresson, 1908 in Cresson (1908).

AUTHORS CONTRIBUTION

DSF: Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing; RSO: Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing, Data curation; RLM: Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing, funding, Conceptualization, Funding acquisition, Project administration, Supervision.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to disclose.

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