An Acad Bras Cienc (2024) 96(2): e20230542 DOI 10.1590/0001-3765202420230542
Anais da Academia Brasileira de Ciências | *Annals of the Brazilian Academy of Sciences*
Printed ISSN 0001-3765 I Online ISSN 1678-2690
www.scielo.br/aabc | www.fb.com/aabcjournal

ANIMAL SCIENCE

Revision of the Brazilian species of *Ptilodexia* Brauer & Bergenstamm, 1889 (Diptera: Tachinidae: Dexiinae), with the description of a new species

MARCELO D. SANTIS & MÁRCIA S. COURI

Abstract: The Brazilian species of the New World genus *Ptilodexia* Brauer & Bergenstamm, 1889 are revised. Before this study, only one species of *Ptilodexia* was recorded from Brazil, viz. *P. lateralis* (Walker, 1836). Herein we record, for the first time, two new records of known *Ptilodexia* species in Brazil, viz. *P. striata* (Wulp, 1891) and *P. rubricornis* (Wulp, 1891). In addition, a new species is described, *Ptilodexia matogrossensis* **sp. nov.** from Mato Grosso and Mato Grosso do Sul states in Brazil; hence four species of this genus are currently recorded from Brazil. The species *Neomyostoma ptilodexioides* Townsend, 1935, from Brazil, placed in the monotypic genus *Neomyostoma* Townsend, 1935, is proposed as junior synonym of *P. lateralis*. Illustrations and detailed descriptions are presented for *P. lateralis*, *P. matogrossensis* **sp. nov.**, *P. striata* and *P. rubricornis* and the male terminalia is described for *P. lateralis* and *P. striata*. The female terminalia and the first larval instar are described for the first time for the genus, based on the descriptions of *P. lateralis* and *P. striata*. A key to the identification of all recognized Brazilian species of *Ptilodexia* is presented. Finally, an updated distributional record is given for all studied species.

Key words: Brazil, Dexiini, Neotropical, new species, taxonomy.

INTRODUCTION

Ptilodexia Brauer & Bergenstamm, 1889 is a New World genus of Dexiini (Dexiinae) with 46 known species (O'Hara et al. 2020), of which 4 occur both in the Nearctic and Neotropical regions, 15 are exclusively Nearctic and 24 are exclusively from the Neotropics. Those last species are very poorly known and most of them are referred to only in the original descriptions, which are brief and uninformative. The situation is far better for the remaining species with Nearctic or with shared Nearctic and Neotropical distribution, because Wilder's (1979) taxonomic revision of the Nearctic species, making those species fairly well-known, keyed and illustrated. There are a few host records for this genus. Most of them are important for the biological control of some agricultural pests, all parasitizing immature Coleoptera of the families Cerambycidae, Scarabaeidae and Melolonthidae. However, the quality and quantity of host records for *Ptilodexia* differ in the different biogeographical regions, as nearly all Nearctic records are from determined species of *Ptilodexia*, on the other hand, with the exception of *P. cingulipes*, all Neotropical records are from undetermined species; see Table I for all hosts records know for this genus.

Regarding the Neotropical Region, there are some noteworthy host records of economically important pests: (1) *P. cingulipes* parasitizing the

Table I. Species of *Ptilodexia* Brauer & Bergenstamm, 1889 (Diptera: Tachinidae): with their respective host records associated with their biogeographical region.

***Ptilodexia* species**	**Host**	**Distribution**	**References**
P. canescens (Walker, 1852)	*Rhagium lineatum* (Olivier) *Saperda calcarata* Say *Phyllophaga* sp.	Nearctic (USA)	Champlain & Knüll 1923 Peterson 1948 Davis 1919
P. carolinensis Brauer & Bergenstamm, 1899	*Phyllophaga rugosa* (Melsheimer) *Popillia japonica* (Newman) *Phyllophaga* sp	Nearctic (USA)	Davis 1919 Wilder 1979 Wilder 1979, Criddle 1918
P. major (Bigot, 1888)	*Phyllophaga* sp *Phyllophaga farcta* (LeConte) *Orizabus pyriformis* (LeConte)	Nearctic (USA)	Wilder 1979 Wilder 1979 Davis 1919
P. harpasa (Walker, 1849)	*Phyllophaga* sp *Macrodactylus subspinosus* (Fabricius)	Nearctic (USA)	Davis 1919, Criddle 1918 Wilder 1979
Ptilodexia sp	*Phyllophaga anxia* (LeConte, 1850)	Nearctic (Canada)	Lim et al. 1981
P. cingulipes Blanchard, 1966	*Archophileurus vervex* (Burmeister) *Bothynus striatellus* (Fairmaire) *Cyclocephala* sp. *Diloboderus abderus* (Sturm)	Neotropical (Argentina)	Blanchard 1966 Blanchard 1966 Crouzel 1965 Crouzel 1965
Ptilodexia sp	*Cyclocephala* sp *Diloboderus abderus* (Sturm) *Cyclocephala signaticollis* Burmeister	Neotropical (Uruguay)	Silveira & Ruffinelli 1956, Parker et al. 1951 Parker et al. 1951 Parker et al. 1951
Ptilodexia sp	*Liogenys suturalis* Blanchard *Phyllophaga cuyabana* (Moser)	Neotropical (Brazil)	Santos & Ávila 2009 Oliveira et al. 2004

larva of *Diloboderus abderus* (Sturm) (Blanchard 1966, Crouzel 1965), a significant wheat pest under no-till system in the Southern region of Brazil (Silva & Boss 2002); (2) undetermined species of *Ptilodexia* paratizing the larva of *Cyclocephala signaticollis* Burmeister (Parker et al. 1951), an agricultural pest that damages potato crops in Argentina (Berón & Diaz 2005); (3) undetermined species of *Ptilodexia* from Brazil that attacks *Liogenys suturalis* Blanchard, also known as corn white grub, that attacks mainly, corn, but also wheat and oat crops in Central-West of Brazil (Santos & Ávila 2009) and *Phyllophaga cuyabana* (Moser), also known as soybean white grub, a major agricultural pest that damages mainly soybean crops, but also corn and sunflower crops (Oliveira et al. 2004).

Some known reasons exist for this asymmetric knowledge of *Ptilodexia* species from the Nearctic and Neotropical regions. Santis (2022) discussed the historical contingencies that led to difficulties in the studies of Neotropical Diptera, mainly the Dexiinae. We add some particular reasons brought up by Wilder (1979: 1-2) that made the study of *Ptilodexia* a complex task.: "... (1) difficulty in associating the sexes, (2) a high degree of intraspecific variation, (3) an... low degree of interspecific variation, and (4) the lack of consistent traditional morphological characters." The majority of the species of

Ptilodexia occur in the Neotropical region, in particular from a single country, Mexico that contains the distribution of 18 species, while there are four species, *P. rubricauda* (Bigot, 1889), *P. sororia* (Williston, 1896), *P. spinosa* (Bigot, 1889) and *P. strenua* (Robineau-Desvoidy, 1830), from the Greater Antilles. Concerning South America there are only six records of *Ptilodexia*: two from Guyana, *P. tinctipennis* (Curran, 1934) and *P. vittigera* (Curran, 1934); one from Brazil, *P. lateralis* (Walker, 1836); and three from Argentina, *P. argentina* (Bigot, 1889), *P. ypsiliformis* Blanchard, 1966 and *P. cingulipes* Blanchard, 1966. Even though important as pest control, such as the white grubs, all the host records from, e.g., Brazil, are derived from undetermined species of *Ptilodexia*; while only one aforementioned named species is recorded from Brazil. So, the existence of a taxonomic gap is evident and the great importance of better knowing these taxa from the neotropics is absolutely clear. However, before this study, it was virtually impossible to reliably identify a species of this genus without consulting the primary or secondary type material, as there are no keys, redescriptions or diagnoses of the Neotropical species.

Considering the complexities, availability of extensive material from Brazil, and the economic importance of these flies, which are inversely proportional to their knowledge, this study aims to provide a more focused revision of *Ptilodexia* by revising the Brazilian species, to clarify the issues explained above. This study is the first revision of a Brazilian or Neotropical species of this genus. All species dealt herein were redescribed and photographed. Additionally, when available, the male and female terminalia and the first-instar larvae were also illustrated and described.

The ZooBank Life Science Identifier (LSID) of this publication is: urn:lsid:zoobank.org:pub:36AB00A1-01D1-4810-BAA8-3A1AE8D33810.

MATERIALS AND METHODS

The examined material from each institution, as well as the way of access of the material (loan, visit), are indicated as follows: CEIOC, Coleção Entomológica do Instituto Oswaldo Cruz, Rio de Janeiro, Brazil – visit and loan; MNRJ, Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil – visit and loan; MZSP, Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil – visit and loan; NHMUK, Natural History Museum, London, UK – visit. The label data are presented within quotation marks for each label, with forward slashes indicating line breaks and semicolons separating different labels. Morphological terminology follows Cumming & Wood (2017). The terminology of first instar larvae followed the nomenclature used by Cantrell (1988), but the term 'cephaloskeleton' of Courtney et al. (2000) was used.

Photographs of the pinned specimens were taken using a Canon EOS 5DSR digital camera for the material deposited at NHMUK, a Leica MC170 HD digital camera attached to a Leica MZ16 stereomicroscope for the CEIOC, MNRJ and MZSP material. The images were subsequently stacked (merging different focal planes into one image) with the software Helicon Focus 7.5.8. and edited in Adobe Photoshop CC 2019. Illustrations were made using a camera lucida attached to a Leica MZ16 stereomicroscope, and edited and arranged in Adobe Illustrator CC 2019. To digest tissues and clear structures, the last abdominal segments were put into a glass tube containing a 10% KOH solution and heated in boiling water for 5 minutes, neutralized in a 5% acetic acid solution, and rinsed in distilled water. After examination, the dissected parts were placed in

glycerin inside a plastic microvial pinned with the source specimen.

RESULTS

Taxonomy

Our study confirms the presence of four species of *Ptilodexia* in Brazil, viz. *P. lateralis*, *P. striata* (Wulp, 1891), *P. rubricornis* (Wulp, 1891) and a newly herein described species, *Ptilodexia matogrossensis* **sp. nov.** from Mato Grosso and Mato Grosso do Sul states in Brazil. The species *Neomyostoma ptilodexioides* Townsend, 1935, from Brazil, placed in the monotypic genus *Neomyostoma* Townsend, 1935, is proposed as junior synonym of *P. lateralis*. Illustrations and detailed descriptions are given for *P. lateralis*, *P. matogrossensis* **sp. nov.**, *P. striata* and *P. rubricornis*, the male terminalia are described for *P. lateralis* and *P. striata*. The female terminalia and the first instar larva is described for the first time for the genus, based on the descriptions of *P. lateralis* and *P. striata*. A key for the identification of all recognized Brazilian species of *Ptilodexia* is given. Finally, an updated distributional record is given for all species.

Ptilodexia Brauer & Bergenstamm, 1889

Ptilodexia Brauer & Bergenstamm, 1889: 119 [also 1890: 51]. Type species: *Ptilodexia carolinensis* Brauer & Bergenstamm, 1889 (as "*D. carolinensis* Schin."), by monotypy.

Neomyostoma Townsend, 1935: 218. Type species: *Neomyostoma ptilodexioides* Townsend, 1935, Praia Grande, São Paulo, Brazil, by original designation. **New synonymy**.

Note. For a full generic synonymy and a species list see O'Hara et al. (2020: 70-72).

General characterization. Medium to large flies with general color gray, reddish to orangish, thorax dark and abdomen broad, to somewhat conical, usually with blackish longitudinal vitta and bearing numerous median discal and marginal setae on abdominal tergites.

Head. Ocellar setae long, divergent and proclinate. Inner vertical seta decussate and long, outer vertical seta absent. Arista long plumose. Fronto-orbital plate with lowermost frontal seta not reaching antennal insertion. Mid facial elevation present. Postpedicel about 1.4-1.7x the combined lengths of scape and pedicel. Fronto-orbital plate with setulae throughout its length, parafacial usually with setulae, but can be absent or present in various degrees, short to long. Frontal vitta narrowed dorsally. Lower facial margin usually not protruding, invisible in profile. Vibrissa arising at the level of lower facial margin. Thorax. Notopleuron with 2 equal-sized setae. Postalar callus with 3 setae, the outer one weak. Propleuron and prosternum bare. Anepimerum with numerous long setae. Katepisternal setae 2+1. Postmetacoxal area membranous. Anatergite with small tuff of setulae dorsally. Posterior spiracle with posterior lappet larger than anterior. Katepimeron setulose only on posterior region. *Wing*. Costal spine absent. Cell r_{4+5} open at wing margin; length of opening shorter than crossvein r-m. Crossvein dm-cu sinuous. Vein M_1 ending at wing margin close to tip, bent forward to R_{4+5}, forming an angle slightly smaller than 90°, and convex after bend. Abdomen. Ovoconic dorsally, broad laterally. Syntergite 1+2 with mid-dorsal longitudinal depression extending to posterior margin. Male Terminalia. Syntergosternite 7+8 broad. Sternite 6 asymmetrical. Sternite 5 with well-developed lobules, apically short setulose (Figs. 4c, 8c). Epandrium broad in posterior view, setulose, and closed dorsally (Figs. 8a-b, 4a-b). Anterior epandrial process poorly developed; lateral lobes of the epandrium well developed. Hypandrial arm short, hypandrial apodeme clearly distinguishable, with narrow central plate. Cerci not fused, broad, and

distally slightly tapered in posterior view (Figs. 4a-b, 8a-b). Surstylus broad, not fused with epandrium, convex, and setulose in frontal view; distally tapered in lateral view (Figs. 4a-b, 8a-b). Bacilliform sclerite rod-like. Epiphallus present, distally narrow, and fused with basiphallus. Pregonite and postgonite fused, with a visible seam, appearing as a curved, elongate structure; pregonite connected basally to hypandrium by a sclerotized seam. Basiphallus subrectangular, as long as postgonite. Extension of dorsal sclerite of distiphallus long; dorsal sclerite ventrally slightly serrulated; granular area present (Figs. 4d; 8d). Female terminalia (Figs. 6c, 10c). Tergites 6 and 7 complete dorsally. Tergite 8 absent. Sternites 6 and 7 complete ventrally, with setae on all sclerites, mainly on posterior margin. Sternite 8 subrectangular with setulae mainly on the posterior margin. Sternite 9 as a reduced structure somewhat narrow posteriorly. Sternite 10 as a narrow strip, broad anteriorly, with setulae only on the posterior margin. Syntergite 9+10 absent. Three equal spermathecae, straight and without any pore or adjacent structures.

First larval instar (Figs. 6a-b, 10a-b). Cephaloskeleton thin and lightly sclerotized, with somewhat triangular mouth hook; intermediate region indistinct; dorsal and ventral cornua slightly diverging from each other. Antennae well developed. Body covered with platelets. Segments 1-4 with platelets bearing two to six spines posteriorly, on all segment; segments 1-4 with subrectangular platelets and segment 5-12 laterodorsally with elongate transverse-oval platelets. Segments 5-8 with spines posteriorly on lateroventral regions; segments 9-12 with platelets without spines. Segment 12 elongate conical, with posterior spiracles elongate.

Diagnosis. *Ptilodexia* is keyed in couplet 176 of the key to Tachinidae genera in the Manual of Central American Diptera (Wood & Zumbado 2010: 1383). In order to further differentiate *Ptilodexia* from the allied genera of Dexiini, mainly *Eudexia* Brauer & Bergenstamm, 1889 and *Mochlosoma* Brauer & Bergenstamm, 1889, the following diagnosis is given, that is partially based on Wilder (1979): head with mid-facial elevation, prementum shorter than the head height, longer in *Mochlosoma*, lower facial margin usually not protruding, invisible in profile, parafacial setulae varied, absent or present in various degrees, short to long (in Brazilian species always absent); wing with apical cell open or closed at wing margin (in Brazilian species always open), infrasquamal setulae usually present (in Brazilian species always present); abdomen broad, conical, reddish-brown to blackish and tergites 3 and 4 each with at least two pairs of discal setae, not spine-like as in *Eudexia*.

Remarks. Potential new generic synonymy currently exists for *Ptilodexia*, e.g., the genera *Rhamphinina* Bigot, 1885 and *Paramyocera* Townsend, 1915. Both are exclusively Neotropical taxa, *Rhamphinina* comprising two species viz. *R. discalis* (Townsend, 1915) from Peru and *R. pica* (Fabricius, 1805) from Mexico, while *Paramyocera* includes only one species, *P. oroyensis* Townsend, 1919 from Peru. However, due to the high level of interspecific variability of *Ptilodexia*, and the unavailability of additional material that could conclusively confirm these synonyms, we are not formally proposing these taxonomic acts, as more material from those aforementioned regions should be further studied.

Phylogenetic status. The most similar taxon, thought to be sister group to *Ptilodexia* (Wilder 1979), is the New World genus *Mochlosoma*. Similarly to *Ptilodexia*, most of its diversity resides in the neotropics, and more precisely, Mexico; 13 of its 18 total species are known only from Mexico. Both genera share their overall appearance, e.g., head with mid facial elevation present, parafacial inconspicuously setulose

to distinctly haired, abdomen ovoconic, with reddish, yellowish or brownish coloration with silvery pruinosity, in addition to a conspicuous dark dorsal median vitta, and abdominal tergites 3 to 5 belong with two to five discal setae. Finally, they also share very similar male terminalia with *Ptilodexia* (Wilder 1979). The most important difference that separates these two genera is the prementum shape and length (Wilder 1979). In *Ptilodexia* the prementum varies from 0.3 to 0.9 times the head height, and the shape is broad and linear or slightly tapered, while in *Mochlosoma* the prementum is much longer than the head height, being narrow and flexible. However, this long prementum, that could be a potential synapomorphy, was not considered in phylogenetic approaches. The tribe Dexiini, where both *Ptilodexia* and *Mochlosoma* belong, was included in phylogenies with broader approach, concerning all four tachinid subfamilies. One of them is a morphological phylogeny by Cerretti et al. (2014) and the other is a molecular phylogeny by Stireman et al. (2019). In the first one, the morphological phylogeny of Cerretti et al. (2014), Dexiini was represented by only six genera that although including taxa distributed across more than one biogeographical region, only the Palaearctic species were sampled. From those genera, only *Billaea* Robineau-Desvoidy, 1830 is also recorded from the Neotropical region. Thus, it is very difficult to use this phylogenetic hypothesis to discuss the morphological characters and to ascertain the close relations of *Ptilodexia*. The situation is better for the molecular phylogeny of Stireman et al. (2019), as they have sampled 21 genera of Dexiini, including three Neotropical species from the totality of 32 species from other regions. Most importantly, they have included two North American species of *Ptilodexia*, viz. *P. conjuncta* (Wulp)/*P. harpasa* (Walker) and *Ptilodexia rufipennis* (Macquart), in additiona to one undetermined species of *Mochlosoma* from the USA. Confirming the views of Wilder (1979), they were recovered as sister groups, in addition to a clade that included *Trochilodes* Coquillett, 1903 (a genus belonging to Voriini, Dexiinae) and *Pseudodinera* Brauer & Bergenstamm, 1891. Although this is the first phylogenetic hypothesis for these genera, included in a larger phylogenetic hypothesis - for all tachinids - the sampling of a single undetermined species of *Mochosoma* and only two species of *Ptilodexia*, in taxa that presents almost sixty species together, in addition to including only Nearctic species, from prominently Neotropical genera, are some limitations for that study. A morphological phylogenetic hypothesis including more taxa from the Neotropical region is highly needed, in order to confirm this phylogenetic hypothesis as sister taxa and to state if this long prementum is an autapomorphy for *Mochlosoma*. Finally, the use of the first larval instar is of utmost importance, as has been briefly shown herein its usefulness (as diagnostic for the two species with this data, viz. *P. lateralis* and *P. striata*), presents a potential phylogenetic signal that can be obtained from this alternate source of evidence.

Identification key to Brazilian species of *Ptilodexia*

1 - Wings smoky and abdomen entirely brownish black with silvery-gray pruinosity..... *P. striata* (Wulp, 1891)

- Wings hyaline and abdomen orangish to yellowish-tawny with silver pruinosity, bearing a continuous blackish median vittae 2

2 – Abdomen yellowish, with syntergite 1+2 about ⅓ brownish black anteriorly and tergite 5 entirely brownish black .... *P. rubricornis* (Wulp, 1891)

- Abdomen orangish to tawny, with syntergite 1+2, at times, about 1/5 brownish black anteriorly and tergite 5 brownish black only medially 3

3 – Scutum and scutellum golden pruinose, females with legs black but with femur and tibia yellowish, males with abdomen light yellowish to tawny in ground color .... *P. matogrossensis* **sp. nov.**

- Scutum and scutellum silvery pruinose, females with legs black but with light brownish femur, males with abdomen yellowish-orangish in ground color ..... *P. lateralis* (Walker, 1836)

Ptilodexia matogrossensis **sp. nov.**

Holotype male: "Mato Grosso do Sul, Corumbá, BEP – Paratudal/ S19°34'11,4" W57°01'08,5"/14-29.x.2012/ Lamas, Nihei & eq. cols./ SISBIOTA CNPq/FAPESP"; "Holótipo"; "Santis det 2023/ Ptilodexia matogrossensis" (MZSP).

Paratypes females: "Mato Grosso do Sul, Corumbá, BEP – Paratudal/ S19°34'11,4" W57°01'08,5"/14-29.x.2012/ Lamas, Nihei & eq. cols./ SISBIOTA CNPq/FAPESP"; "Parátipo"; "Santis det 2023/ Ptilodexia matogrossensis" (MZSP).

"Brasil: MS: Aquidauana/ Reserva Ecológica UEMS/ Veg. Aberta. Flor. Est. Decidual/ S 20°25'59,0" W 55°39'20,8"/ Malaise 08/ 26.ix-11.x.2012/ Lamas, Nihei & eq. cols./ SISBIOTA CNPq/FAPESP"; "Santis det 2023/ Ptilodexia matogrossensis" (MZSP).

"Brasil: MT: Poconé/ Fazenda Rio Clarinho/ Trilha do Bosque (Paratudal)/ S 16°36'16,8" W 56°43'19,0"/ Malaise 50/ 30.xii,2012-19.i.2013/ Lamas, Nihei & eq. cols./ SISBIOTA CNPq/FAPESP"; "Parátipo"; "Santis det 2023/ Ptilodexia matogrossensis" (MZSP).

Diagnosis. Medium sized tawny fly, with silvery to goldish pruinosity. Head with goldish pruinosity. Scape and pedicel yellow to orangish. Scutum and scutellum golden pruinose. Wings hyaline. Females with femur and tibia yellowish. Males with abdomen light yellowish to light brown in ground color and females with abdomen reddish in ground color, both with less conspicuous and continuous brownish-black median vittae, than most similar species, *P. lateralis*.

Description. Male. Length: 8.9 mm.

Coloration (Fig. 1). Head with goldish pruinosity, but genal dilation with brownish pruinosity. Occiput whitish, with long golden setulae. Scape and pedicel yellow to orangish. Postpedicel orangish, but about distal ½ dark orangish orangish. Arista dark brown, but proximal ⅕ light brown. Palpus light yellow to orangish. Labellum light brown, prementum shiny black. Scutum brownish-black, but presutural region and anterodorsal portion of postsutural region with goldish pruinosity, fading to brownish-black medially; presutural region with five brownish-black vittae, the three central ones narrow and the two peripheral ones broad. Scutellum goldish, with brownish black on ¼ anteriorly, silver pruinose. Wing hyaline. Tegula brown, basicosta yellowish. Halter yellowish. Posterior spiracle light brown. Legs brownish-black, with median surfaces of front, mid, and hind tibiae yellowish. Upper and lower calypters hyaline. Abdomen yellowish to light tawny with silvery to goldish pruinosity irregular distributed along each tergite, with all setae of the abdomen arising from a bare dark spot; with a less inconspicuous and continuous brownish black median vittae from syntergites 1+2 to tergite 5.

Head (Figs. 1b-c). Vertex about 0.16x head width in dorsal view. Width of parafacial measured between inner margin of compound eye and antennal insertion about 0.5x the width of gena. Setulae with different lengths ranging from short to long going through all mediate stages along the frontal-orbital plate. Postpedicel about 1.3x the combined lengths of scape and pedicel. Eye about 0.65x the head height. Gena about 0.4x eye height. Prementum

Figure 1. ***Ptilodexia matogrossensis*** **sp. nov., holotype male: a. dorsal habitus; b. head, frontal view; c. lateral habitus.**

about 0.8x head height. Labellum developed, about 0.1x as long as prementum.

Thorax (Figs. 1a, c). Acrostichal setae 2+2. Dorsocentral setae 3+3. Intra-alar setae 1+2. Intra-postalar seta present. Supra-alar setae 2+3. Postpronotal lobe with 4-5 setae. Katepisternal setae 2+1. Scutellum with one pair of basal, three pairs of lateral, and one pair of strong, straight apical setae; numerous erect discal setae. Wing. Vein R_{4+5} with setulae ventrally and dorsally at base. Legs. Fore femur with posterodorsal and posteroventral rows of setae; fore tibia with 7 median anterodorsal, 2 posteroventral in apical third, 3 preapical, 2 anterodorsal and 1 posteroventral setae. Mid femur with 8 anteroventral and 5 anteromedian setae, 2 preapical, and 2 posteroventral setae; mid tibia with 2 median anteroventral and 1 posteroventral setae. Hind femur with posterodorsal and posteroventral rows of setae. Hind tibia with rows of anterodorsal (6) and posterodrosal setae (6), 3 submedian posteroventral, 4 preapical, 2 anterodorsal, and 2 posteroventral setae.

Abdomen (Figs. 1a, c). Syntergite 1+2 with at least two pairs of lateral marginal setae; tergite 3 with at least two pairs of discal and lateral setae, 1 pair of median marginal setae; tergite 4 with

2-3 pairs of discal setae and tergite 5 entirely covered with spine-like setae.

Terminalia. Not dissected.

Female (Fig. 2). Differs from male as follows. Head. Vertex about 0.28x head width in dorsal view. Fronto-orbital plate with two strong and proclinate setae and one weak lateroclinate orbital seta (Figs. 2b-c). Abdomen broader and shorter than in male, reddish brown to brownish with silver pruinosity dorsally and laterally, occupying almost all tergites (Fig. 2a, c). Tergite 3 and 4 with one pair of discal setae.

Biology. Unknown.

Distribution. Brazil (Mato Grosso and Mato Grosso do Sul states).

Etymology. The name of the species refers to the union of the two occurrences of this species, in Mato Grosso do Sul and Mato Grosso states of Brazil.

Ptilodexia lateralis (Walker, 1836)

Sarcophaga lateralis Walker, 1836: 352. Type locality: São Paulo, São Paulo, Brazil. References: Aldrich (1930: 14, taxonomic notes, as belonging to *Ptilodexia*).

Ptilodexia lateralis (Walker, 1836). References: Guimarães (1971: 33, catalogue and new combination as *P. lateralis*); O'Hara et al. (2020: 71, checklist of World Tachinidae).

Neomyostoma ptilodexioides Townsend, 1935: 218. Type locality: Praia Grande, São Paulo,

Figure 2. *Ptilodexia matogrossensis* sp. nov., paratype female: a. dorsal habitus; b. head, frontal view; c. lateral habitus.

Brazil. **New synonymy**. References. Guimarães (1971: 31, catalogue); Toma & Nihei (2006: 250, type material of Tachinidade deposited at MZSP); O'Hara et al. (2020: 59, checklist of World Tachinidae).

Remarks. Herein, we are following the recommendations of Crosskey (1974) and O'Hara & Wood (2004) to consider when a single known specimen (type specimen) exists, and there is no evidence that more than one original specimen may have existed or may exist in other collections, as the holotype. This being the particular case of Francis Walker's Tachinidae types in NHMUK because the collection has been kept largely intact and that Walker frequently described species from single specimens (O'Hara & Wood 2004). As put by Crosskey (1974: 273): "(I) *If a nominal species-group taxon was based upon an unstated number of specimens and had no originally designated type-specimen, a single extant type is the holotype [unless contrary evidence from any source exists or until it is obtained).*" Following the fact that the one of us (MDS) and Aldrich (1930) only found a single male at the NHMUK, this type specimen is considered as the holotype of *Sarcophaga lateralis* Walker, 1836.

Type material examined. Holotype male of *Sarcophaga lateralis* Walker, 1836 (NHMUK): "Holo-/type"; "Type"; "63/ 43"; "Sarcophaga/ lateralis Wlk. [handwritten]"; "S.P [handwritten]"; "Santo Paulo,/ Brazil,/ Cap. P.P. King./ 63-43. [handwritten]"; Holotype ♂/ of Sarcophaga/ lateralis Wlk./ examined 1970./ R.W. Crosskey."; "NHMUK 013933588".

Lectotype male of *Neomyostoma ptilodexioides* Townsend, 1935 (MZSP): "Coleção/ A. Barbiellini"; "Type"; "Neomyostoma/ ptilodexioides TT/ Det CHTT ♂♀"; "Praia Grande/ S. Paulo-934/ A. Barbiellini Jr.".

Paralectotype female (MZSP): "Coleção/ A. Barbiellini"; "Type"; "Praia Grande/ S. Paulo-934/ A. Barbiellini Jr."

Remarks. Townsend (1935) described this species with an unspecified number of males and females, and without a designation of the holotype. However, one year later, Townsend (1936: 351) mentioned a "Ht male" for *Neomyostoma ptilodexioides* from Brazil in MZSP (as "São Paulo B."). Thus, following O'Hara & Cerretti (2016: 11-12) in recognizing lectotype fixations in Townsend's Manual of Myiology [Parts I-XII, 1934–1942] when there is a strong possibility of the lectotype being recognized in the stated collection, Townsend's aforementioned quote is accepted as a lectotype fixation because the specimen in question, this single male, could be conclusively recognized, and additionally bears a determination label of Townsend reading: "*Neomyostoma ptilodexioides* TT Det CHTT", that distinguishes it from the other single female within the type series.

As argued by Wilder (1979) some specific characters of *Ptilodexia* are subtle, difficult to see and unstable, sometimes differing between individuals. This is exactly the case of *P. lateralis* and *N. ptilodexioides* as the only difference spotted between these species was the presence of short setulae on the fronto-orbital plate and the scutellum brownish black in *P. lateralis* and fronto-orbital plate with long setulae and scutellum tawny in *N. ptilodexioides*. Inspecting a long series of both species, we could conclude that those characters are unstable, with all ranges of variability found. In conclusion, we have not found enough evidence for keeping those species as distinct ones and we propose a new specific synonymy: *N. ptilodexioides* new junior synonym to *P. lateralis*.

Additional material examined. BRAZIL. Mato Grosso do Sul: Porto Murtinho, Fazenda Retiro Conceição, Trilha da Mata Bruta, S21°41'52,0"

W57° 45'57,1", 1 female, 15.v-01.vi.2012, Lamas, Nihei & eq. cols. SISBIOTA CNPq/FAPESP (MZSP); São Paulo: Bananal, Serra da Bocaína, 22 males and 7 females, 22.ii.1960, J. Luiz & J. Evangelista cols. (MZSP); Campos do Jordão, Lagoinha, 18 males and 6 females, ii.1953, Travassos col. (MZSP), ditto, Fazenda Guarda – Alto da Boa Vista, 5 males and 9 females, 23.iii.1963, Rabello, T.F., J. Guimarães & Barroso cols. (MZSP), ditto, 3 males, 26.xi.1957, K. Lenko col., Coleção Campos Seabra, ditto, 4 males, 12.ii.1958 (MZSP).

Diagnosis. Medium sized blackish fly with orangish abdomen. Wings hyaline and abdomen orangish with tergite 5 brownish black only medially, and legs with brownish black femur. Abdomen yellowish-orangish, with a conspicuous and continuous brownish black median vittae. Male terminalia with granular area about ½ the length of dorsal sclerite. First-instar larva with segment 12 with ventrolateral portion with a small paired protuberance, ending with a small spine.

Redescription. Male. Body length: 13.5 mm.

Coloration (Fig. 3). Head with dark silver pruinosity, genal dilation with brownish

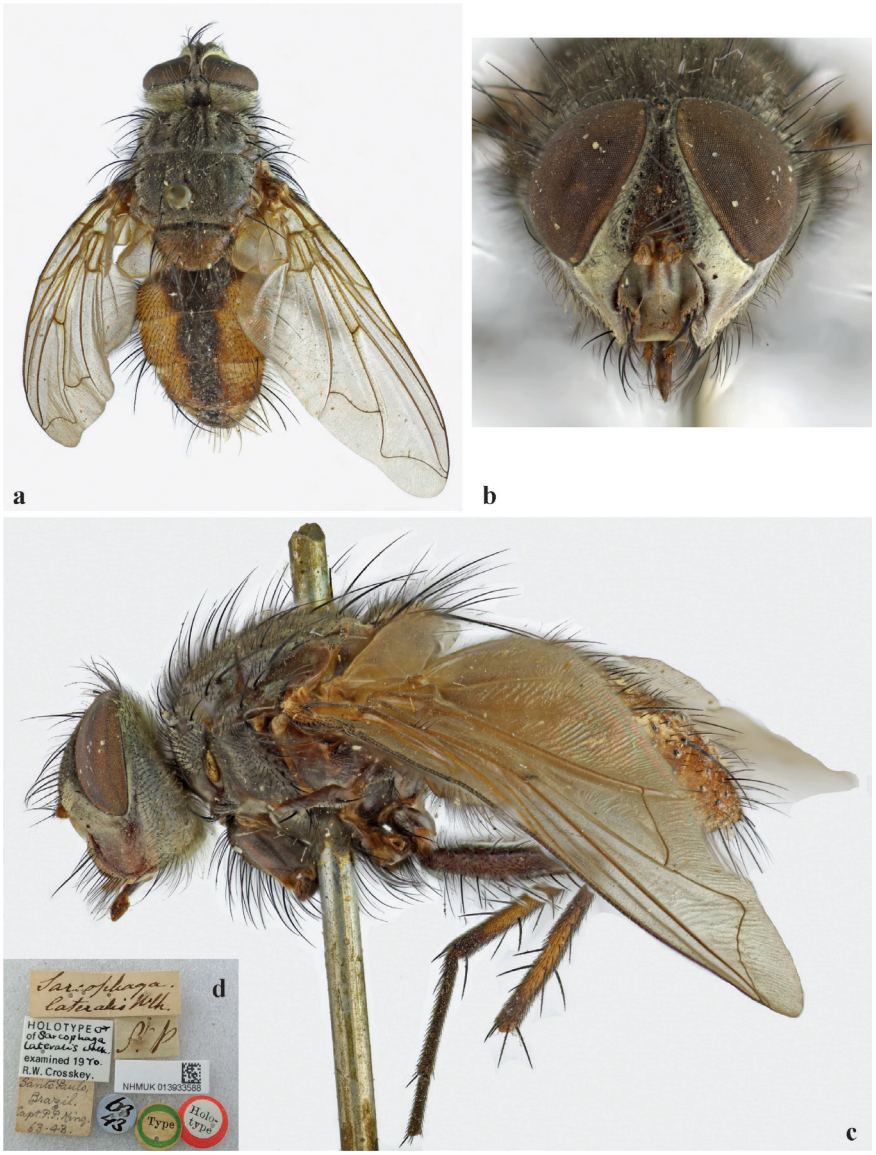

Figure 3. ***Ptilodexia lateralis*** **(Walker, 1836) (male, holotype): a. dorsal habitus; b. head, frontal view; c. lateral habitus; d. labels.**

pruinosity. Occiput whitish, with long golden setulae. Scape and pedicel light brown and pedicel dark brown. Postpedicel orangish, about distal ½ brownish. Arista dark brown, with proximal ⅕ light brown. Palpus light yellow to orangish. Labellum light brown, prementum shiny black. Scutum brownish-black, presutural region and anterodorsal portion of postsutural region with silver pruinosity, fading to brownish-black posteriorly; presutural region with five brownish-black vittae, the three central ones narrow and the two peripheral ones broad. Scutellum tawny to brownish black. With brownish black on ¼ anteriorly, silver pruinose. Wing hyaline. Tegula brown, basicosta yellowish. Halter yellowish. Posterior spiracle light brown. Legs brownish-black, but median posterior surfaces of front, mid, and hind tibiae light brown. Upper and lower calypters hyaline. Abdomen yellowish-orangish with silvery pruinosity irregular distributed along each tergite; with a conspicuous and continuous brownish black median vittae from syntergite 1+2 to tergite 5.

Head (Figs. 3b-c). Vertex about 0.13x head width in dorsal view. Width of parafacial measured between inner margin of compound eye and antennal insertion about 0.3x the width of gena. Setulae with different lengths from short to long going through all mediate stages along the frontal-orbital plate. Postpedicel about 1.5x the combined lengths of scape and pedicel. Eye about 0.7x the head height. Gena about 0.55x eye height. Prementum about 0.5x head height. Labellum developed, about 0.1x as long as prementum.

Thorax (Fig. 3a, c). Acrostichal setae 3-2+3. Dorsocentral setae 3+3. Intra-alar setae 1+2. Intra-postalar seta present. Supra-alar setae 2+3. Postpronotal lobe with 4-5 setae. Postalar callus with 3 setae, the outer one weak. Scutellum with one pair of basal, three pairs of lateral, and one pair of strong, straight apical setae; numerous erect discal setae. Wing. Vein R_{4+5} with setulae ventrally and dorsally at base. Legs. Fore femur with posterodorsal and posteroventral rows of setae; fore tibia with 7 median anterodorsal, 2 posteroventral in apical third, 3 preapical, 2 anterodorsal and 1 posteroventral setae. Mid femur with 8 anteroventral and 5 anteromedian setae, 2 preapical, and 2 posteroventral setae; mid tibia with 2 median anteroventral and 1 posteroventral setae. Hind femur with posterodorsal and posteroventral rows of setae. Hind tibia with rows of anterodorsal (6) and posterodrosal setae (6), 3 submedian posteroventral, 4 preapical, 2 anterodorsal, and 2 posteorventral setae.

Abdomen (Figs. 3a, c). Syntergite 1+2 with at least two pairs of lateral marginal setae; tergite 3 with at least two pairs of discal and lateral setae, with 1 pair of median marginal setae; tergite 4 with 2-3 pairs of discal setae and tergite 5 entirely covered with spine-like setae. *Terminalia* (Fig. 4). Tergite 6 undivided, about ¼ length of syntergosternite 7+8. Sternite 5, apically long setulose (Fig. 4c). Ejaculatory apodeme sub-ovate, with base narrow and apex broad (Fig. 4d). Extension of dorsal sclerite of distiphallus with granular area about ¼ the length of dorsal sclerite (Fig. 4d).

Female (Fig. 5). Differs from male as follows. Vertex about 0.23x head width in dorsal view. Head with fronto-orbital plate with two strong and proclinate and one weak lateroclinate orbital setae (Figs. 5b-c). Abdomen reddish brown with silver pruinosity dorsally and laterally, sometimes occupying almost all tergites. Tergites 3 and 4 with one pair of discal setae (Figs a, c). Terminalia (Fig. 6c). Tergites 6 and 7 with setae at posterior margin. Cerci well developed, globose, with several setae apically.

First larval instar (Figs. 6a-b). Cephaloskeleton with accessory sclerite posteriorly broad, narrowing anteriorly, anterior to mouth hook;

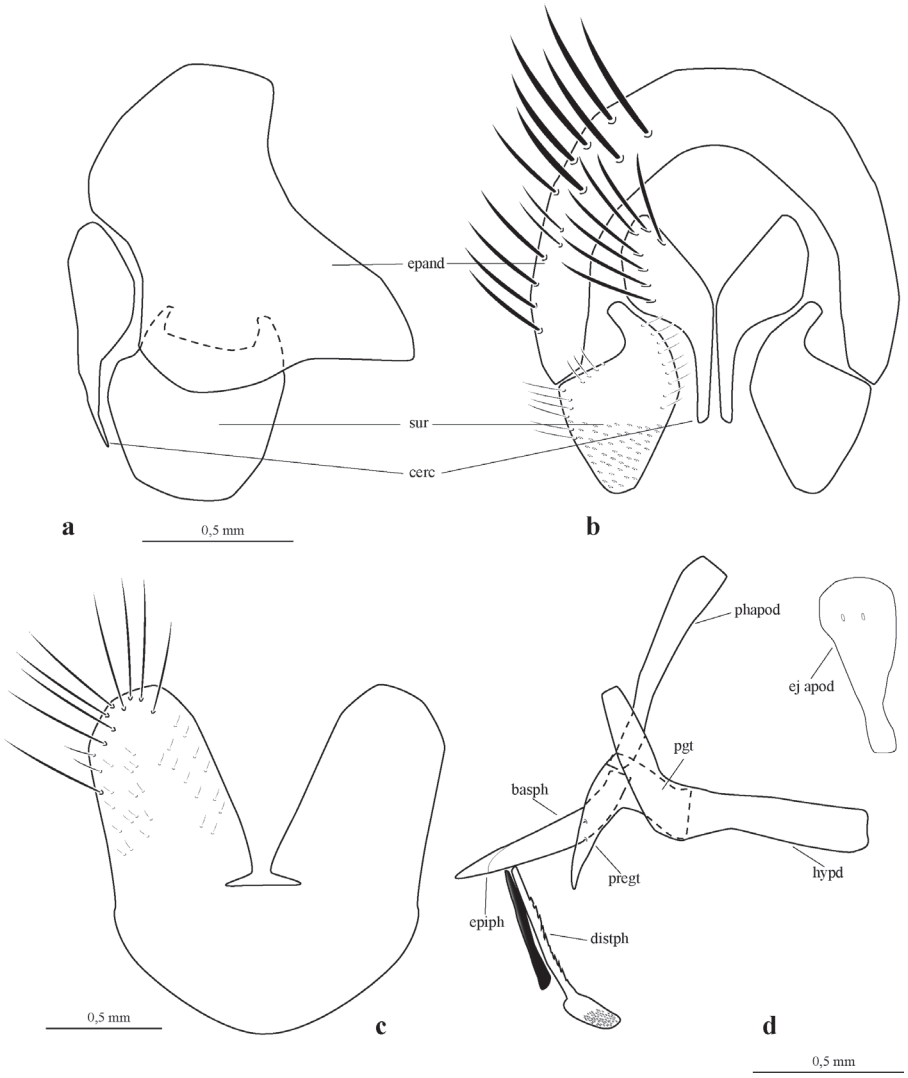

Figure 4. ***Ptilodexia lateralis*** **(Walker, 1836) (male terminalia, São Paulo, Brazil): a. Epandrium, cercus and surstylus, lateral view; b. Epandrium, cerci and surstyli, posterior view; c. Sternite 5, posterior view; d. Hypandrium, phallapodeme, basiphallus, epiphallus, distiphallus, pregonite and postgonite, lateral view. Abbreviations: basph = basiphallus; cerc = cercus; distph = distiphallus; ej apod = ejaculatory apodeme; epand = epandrium; epiph = epiphallus; hypd = hypandrium; pgt = postgonite; phapod = phallapodeme; pregt = pregonite; sur = surstylus.**

sclerite of salivary gland as a narrow strip (Fig. 6a). Segment 12 with ventrolateral portion with a small paired protuberance, ending with a small spine on segment 12 (Fig. 6c).

Biology. Unknown.

Distribution. Brazil (Mato Grosso do Sul [new record] and São Paulo states).

Notes. The holotype male of *Sarcophaga lateralis* Walker, 1836 was collected by the naval officer, hydrographer and company manager, Phillip Parker King (1791–1856). The British Navy set out a series of expeditions to the Magellan Straits with the purpose of obtaining scientific information, and Captain King was in the command of the first expedition (Papavero 1973). Thus, on 22nd of May 1826, he sailed to Magellan Straits and in 18th of September 1827 reached the city of Santos in the State of São Paulo. Captain King stayed there until the 28th and in this interval he took a quick trip to the city of São Paulo (written "St. Paul" in his book, *Narrative of the Surveying Voyages of His Majesty's Ships Adventure and Beagle* (1839), and in Walker's (1936) original description; while Walker label data of *P. lateralis* holotype is written "Santo Paulo"), for the purpose of making barometrical observations (King 1839). During his stay in São Paulo, he collected a single specimen, that along

Figure 5. ***Ptilodexia lateralis*** **(Walker, 1836) (female, São Paulo, Brazil): a. dorsal habitus; b. head, frontal view; c. lateral habitus; d. labels.**

with all his other specimens were given by him to the British Museum (Natural History) in London (now the Natural History Museum, NHMUK), that were later examined and described by English entomologist Francis Walker (1809–1874) in a paper devoted to King's insects (Walker, 1936), as *Sarcophaga lateralis* Walker, 1836; later considered as belonging to *Ptilodexia* (Aldrich 1930, Guimarães 1971).

About one hundred years later this species was collected again, but at this time by Amadeu A. Barbiellini Jr., son of the Italian Count Amadeu A. Barbiellini in 1934 at the district of Praia Grande, then within the city of São Vicente, and now a city by itself. Townsend (1935) described these specimens, that included a single male and a female, as a new genus and species, *Neomyostoma ptilodexioides* Townsend, 1935. This species is herein proposed as junior

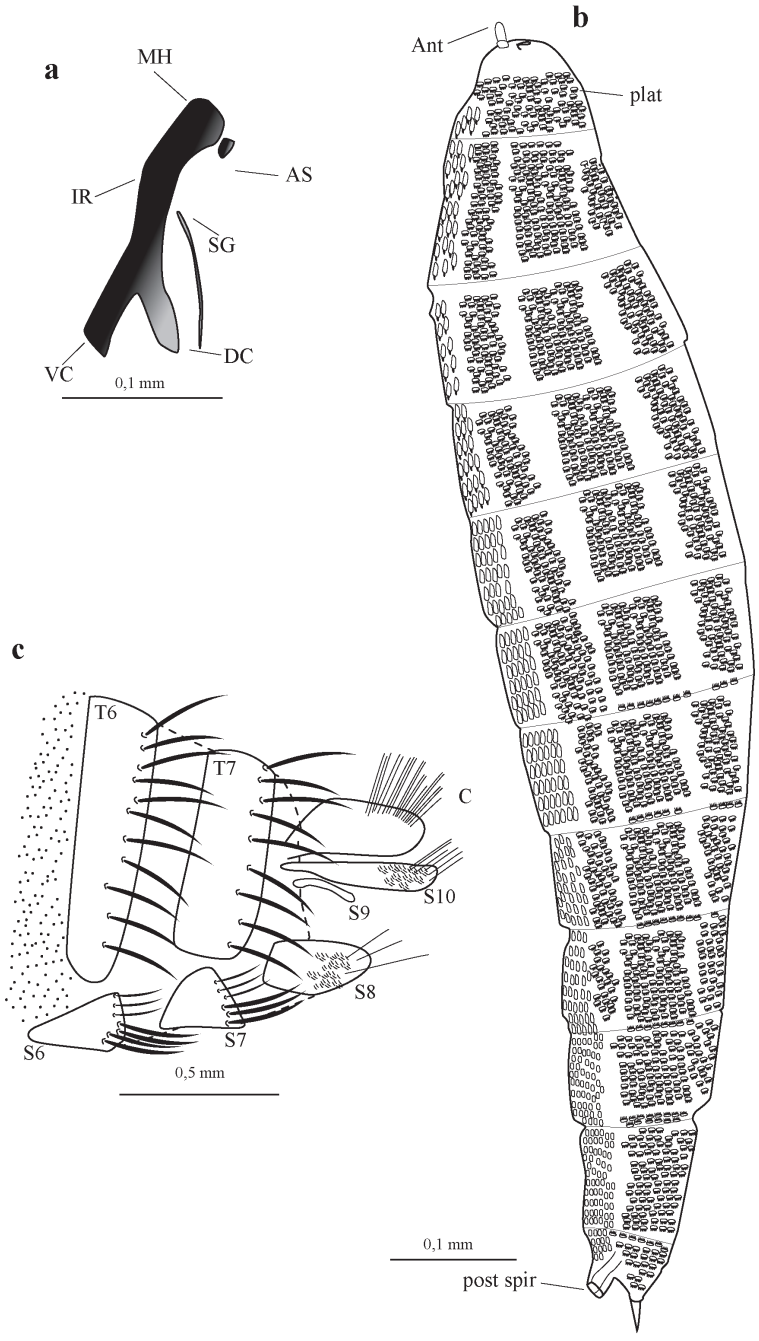

Figure 6. ***Ptilodexia lateralis*** **(Walker, 1836) (female, São Paulo, Brazil): a. cephaloskeleton; b. first larval instar; c. terminalia. Abbreviations: AS = accessory sclerite; ant = antenna; C = cercus; DC = dorsal cornua; IR = intermediate region; MD = mouth hook; plat = platelets; post spir = posterior spiracle; SG = sclerite of salivary gland; S6 = sternite 6; S7 = sternite 7; S8 = sternite 8; S10 = sternite 10; T6 = tergite 6; T7 = tergite 7; VC = ventral cornua.**

synonymy of *P. lateralis*. The life and work of Barbiellini and his contribution to Brazilian Entomology are numerous and relevant, for instance, it was by his hands that the first periodical publication dedicated to insects in Brazil, and for all South America, called "*O Entomologista Brasileiro*" [*The Brazilian Entomologist*] was created in 1908 (Carrera 1956). A brief biography about him, based on the studies of Carrera (1956) and Antuniassi & Moura (2005), is given below.

The Cont Amadeu Amadei Barbiellini (1877–1955) was born in Ancona, Italy. He inherited the title of Count from one of his ancestors, who had received it, in turn, from the Vatican. Barbiellini came to Brazil definitively in 1907,

with his wife Ana Barbiellini and a daughter; the couple had ten children, all born in Brazil. Years later he became a naturalized Brazilian citizen. Count Barbiellini, since he was a child in Italy, was interested in entomology and could be considered an entomologist amateur. He enjoyed capturing and collecting insects, and sent them to entomologists for identification. Barbiellini was also a member of the Royal Entomological Society and maintained contact with entomologists in Brazil and abroad, for instance, with the renowned Italian dipterist Mario Bezzi (1868–1927). As a result, more than one hundred species were collected, including in the majority of cases insects, but also some arachinids, with some being named barbiellini in his honor. Regarding the tachinids, there are three species that are named in his homage: *Melanoromintho barbiellinii* Townsend, 1935, *Euthera (Euthera) barbiellinii* Bezzi, 1925 and *Belvosiomimops barbiellinii* Townsend, 1935. Most of Barbiellini's collection of thousands of specimens of insects was donated by him to the National School of Agronomy of Rio de Janeiro, nowadays incorporated to the Universidade Federal Rural do Rio de Janeiro (Rio de Janeiro, Brazil). A small sample of Barbiellini's collection is presently at MZSP; regarding dipterans, and more specifically, the tachinids, there are 10 primary type specimens collected by him (Toma & Nihei 2006), attesting his importance to the taxonomy of Neotropical tachinids and dipterans overall. One of the great scientific achievements of Cont Barbiellini was the creator of Chacaras and Garden's Magazine (1909–1969) of which he was the editor. The magazine focused on disseminating a wide range of technical and scientific knowledge of great interest to rural landowners, and also discussed the issue of land in Brazil, incisively and recurrently addressing the problems of small and medium-sized properties convinced of its importance for a more balanced development of Brazilian agriculture. Count Barbiellini died in 11th November 1955 in the city of São Vicente in São Paulo. Finally, it is worth mentioning the last words of Messias Carrera in his necrology of Barbiellini (Carrera 1956: 216): "Cultuava... a grande paixão de toda a sua existência: a Entomologia." [He reverenced... the great passion of his entire existence: Entomology].

Ptilodexia striata (Wulp, 1891)

Rhynchodexia striata Wulp, 1891: 234. Type locality: Volcan de Chiriquí, Chiriquí, Panama.

Ptilodexia striata (Wulp, 1891). References: Guimarães (1971: 34, catalogue and new combination as *P. striata*); O'Hara et al. (2020: 72, checklist of World Tachinidae).

Type material examined. Holotype male (NHMUK): "Holo-/ type"; "V[olcan]. De Chiriqui./ 3-4000 ft./ Champion."; "B.C.A. Dipt. II./ Rhynchodexia/ striata,/ v.d. W."; "Central America/ Pres. by/ F.D. Godman./ O. Salvin./ 1903-172."; "NHMUK 013933597".

Additional material examined. BRAZIL. Bahia: Igrapiúna, Reserva Michelin, 1 female, 24.ii-31.iii.2013, Aragão, Menezes, Mota & Andrena cols (MZSP), Camacan, RPPN Serra Bonita, 780m, S15°23'31" W39°33'53", 1 male, 01-06.ii.2009, Vitor Becker col (MZSP), ditto, 1 female, 02-06.ii.2009, Nihei, Figueiredo, Almeida & Cezar cols, ditto, 5 females, 01-06.ii.2009, ditto, Reserva Serra Bonita, S15°23' W39°33', 800m, 1 male, xi.2008, V.O. Becker col, ditto, 1 female, xii.2012 Calor et al col (MZSP); Goiás: Goiânia, Campinas, 1 male, i.1936, 1 male, Borgmeier & S. Lopes col (CEIOC); Espírito Santo: Linhares, 1 male, xii.1970, P.C. Elias col (MZSP).

Diagnosis. Large blackish fly with silver pruinosity. Wings smoky and abdomen entirely brownish black with silvery pruinosity, and with females with brownish black femur, first instar larvae elongate conical, with posterior spiracles

elongate. Male terminalia with granular area about ½ the length of dorsal sclerite. First-instar larva with segment 12 with lateral and apical portion ending each with a pair of small spines.

Redescription. Male. Body length: 18.2 mm.

Coloration (Fig. 7). Head with dark silver pruinosity, but genal dilation with brownish pruinosity. Occiput whitish, with long golden setulae. Scape and pedicel light brown and pedicel dark brown. Postpedicel orangish, but about distal ½ brownish. Arista dark brown, but proximal ⅕ light brown. Palpus light yellow to orangish. Labellum light brown, prementum shiny black. Scutum brownish-black, but presutural region and anterodorsal portion of postsutural region with silver pruinosity; presutural region with five brownish-black vittae, the two submedian narrow, and the central one and the two peripheral ones broad. Scutellum brownish black, with silver pruinosity. Wing slightly smoky on veins. Tegula brown, basicosta yellowish. Halter yellowish. Posterior

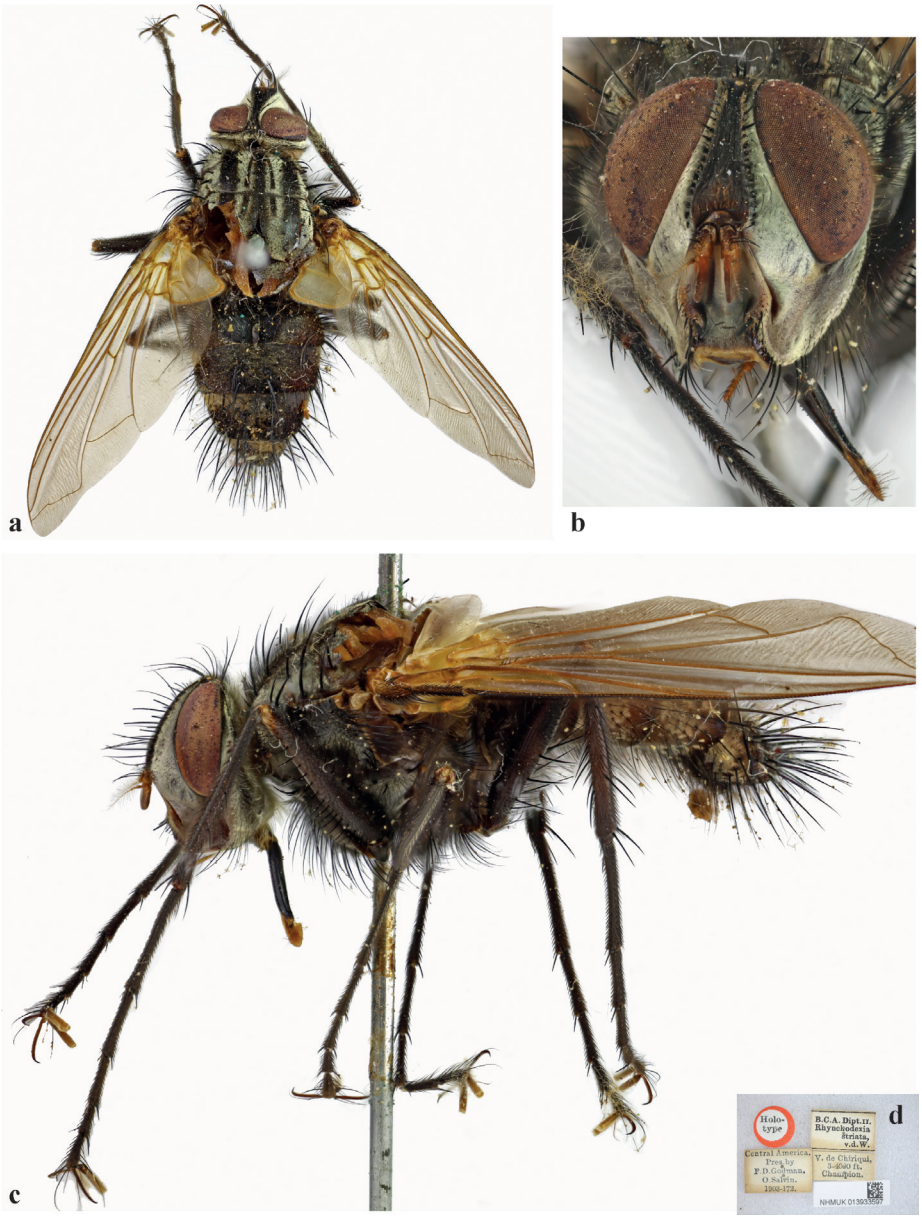

Figure 7. ***Ptilodexia striata*** **(Wulp, 1891) (male, holotype): a. dorsal habitus; b. head, frontal view; c. lateral habitus; d. labels.**

spiracle light brown. Legs brownish-black, but median posterior surfaces of mid, and hind tibiae reddish brown. Upper and lower calypters hyaline. Abdomen brownish on dorsal view and light brown on lateral view with silvery pruinosity, syntergite 1+2 with silver pruinosity laterally, on dorsal view, tergite 3 mostly with silver pruinosity, except in the median region, tergite 4 with silvery pruinosity located on anterolateral region dorsally, tergite 5 with silver pruinosity on anterior portion.

Head (Figs. 7b-c). Vertex about 0.15x head width in dorsal view. Width of parafacial measured between inner margin of compound eye and antennal insertion about 0.5x the width of gena. Postpedicel about 1.4x the combined lengths of scape and pedicel. Fronto-orbital plate with setulae throughout its length, parafacial bare. Eye about 0.62x the head height. Gena about 0.6x eye height. Prementum about 1.4x head height. Labellum developed, about 0.1x as long as prementum.

Thorax (Figs. 7a, c). Acrostichal setae 3+3. Dorsocentral setae 3+4. Intra-alar setae 1+3. Intra-postalar seta present. Supra-alar setae 2+3. Postpronotal lobe with 4 setae. Postalar callus with 3 setae, the outer one weak. Scutellum with one pair of basal, two pairs of lateral, one pair of decussate apical and one pair of discal setae. Wing. Base of R and apical third of R_1 vein dorsally and ventrally setulose. Legs. Fore femur with posterodorsal and posteroventral rows of setae; fore tibia with 3 posteroventral on middle to apical third, 2 preapical, 2 anterodorsal setae. Mid femur with 4 anterodorsal setae on apical third; mid tibia with 1 anterodorsal, 1 anteroventral and 1 posteroventral setae on apical third. Hind femur with posterodorsal and posteroventral rows of setae; hind tibia with three posterodorsal, two anteroventral and 2 posteroventral setae on median portion, 5 preapical, 2 anterodorsal, 1 anteroventral and 2 posteorventral setae.

Abdomen (Figs. 7a, c). Syntergite 1+2 with at least 2 pairs of lateral marginal setae; tergite 3 with at least three pairs of discal and lateral setae, with 2 pairs of median marginal setae; tergite 4 with 2-3 pairs of discal setae and a row of marginal setae and tergite 5 with two rows of marginal setae and 7-10 pairs of discal setae. Terminalia (Fig. 8). Tergite 6 undivided, about ⅓ length of syntergosternite 7+8. Sternite 5 apically short setulose (Fig. 8c). Ejaculatory apodeme narrowed distally and apically, sinuous (Fig. 8d). Extension of dorsal sclerite of distiphallus long with granular area distally bifurcated, about ½ the length of dorsal sclerite (Fig. 8d).

Female (Fig. 9). Differs from male as follows. Vertex about 0.27x head width in dorsal view. Head with fronto-orbital plate with two strong and proclinate and one weak lateroclinate orbital setae (Figs. 9b-c). Abdomen reddish brown with silver pruinosity dorsally and laterally, sometimes occupying almost all tergites (Figs. 9a, c). Tergites 3 and 4 with one pair of discal setae. Terminalia (Fig. 10c). Tergites 6 and 7 complete dorsally, with setae in all sclerite, mainly at posterior margin of tergites 6 and tergite 7. Cerci well developed, sub-circular, with several setae apically.

First larval instar (Figs. 10a-b). Cephaloskeleton with accessory sclerite posteriorly broad, narrowing anteriorly, anterior to mouth hook; sclerite of salivary gland as a narrow strip (Fig. 10a). Segment 12 with lateral and apical portion ending each with a pair each of small spines on segment 12 (Fig. 10b).

Biology. Unknown.

Distribution. Panama (Chiriquí); Brazil (Bahia, Goiás and Espírito Santo states, new records).

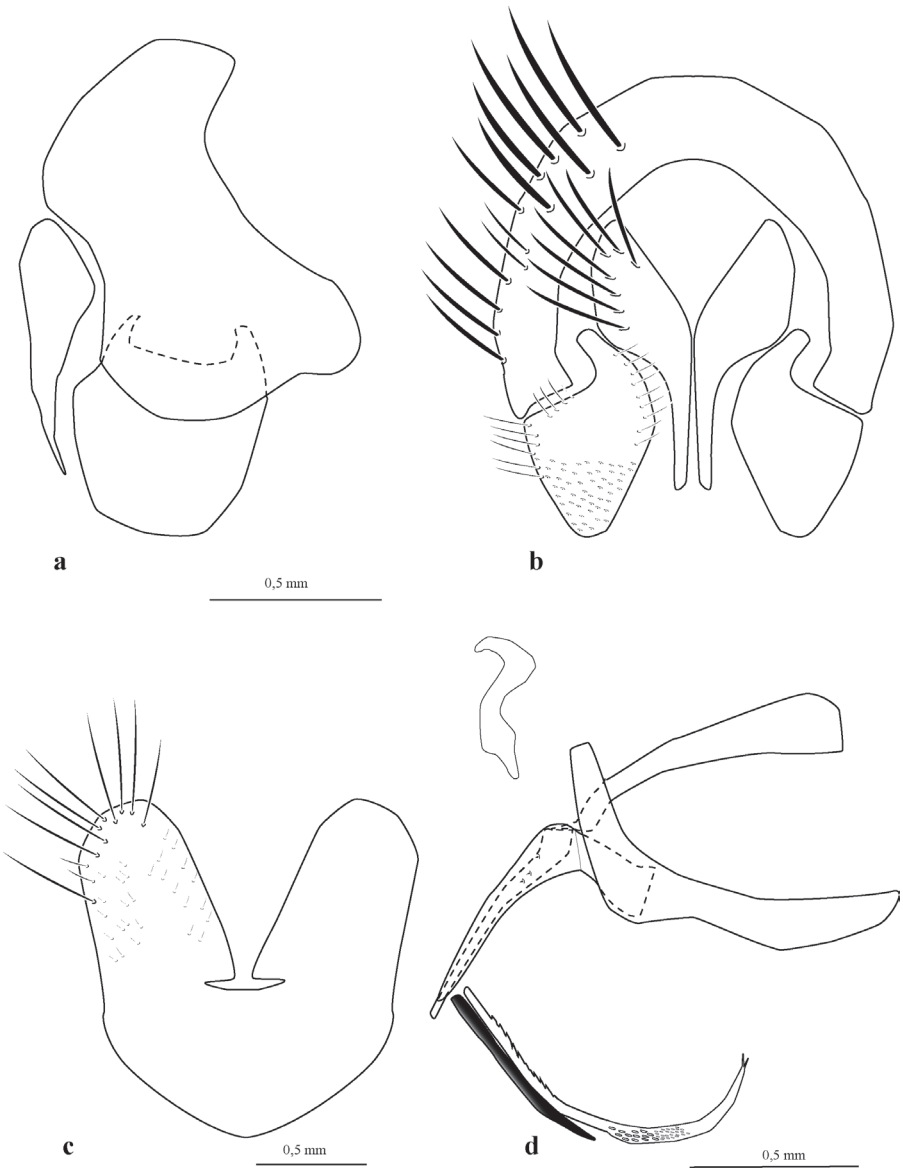

Figure 8. ***Ptilodexia striata*** **(Wulp, 1891) (male, Bahia, Brazil): a. Epandrium, cercus and surstylus, lateral view; b. Epandrium, cerci and surstyli, posterior view; c. Sternite 5, posterior view; d. Hypandrium, phallapodeme, basiphallus, epiphallus, distiphallus, pregonite and postgonite, lateral view.**

Ptilodexia rubricornis (Wulp, 1891)

Rhynchodexia rubricornis Wulp, 1891: 230.
Ptilodexia rubricornis (Wulp, 1891). References: Guimarães (1971: 33, catalogue and new combination as *P. rubricornis*); O'Hara et al. (2020: 71, checklist of World Tachinidae).

Type material examined. Syntype male (NHMUK): "Syn-/ type"; "♂"; "Xucumanatlan,/ Guerrero,/ 7000 ft./ July, H.H. Smith."; "B.C.A. Dipt. II./ Rhynchodexia/ rubricornis,/ v.d. W."; "Central America/ Pres. by/ F.D. Godman./ O. Salvin./ 1903-172."; "NHMUK 013933501".

Additional material examined. BRAZIL. Rio de Janeiro: Nova Friburgo, Mury, 3 males, 1-31.i.1965, Gred & Guimarães cols. (MZSP), ditto, 2 males, i.1978, ditto, 1 male, i.1946, Wygod. col. (MZSP); Itatiaia, 1 male, xi.1950, Travassos & Dalcy col. (MNRJ); Teresópolis, 1 male, 12.i.1940, Lopes col. (MZSP).

Diagnosis. Medium blackish fly with abdomen yellowish in ground color. Thorax with scutum and scutellum silvery pruinose. Wings hyaline. Legs brownish-black, but median posterior surfaces of front, mid, and hind tibiae

Figure 9. ***Ptilodexia striata*** **(Wulp, 1891) (female, Bahia, Brazil): a. dorsal habitus; b. head, frontal view; c. lateral habitus.**

yellowish, and abdomen with syntergite 1+2 about ⅓ anteriorly brownish black and tergite 5 entirely brownish black.

Redescription. Male. Body length: 12.4 mm.

Coloration (Fig. 11). Head with dark silver pruinosity, but genal dilation with brownish pruinosity. Occiput whitish, with long golden setulae. Scape and pedicel light brown. Postpedicel brownish-black, but about distal ⅕ brownish. Arista brown. Palpus yellowish. Labellum brownish, prementum shiny black. Scutum brownish-black, but presutural region and anterodorsal portion of postsutural region with silver pruinosity, fading to brownish-black posteriorly; presutural region with faintly five brownish-black vittae, the three central ones

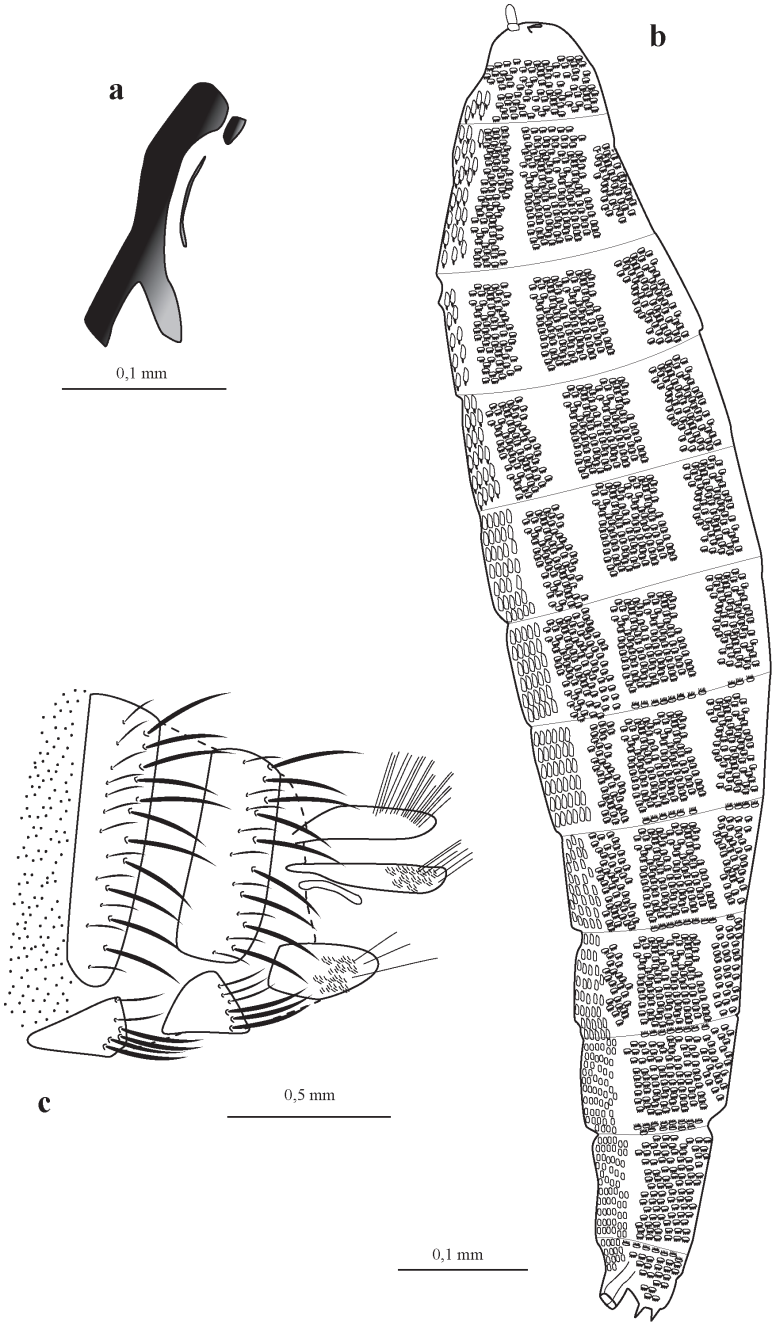

Figure 10. ***Ptilodexia striata*** **(Wulp, 1891) (female, Bahia, Brazil): a. cephaloskeleton; b. first larval instar; c. terminalia.**

narrow and the two peripheral ones broad. Scutellum tawny to brownish black. Wing hyaline. Tegula brown, basicosta yellowish. Halter yellowish. Posterior spiracle light brown. Legs brownish-black, but median posterior surfaces of front, mid, and hind tibiae yellowish. Upper and lower calypters hyaline. Abdomen yellow with silvery pruinosity only dorsally; syntergite 1+2 with a lateral brownish spot, going though half-way of that same tergite, with a continuous brownish black median vittae from syntergite 1+2 to tergite 5.

Head (Figs. 11b-c). Vertex about 0.12x head width in dorsal view. Width of parafacial measured between inner margin of compound eye and antennal insertion about 0.5x the width

of gena. Postpedicel about 1.5x the combined lengths of scape and pedicel. Eye about 0.72x the head height. Gena about 0.6x eye height. Prementum about 0.43x head height. Labellum developed, about 0.1x as long as prementum.

Thorax (Fig. 11a, c). Acrostichal setae 3+3. Dorsocentral setae 3+3. Intra-alar setae 1+3. Intra-postalar seta present. Supra-alar setae 2+4. Postpronotal lobe with 5 setae. Postalar callus with 3 setae, the outer one weak. Scutellum with one pair of basal, three pairs of lateral, and one pair of strong, straight apical setae; numerous erect discal setae. Wing. Vein R_{4+5} with setulae ventrally and dorsally at base; with numerous

Figure 11. ***Ptilodexia rubricornis*** **(Wulp, 1891) (male, syntype): a. dorsal habitus; b. head, frontal view; c. lateral habitus; d. labels.**

erect setae. Legs. Fore femur with posterodorsal and posteroventral rows of setae; fore tibia with 2 posteroventral in apical third, 3 preapical, 2 anterodorsal and 1 posteroventral setae. Mid femur with 2 posterodorsal setae on distal third; mid tibia with 1 median anteroventral seta. Hind femur with posterodorsal and posteroventral rows of setae. Hind tibia with rows of anterodorsal (5) and posterodorsal setae (5), 4 preapical, 2 anterodorsal, and 2 posteroventral setae.

Abdomen (Fig. 11a, c). Syntergite 1+2 with at least 2 pairs of lateral marginal setae; tergite 3 with at least three pairs of discal and lateral setae, with 2 pairs of median marginal setae; tergite 4 with marginal setae arranged in two transverse rows and 2 to 3 discal setae and tergite 5 entirely covered with spine-like setae.

Terminalia. Not dissected.

Female. Unknown (see remark below).

Biology. Unknown.

Distribution. Mexico (Guerrero, Tabasco and Vera Cruz); Brazil (Rio de Janeiro state, new record).

Remarks. The original syntypic series of this species at the NHMUK presents a mix of different species according to a note probably written by Diana Dee Wilder that reviewed the Nearctic species of *Ptilodexia* and studied those type materials. Along with the 12 authentic syntypes of *P. rubricornis* there appear to be, at least, a male and a female of *P. conjuncta* (Wulp, 1891), four males and one female of *P. arida* (Curran, 1930), and, finally, a single female of *P. major*. Thus, although Wulp (1891) refereed to some females as belonging to *P. rubricornis* in the original description, no legitime specimen was recognized by Wilder. At this time, it is not possible to confirm all those assertions, as the aforementioned specimens were not studied in detail. Thus, before fixing a lectotype and paralectotypes for this species, these issues should be conclusively confirmed.

Acknowledgments

We thank the following curators of the depository institutions for loaning material: Jane Costa (CEIOC) and Carlos Lamas (MZSP). MDS is indebted to Nigel Wyatt (NHMUK) for his kind assistance during his visit and for kindly allowing him to use the NHMUK Diptera section's image capturing system. Financial support from Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq, process number 150141/2022-0 to MDS and 303414/2018-9 to MSC.

REFERENCES

ALDRICH JM. 1930. Notes on the types of American two-winged flies of the genus *Sarcophaga* and a few related forms, described by the early authors. Proc U.S. Natl Mus 78: 1-39 + 3 pls.

ANTUNIASSI MHR & MOURA MIGL. 2005. A Revista Chácaras e Quintais e a comunicação rural. Cadernos CERU 2(16): 183-192.

BERÓN CM & DIAZ BM. 2005. Pathogenicity of hyphomycetous fungi against *Cyclocephala signaticollis*. BioControl 50: 143-150.

BLANCHARD EE. 1966. Dípteros parásitos de escarabaeoideos argentinos. Rev Patol Veget 3: 175-229.

BRAUER F & BERGENSTAMM JE VON. 1889. Die Zweiflügler des Kaiserlichen Museums zu Wien. IV. Vorarbeiten zu einer Monographie der Muscaria schizometopa (exclusive Anthomyidae). Pars I. Denkschr Kaiserl Akad Wiss Math-Naturwiss Kl 56(1): 69-180 + 11 pls.

CANTRELL BK. 1988. The comparative morphology of the male and female postabdomen of the Australian Tachinidae (Diptera), with descriptions of some first–instar larvae and pupae. Invertebr Taxon 2: 81-221.

CARRERA M. 1956. Necrológio do Conde Amadeu A. Barbiellini. Rev Bras Entomol 4: 213-216.

CERRETTI P, O'HARA JE, WOOD DM, SHIMA H, INCLÁN DJ & STIREMAN JO III. 2014. Signal through the noise? Phylogeny of the Tachinidae (Diptera) as inferred from morphological evidence. Syst Entomol 39: 335-353.

CHAMPLAIN AB & KNÜLL JN. 1923. Notes on Pennsylvania Diptera. Entomol News 34(7): 211-215.

CRIDDLE N. 1918. The habits and control of white grubs in Manitoba. Agr Gaz Canada 5(5): 449-454.

COURTNEY GW, SINCLAIR BJ & MEIER R. 2000. Morphology and terminology of Diptera larvae. In: Papp L, Darvas B

(Eds). Manual of palaearctic diptera (Vol. 19). Budapest: Science Herald, p. 85-161.

CROSSKEY RW. 1974. The British Tachinidae of Walker and Stephens (Diptera). Bull Br Mus Nat Hist Entomol 30: 269-308.

CROUZEL IS. 1965. Parasitismo en "Gusano blancos" en la Republica Argentina (Col. Scarabaeidae). Rev Soc Entomol Arg 27(1-4): 83-87.

CUMMING JM & WOOD DM. 2017. Adult morphology and terminology. In: Kirk-Spriggs AH & Sinclair BJ (Eds). Manual of Afrotropical Diptera. Vol. 1. Suricata 4. Pretoria: South African National Biodiversity Institute Graphics & Editing, p. 89-133.

DAVIS JJ. 1919. Contributions to a knowledge of the natural enemies of *Phyllophaga*. Ill Nat Hist Surv Bull 8(5): 53-138.

GUIMARÃES JH. 1971. Family Tachinidae (Larvaevoridae). In: Papavero N (Ed). A catalogue of the Diptera of the Americas South of the United States. Vol. 104. Departamento de Zoologia, Secretaria da Agricultura, São Paulo, p. 1-333.

KING PP. 1839. Narrative of the Surveying Voyages of His Majesty's Ships Adventure and Beagle, Between the Years 1826 and 1836, Describing Their Examination of the Southern Shores of South America, and the Beagle's Circumnavigation of the Globe, edited by Robert Fitzroy, 3 vols. London: Henry Colburn.

LIM KP, STEWART RK & YULE WN. 1981. Natural enemies of the common June beetle, *Phyllophaga anxia* (Coleoptera: Scarabaeidae) in southern Quebec. Ann Entomol Soc Quebec 16: 14-27.

O'HARA JE & CERRETTI P. 2016. Annotated catalogue of the Tachinidae (Insecta, Diptera) of the Afrotropical Region, with the description of seven new genera. ZooKeys 575: 1-344.

O'HARA JE, HENDERSON S & WOOD DM. 2020. Preliminary checklist of the Tachinidae (Diptera) of the world. Version 2.1. PDF document, 1039 pages. http://www.nadsdiptera.org/Tach/WorldTachs/Checklist/Worldchecklist.html (accessed 22 March 2023).

O'HARA JE & WOOD DM. 2004. Catalogue of the Tachinidae (Diptera) of America north of Mexico. Mem Entomol Int 18: iv + 410 p.

OLIVEIRA LJ, SANTOS B, PARRA JRP & HOFFMANN-CAMPO CB. 2004. Coró-Da-Soja. In: Salvadori JR, Ávila CJ & Silva MTB (Eds). Pragas de solo no Brasil. Passo Fundo: Embrapa Trigo; Dourados: Embrapa Agropecuária Oeste; Cruz Alta: Fundacep Fecotrigo, 544 p.

PAPAVERO N. 1973. Essays on the history of Neotropical Dipterology, with special reference to collectors (1750–1905), Vol. 2. São Paulo: Museu de Zoologia, Universidade de São Paulo, p. 217-446.

PARKER HL, BERRY AP & GUIDO SA. 1951. Host-parasite and parasite-host lists of insects reared in the South American Parasite Laboratory during the period 1940–1946. Rev Asoc Ing Agron Montevideo 23: 15-112.

PETERSON LOT. 1948. Some aspects of poplar borer, *Saperda calcarata* Say, (Cerambycidae) infestations under parkbelt conditions. Rep Ent Soc Ont 78: 56-61.

SANTIS MD. 2022. A bibliographic review of the history of Dexiinae (Diptera, Tachinidae) taxonomy in the Neotropical Region with bibliographic notes on Dominik Bilimek and Fritz Plaumann. Arq Zool 53(4): 53-72.

SANTOS V & ÁVILA CJ. 2009. Ocorrência de parasitismo em larvas de *Liogenys suturalis* Blanchard, 1851 (Coleoptera: Melolonthidae) por *Ptilodexia* Brauer & Bergenstamm, 1889 (Diptera: tachinidae). Arq Inst Biol 76: 745-748.

SILVA MTB & BOSS A. 2002. Controle de larvas de *Diloboderus abderus* com inseticidas em trigo. Cienc Rural 32: 191-195.

SILVEIRA GA & RUFFINELLI A. 1956. Primer catálogo de los parásitos y predadores encontrados en el Uruguay. Bol Fac Agron Univ Montevideo 32: 1-80.

STIREMAN JO III, CERRETTI P, O'HARA JE, BLASCHKE JD & MOULTON JK. 2019. Molecular phylogeny and evolution of world Tachinidae (Diptera). Mol Phylogenet Evol 139: 106358.

TOMA R & NIHEI SS. 2006. Catálogo do material-tipo de Tachinidae (Diptera) depositado no Museu de Zoologia da Universidade de São Paulo. Rev Bras Entomol 50: 240-256.

TOWNSEND CHT. 1935. New South American Oestroidea (Dipt.). Rev Entomol 5: 216-233.

TOWNSEND CHT. 1936. Manual of myiology in twelve parts. Part IV. Oestroid classification and habits. Dexiidae and Exoristidae. Itaquaquecetuba: Privately published, 303 p.

WALKER F. 1836. Descriptions, &c. of the Diptera. p. 331-359. In: Curtis J, Haliday AH & Walker F. Descriptions, &c. of the insects collected by Captain P.P. King, R.N., F.R.S., in the survey of the Straits of Magellan. Trans Linn Soc Lond 17: 315-359.

WILDER DD. 1979. Systematics of the Nearctic *Ptilodexia* Brauer and Bergenstamm (Diptera: Tachinidae). Proc Calif Acad Sci 42: 1-55.

WOOD DM & ZUMBADO MA. 2010. Tachinidae. In: Brown BV, Borkent A, Cumming JM, Wood DM, Woodley NE,

Zumbado MA (Eds). Manual of Central American Diptera. Vol. 2. Ottawa: NRC Research Press, p. 1343-1417.

How to cite
SANTIS MD & COURI MS. 2024. Revision of the Brazilian species of *Ptilodexia* Brauer & Bergenstamm, 1889 (Diptera: Tachinidae: Dexiinae), with the description of a new species. An Acad Bras Cienc 96: e20230542. DOI: 10.1590/0001-3765202420230542.

Manuscript received on May 10, 2023;
accepted for publication on March 3, 2024

MARCELO D. SANTIS
https://orcid.org/0000-0003-4949-6433

MÁRCIA S. COURI
https://orcid.org/0000-0002-5340-395X

Museu Nacional/UFRJ, Quinta da Boa Vista, São Cristóvão 20940-040, Rio de Janeiro, RJ, Brazil

Correspondence to: **Marcelo D. Santis**
E-mail: mrclsantis@gmail.com

Author contributions

MDS conceived and analyzed the data, prepared figures and tables, authored and reviewed drafts of the paper, and approved the final draft. MSC analyzed the data, reviewed drafts of the paper, and approved the final draft.