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RESEARCH ARTICLE

On *Cerodontha* (Diptera: Agromyzidae) from Brazil: new species and new records

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ABSTRACT. There are few literature publications on the species of *Cerodontha* Rondani, 1861 that occur in Brazil. This contrasts with the situation in the Nearctic region and Europe, where the genus is well-studied. We analyzed specimens of *Cerodontha* from two important collections in Brazil: Instituto Nacional de Pesquisas da Amazônia and Museu Nacional, Universidade Federal do Rio de Janeiro. As a result, we found and describe two new species: *Cerodontha* (*Poemyza*) *teresopoliensis* **sp. nov.** and *Cerodontha* (*Poemyza*) *rafaelii* **sp. nov.**, that both can be recognized for some specific character, as the darker body coloration and form of the male genitalia. We also provide new records and additional characters to diagnosis for the *Cerodontha* (*Butomomyza*) *orcina* Spencer, 1973 and *Cerodontha* (*Butomomyza*) *obscurata* Martinez, 1992. The descriptions are illustrated with images of the external morphology of the adult and male genitalia. A key to the Brazilian species of the subgenera *Butomomyza* and *Poemyza* are also provided.

KEY WORDS. *Butomomyza*, Brazilian species, *Cerodontha*, key, leafminers, *Poemyza*.

INTRODUCTION

Cerodontha Rondani, 1861 is a large genus with a worldwide distribution and 295 known species. Currently, the genus is divided into seven valid subgenera: *Cerodontha* sensu stricto, *C.* (*Butomomyza*) Nowakowski, 1967, *C.* (*Dizygomyza*) Hendel, 1920, *C.* (*Icteromyza*) Hendel, 1931, *C.* (*Phytagromyza*) Hendel, 1920, *C.* (*Poemyza*) Hendel, 1931 and *C.* (*Xenophytomyza*) Frey, 1946 (Lonsdale and Tschirnhaus 2021). Of these, six subgenera and 37 species occur in the Neotropics, excluding *Phytagromyza*; only five species are known from Brazil, which are: *Cerodontha* (*B.*) *angulata* (Loew), *Cerodontha* (*C.*) *dorsalis* (Loew), *Cerodontha* (*D.*) *inepta* (Spencer), *Cerodontha* (*I.*) *braziliana* Spencer and *Cerodontha* (*I.*) *longipennis* (Loew) (Martinez and Etienne 2002, Boucher 2003, 2005, Boucher and Wheeler 2014). *Cerodontha* species are leafminers that exclusively feed on monocotyledons, specifically of the families Cyperaceae, Iridaceae, Juncaceae and Poaceae (Boucher 2010).

Some characters can be used to identify *Cerodontha* species, despite significant variation among subgenera. For instance, the lunule can appear higher than wide, sometimes narrower apically or broad with a semicircular appearance; the first flagellomere shows considerable variability, ranging from having a spine or being slightly angulate anterodorsally to being small and rounded or greatly enlarged across different subgenera; the scutellar setae can have one or two pairs; the male genitalia may feature a surstylus with or without spines, a well-developed mesophallus that is stalk-like and fused to the distiphallus, and a distiphallus with one pair of apical tubules or secondarily fused (Spencer 1976, Spencer and Steyskal 1986, Boucher 2012, Lonsdale 2021).

Besides that, some species of *C.* (*Dizygomyza*) and *C.* (*Poemyza*) have a stridulatory file on the abdominal pleuron, like many *Liriomyza* Mik, 1894, but shorter, wider and flatter (Lonsdale and Tschirnhaus 2021). One pair of long, well-sclerotized processes on venter of the subepandrial sclerite is a common character for all subgenera (Spencer 1976), called "Langfortsatz" or "processus longus" for some authors (Sasakawa 1961, Nowakowisk 1972). According to Lonsdale (2021) this character may be an apomorphy for *Cerodontha* but requires further investigation.

In the phylogenetic analysis of Scheffer et al. (2007), based on molecular data, *Cerodontha* is a monophyletic genus and is the sister group of other Phytomyzinae, which include two clades. One clade consists of *Calycomyza* Hendel, 1931 + *Liriomyza* + *Metopomyza* Enderlein, 1936 + most of the *Phytoliriomyza* Hendel, 1931, while the second clade contains *Phytomyza* Fallén, 1823 (other previous genera, e.g. *Napomyza* Westwood, 1840 and *Chromatomyia* Hardy, 1849 included in this clade, were synonymized with *Phytomyza* in previous studies (Lonsdale and Eiseman 2021, Winkler et al. 2009).

In this study, we describe two new species of *Cerodontha* (*Poemyza*), representing the first record of this subgenus in Brazil. Additionally, we added new records for two species of *Cerodontha* (*Butomomyza*). We provide a complete description and diagnosis, photographs of the external morphology of the adults and male genitalia and keys to the Brazilian species of these two subgenera.

MATERIAL AND METHODS

The specimens used in this study belong to the collections of the Instituto de Pesquisas da Amazônia (INPA) and the Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ). Holotypes and at least one specimen of each known species were mounted on entomological pins, while most of the remaining specimens were preserved in absolute ethanol for future molecular studies. Male genitalia were clarified using hot acid lactic for 5–10 minutes and then placed on slides with glycerin for dissection and analysis under optical microscope. After analysis, the genital structures were inserted in microvials and pinned with the respective specimen.

All adult specimens were photographed using a Leica DFC450 microscope and processed with LAS V4.6 software. Male genitalia images were made using an optical microscope NIKONECLIPSE E200 MV R, with the software Zen 2 (version 2.0). Some male genitalic structures were drawn using a camera lucida and edited using CorelDRAW® Graphics Suite 2023. The terminology followed Cumming and Wood (2017) and Lonsdale (2021), except "ori" (inferior orbital setae) and "ors" (superior orbital setae) which follows Lonsdale (2011). The material was deposited at the Diptera collections of INPA and MNRJ. The measurements of the gena and eye, as well as the enumeration of the dorsocentral setae, followed Lonsdale (2021). The wings were measured while fully extended, ensuring that their entire span was accounted for. For this reason, it is possible that the length of the wing images does not correspond to the given measurements.

The provided keys include the main external and internal characters for the segregation of species. We have also compiled an updated list of *Cerodontha* species that are valid in the Neotropical region. Although the species *Cerodontha* (*D.*) *frosti* Spencer, 1973, *Cerodontha* (*D.*) *iridophora* Spencer, 1973, *Cerodontha* (*D.*) *kasparyani* Zlobin, 1997, *Cerodontha* (*D.*) *pecki* Spencer, 1973 were included in the Neotropical list of Martinez and Etienne (2002), as they occur in Florida, they were not included herein because we followed the distributional limits of Morrone (2014).

TAXONOMY

List of Neotropical *Cerodontha*

We present the updated list of *Cerodontha* species from the Neotropical region (Table 1). With the addition of two new Brazilian species of *Cerodontha*, the genus now comprises 39 species in six subgenera in the neotropics, representing approximately 13% of the global generic richness.

Cerodontha Rondani, 1861

Odontocera Macquart, 1835: 614. Type species: *Chlorops denticornis* Panzer, 1806: 104, by original designation. Preoccupied by Audinet-Serville (1833, Cerambycidae).

Cerodontha Rondani, 1861: 10. Type species: *Chlorops denticornis* Panzer, 1806: 104, by original designation. Nowakowski 1973: 7; Spencer 1969: 109; Spencer and Steyskal 1986: 87.

Odonthocera. Misspelling. Rondani 1861: 10.

Ceratomyza Schiner, 1862: 434 [unnecessary replacement name for *Odontocera*]. Type species: *Chlorops denticornis* Panzer, 1806: 104, by automatic designation. Hendel 1931 [synonymy?].

Cerodonta. Misspelling. Hendel 1920: 114, 1932: 265; Hering 1926: 223.

Cerodontha (*Butomomyza*) Nowakowski, 1967

Cerodontha (*Butomomyza*) Nowakowski, 1967: 633. Type species: *Agromyza angulata* Loew, 1869 by original designation. Spencer 1969: 110; Nowakowski 1973: 141; Spencer and Steyskal 1986: 97; Zlobin 2001: 113.

Diagnosis. Body color pale brown to brown. Lunule that is as wide as high or slightly higher than wide. First flagellomere not enlarged. Prescutellar acrostichal setae present. Epandrium with tubercle-like setae on the inner surface (Spencer and Steyskal 1986, Lonsdale 2021).

Key to the Brazilian species of *Cerodontha* (*Butomomyza*)

1. Halter yellow; epandrium with supra-anal process pointed (Fig. 2B); paraphallus with basal margin straight; distiphallus as long as mesophallus (Fig. 2D, E) ..... *Cerodontha* (*B.*) *obscurata* Martinez

Table 1. List of Neotropical species of *Cerodontha* with geographic distribution.

Neotropical species of *Cerodontha*	Distribution
Subgenus *Butomomyza* Nowakowski	
Cerodontha (*B.*) *angulata* (Loew, 1869)	Brazil, Canada, Guiana, Palearctic region, USA.
Cerodontha (*B.*) *chilenica* Spencer, 1982	Chile
Cerodontha (*B.*) *obscurata* Martinez, 1992	Brazil*, Guadeloupe, Martinique
Cerodontha (*B.*) *orcina* Spencer, 1973	Brazil*, Venezuela
Cerodontha (*B.*) *scleriae* Martinez, 1992	Guadeloupe
Cerodontha (*B.*) *puertoricensis* Spencer, 1973	Puerto Rico
Subgenus *Cerodontha* Rondani	
Cerodontha (*C.*) *adunca* Boucher, 2002	Mexico
Cerodontha (*C.*) *angela* Boucher, 2014	Ecuador
Cerodontha (*C.*) *chilensis* Spencer, 1982	Chile
Cerodontha (*C.*) *colombiensis* Spencer, 1985	Argentina, Bolivia, Chile, Colombia, Ecuador, Peru
Cerodontha (*C.*) *dorsalis* (Loew, 1963)	Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Dominic, Ecuador, Guadeloupe, Guatemala, Jamaica, Martinique, Mexico, Palearctic region, Paraguay, Peru, Puerto Rico, San Martin, USA, Venezuela
Cerodontha (*C.*) *flavifrons* (Philippi, 1865)	Chile, Ecuador, Peru
Cerodontha (*C.*) *fulvithorax* Malloch, 1934	Argentina
Cerodontha (*C.*) *inflata* Boucher, 2002	Mexico
Cerodontha (*C.*) *macrophaloides* Sasakawa, 1992	Peru
Cerodontha (*C.*) *magellani* Spencer, 1982	Chile
Cerodontha (*C.*) *nigricornis* Becker, 1919	Ecuador
Cerodontha (*C.*) *patagonica* Spencer, 1982	Chile
Cerodontha (*C.*) *toluca* Boucher, 2002	Mexico
Cerodontha (*C.*) *trispinata* Spencer, 1977	Mexico
Cerodontha (*C.*) *trispinella* Spencer, 1977	Mexico
Cerodontha (*C.*) *trispinosa* Spencer, 1977	Mexico
Subgenus *Dizygomyza* Hendel	
Cerodontha (*D.*) *andensis* (Spencer, 1963)	Colombia
Cerodontha (*D.*) *correntosana* (Malloch, 1934)	Argentina
Cerodontha (*D.*) *impatientis* Sasakawa, 1992	Venezuela
Cerodontha (*D.*) *inepta* (Spencer, 1963)	Brazil
Cerodontha (*D.*) *luctuosa* (Meigen, 1830)	Mexico, USA
Cerodontha (*D.*) *magna* Spencer, 1973	Venezuela
Cerodontha (*D.*) *nigrihalterata* Boucher, 2005	Costa Rica
Cerodontha (*D.*) *nitidiventris* (Malloch, 1934)	Argentina
Cerodontha (*D.*) *scirpioides* Zlobin, 1977	Costa Rica, Mexico
Subgenus *Icteromyza* Hendel	
Cerodontha (*I.*) *atrissima* Spencer, 1977	Mexico
Cerodontha (*I.*) *braziliana* Spencer, 1963	Brazil
Cerodontha (*I.*) *longipennis* (Loew, 1869)	Brazil, Canada, Chile, USA
Subgenus *Poemyza* Hendel	
Cerodontha (*P.*) *bambusae* Martinez, 1992	Granada, Guadeloupe, Martinique
Cerodontha (*P.*) *nigra* Spencer, 1985	Colombia
Cerodontha (*P.*) *rafaelii* sp. nov.	Brazil
Cerodontha (*P.*) *teresopoliensis* sp. nov.	Brazil
Subgenus *Xenophytomyza* Frey	
Cerodontha (*X.*) *biseta* (Hendel, 1920)	Canada, Jamaica, USA

*New record.

1'. Halter white; epandrium with supra-anal process rounded; paraphallus with basal margin rounded; distiphallus at least 1.3x longer than mesophallus 2
1. Apical bulb of mesophallus bilobate, slightly elongated in ventral view; distiphallus directed more apically than dorsally; tubules separate, slightly divergent apically (Fig. 4C, D)..... *Cerodontha* (*B.*) *orcina* Spencer
2'. Apical bulb of mesophallus broadly ovate in ventral view; distiphallus directed more dorsally than apically (Fig. 5A, B)..... *Cerodontha* (*B.*) *angulata* (Loew)

Cerodontha (*Butomomyza*) *obscurata* Martinez, 1992

Figs 1, 2

Cerodontha (*Butomomyza*) *obscurata* Martinez in Spencer et al. 1992: 274; Etienne and Martinez 2013: 476.

Material examined. 1♂ INPA: Brasil, AM, Manaus, R.F. Adolpho Ducke, Sede, 30.i.2018, Varredura, R. Ale-Rocha et al. 1♂ MNRJ: MNRJ-ENT1-69658: Brasil, AM, Manaus, R.F. Adolpho Ducke, Sede, 30.i.2018, Varredura, R. Ale-Rocha et al.

Description. Wing length: 1.35–1.7 mm (♂). Length of ultimate section of vein M_4 divided by penultimate section: 0.6. Eye height divided by gena height: 10–11.5. Ocellar triangle short, ending to the posterior ors. Fronto-orbital plate and parafacial not prominent. Lunule only slightly wider than high. First flagellomere small and rounded, with short, yellowish hairs. Arista long and pubescent. Gena slightly angled posteriorly (Fig. 1A–C).

Chaetotaxy. Two incurved ori, two reclinate ors, all equally developed. Ocellar and postocellar setae subequal to fronto-orbitals. One row of long and reclinate orbital setulae. Eye with short pilosity. One pair of prominent setae apically on each palpus. One presutural and three postsutural dorsocentral setae, decreasing in length anteriorly. Four to five rows of acrostichal setulae. Prescutellar acrostichal setae present. Lateral scutellar setae short, less than half length of apical setae. Mid tibia with one strong lateromedial seta.

Coloration. Body mostly dark brown. Ocellar triangle slightly shining. Fronto-orbital plate, lunule and face brown with grey pruinosity. Frons brown. Antennae entirely dark brown. Clypeus dark brown, slightly shining. Gena yellowish brown. Palpus dark brown. Labellum yellow. Scutum and scutellum slightly shining. Pleurae brown, with a yellow stripe on superior and posterior margins of anepisternum. Notopleuron slightly lighter brown. Wing hyaline with base yellow. Calypter greyish-yellow, margin and hairs brown. Halter yellow. Legs brown, with fore knee yellowish. Abdomen shining.

Genitalia. Epandrium with well-developed and pointed supra-anal process. Cerci short, setulose, with one long apical seta. Surstylus small, incurved, with 2–3 strong spines and some long setae on inner margin (Fig. 2A, B). Subepandrial sclerite slightly curved apically. Hypandrium short, V-shaped (Fig. 2C). Basiphallus short, U-shaped with a median projection curved at apex. Hypophallus with long and narrow lateral sclerites, membranous centrally, with a long and curved clear extension. Paraphallus short, with basal margin straight. Mesophallus narrow at base with a bulb apically. Distiphallus as long as mesophallus, entirely divided into one pair of sinuate arms, slightly directed dorsally, with apex slightly flared at opening (Fig. 2D, E). Ejaculatory apodeme with a large blade; sperm pump oval, with a sclerotized bar laterally (Fig. 2F).

Host. Unknown.

Distribution. Brazil (new record), Guadeloupe, Martinique.

Remarks. The analyzed specimens from Brazil have longer wings (1.7 mm) and a slightly shorter mesophallus than the holotype from Guadeloupe (1.35 mm). We consider this small difference to be intraspecific variation.

Cerodontha (*Butomomyza*) *orcina* Spencer, 1973

Figs 3, 4

Cerodontha (*Dizygomyza*) *orcina* Spencer, 1973: 77.
Cerodontha (*Butomomyza*) *orcina* Boucher 2005: 2.

Material examined. 1♂ MNRJ: MNRJ-ENT1-69659, Brasil, RJ, Teresópolis, PARNASO, casa do pesquisador, Malaise, 22°27'19.4"S 042°59'51.7"W, 1148m, 13.ix–25.x.2021, Eq. lab Dipneo col.

Description. Wing length. 1.9–2.1 mm (♂). Length of ultimate section of vein M_4 divided by penultimate section: 0.9. Eye height divided by gena height: 7.6. Ocellar triangle short, ending to the posterior ors. Fronto-orbital plate and parafacial not prominent. Lunule only slightly higher than wide. First flagellomere small and rounded, with short, whitish hairs. Arista short pubescent. Gena slightly angled posteriorly (Fig. 3A–C).

Chaetotaxy. Two incurved ori, the anterior more inclined, three reclinate ors (holotype with two), all equally developed. Ocellar and postocellar setae subequal to fronto-orbitals. One row of long and reclinate orbital setulae. Eye with short pilosity. Two pairs of prominent setae apically on each palpus. One presutural and three postsutural dorsocentral setae, strong and decreasing in length anteriorly. Seven rows of acrostichal setulae (four rows in holotype). Prescutellar acrostichal setae present. Lateral scutellar setae

Figure 1. *Cerodontha* (*Butomomyza*) *obscurata*, habitus, male: (A) lateral view; (B) dorsal view; (C) head, frontal view. Scale bars: 1 mm.

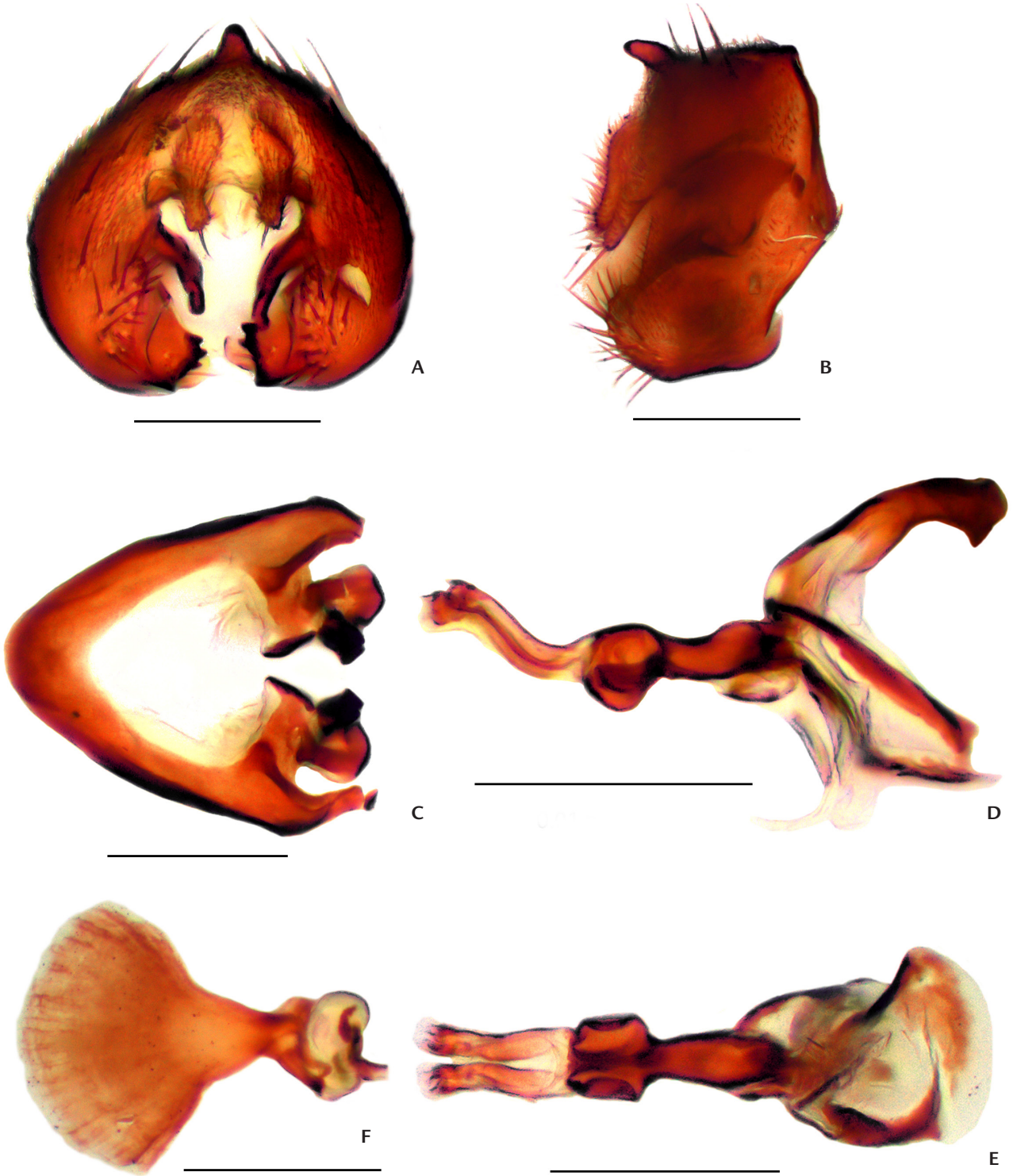

Figure 2. *Cerodontha* (*Butomomyza*) *obscurata*, male genitalia: (A) cercal plate, dorsal view; (B) cercal plate, lateral view; (C) hypandrium; (D) phallus, lateral view; (E) phallus, ventral view; (F) ejaculatory apodeme. Scale bars: 0.01 mm.

Figure 3. *Cerodontha* (*Butomomyza*) *orcina*, habitus, male: (A) lateral view; (B) dorsal view; (C) head, frontal view. Scale bars: 1 mm.

only slightly shorter than apical setae. Mid tibia with one strong lateromedial seta.

Coloration. Body mostly brown. Ocellar triangle and fronto-orbital plate slightly shining. Frons brown, slightly yellowish, with pruinosity. Lunule and face brown with grey pruinosity. Antenna entirely yellowish brown. Clypeus dark brown, slightly shining. Gena and palpus brown, slightly paler. Labellum yellow. Scutum and scutellum shining. Pleurae brown, with a yellow stripe on superior and posterior margins of anepisternum. Posterior margin of postpronotum

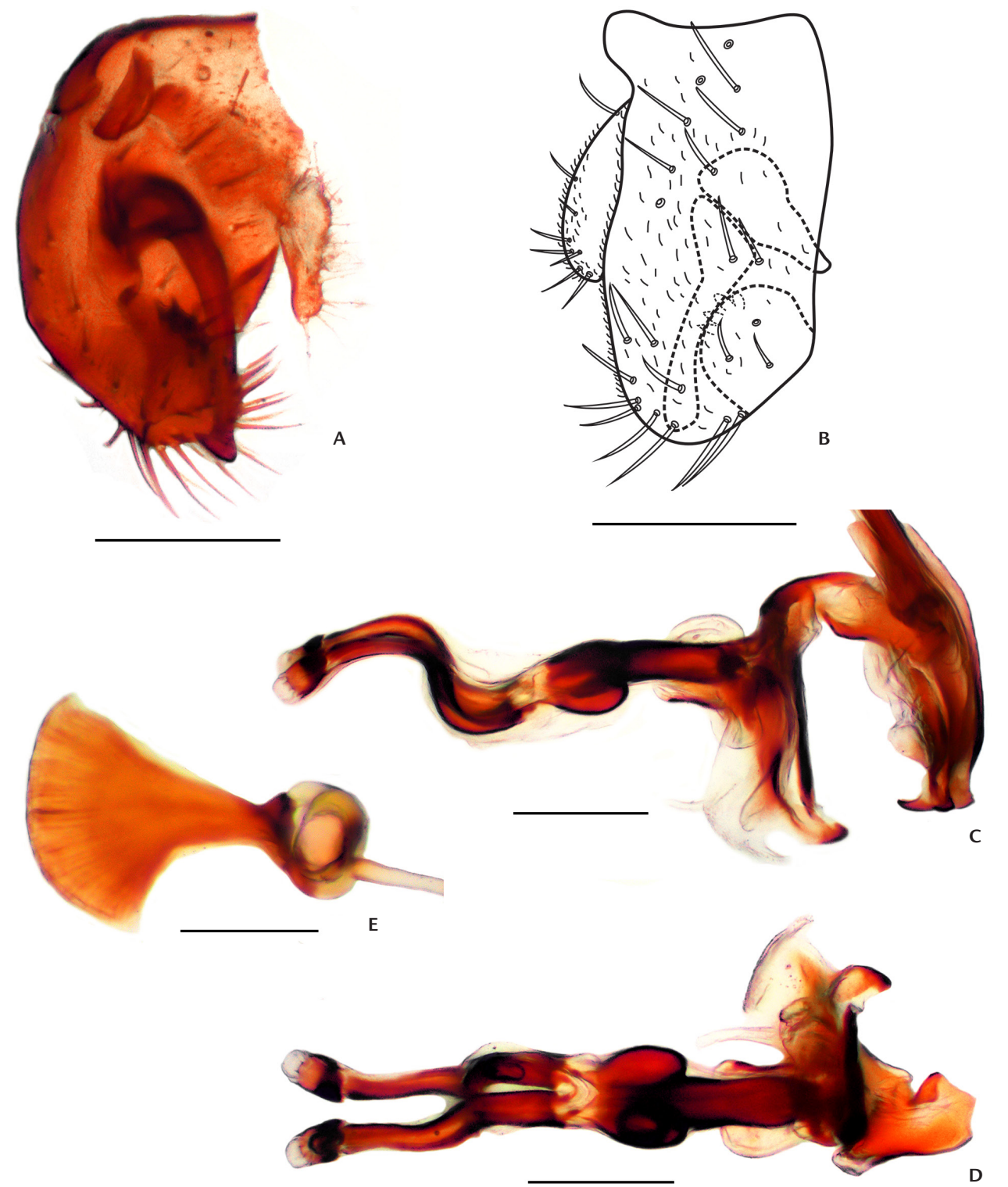

Figure 4. *Cerodontha* (*Butomomyza*) *orcina*, male genitalia: (A) cercal plate, ventral view; (B) cercal plate, lateral view; (c) phallus, lateral view; (D) phallus, ventral view; (E) ejaculatory apodeme. Scale bars: 0.01 mm, except b = 0.1 mm.

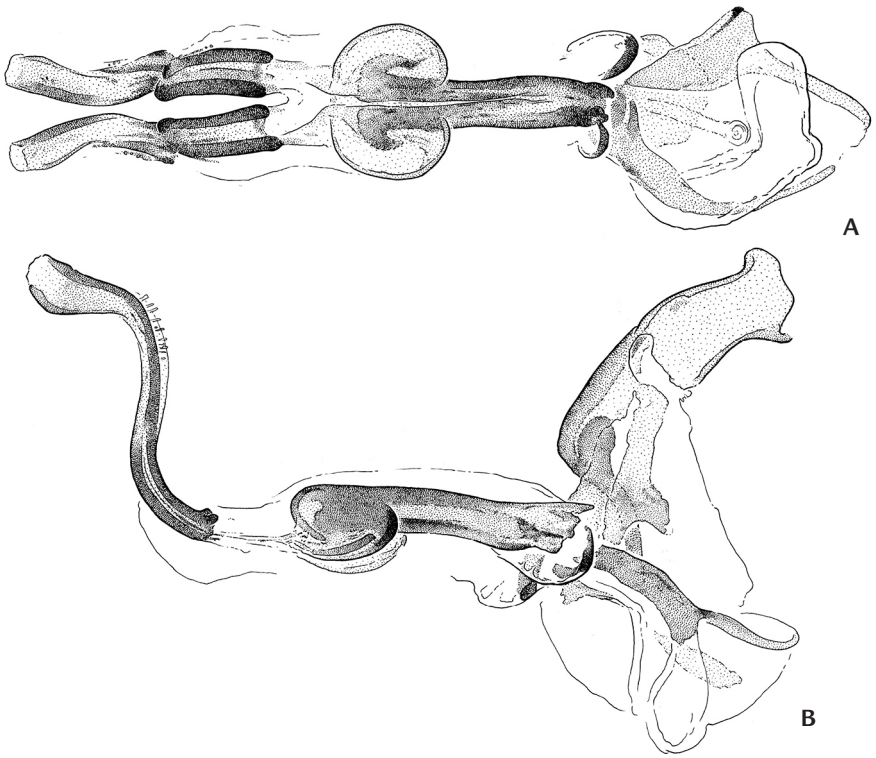

Figure 5. *Cerodontha* (*Butomomyza*) *angulata*, phallus: (A) ventral view; (B) lateral view. Adapted from Lonsdale (2021), an open access article distributed under the terms of the CC0 Public Domain Dedication.

slightly yellowish. Wing hyaline with base yellow. Calypter greyish-yellow, margin and hairs brown. Halter white. Legs brown, with fore knee and all tarsi yellowish.

Genitalia. Epandrium with a large rounded process above anus. Cerci very short, setulose. Surstylus small, incurved, with 6–7 spines and some long setae (Fig. 4A, B). Subepandrial sclerite hook-shaped apically. Hypandrium subtriangular with apex broadly rounded. Basiphallus short, bifid. Hypophallus long, sclerotized laterally and membranous microsetulose centrally, and a clear tubule emerging from between sclerites. Paraphallus short, membranous with basal margin rounded. Mesophallus a little shorter than distiphallus, with stalk narrow and apical bulb which occupies a little less than half the total length of the mesophallus. Distiphallus 1.5x longer than mesophallus, entirely divided into one pair of sinuate arms, directed apically, with a thickening apically, which becomes membranous at the end (Fig. 4C, D). Ejaculatory apodeme large, with stalk narrow; sperm pump clear, with an apical sclerotization (Fig. 4E).

Host. Unknown.

Distribution. Brazil (new record), Venezuela.

Remarks. This species is very similar to *Cerodontha* (*B.*) *puertoricensis* Spencer (in Spencer and Stegmaier 1973). However, there are some small differences between both, such as halter white, basiphallus slightly shorter and apical bulb of the mesophallus slightly straight at base in *Cerodontha* (*B.*) *orcina*. Besides this, *C.* (*B.*) *orcina* has strong spines on the surstylus, whereas for *C.* (*B.*) *puertoricensis*, Spencer (1973) mentioned only a fringe of four or five weak setae along the inner margin. In the original description of *C.* (*B.*) *orcina*, was mentioned two ors and four rows of acrostichal setulae, but we observed three ors and seven rows in the analyzed specimen, which we consider to be a variation within this species.

Cerodontha (*Poemyza*) Hendel, 1931

Dizygomyza (*Poemyza*), Hendel 1931: 35. Type species *Agromyza pygmaea* Meigen, 1830, by original designation.
Phytobia (*Poemyza*), Frick 1952: 391, 1959: 379.
Cerodontha (*Poemyza*), Nowakowski 1962: 102, 1967: 645, 1973: 73; Spencer 1969: 127; Spencer and Steyskal 1986: 93.

Diagnosis. Fronto-orbital plate produced. Lunule high and narrow, sometimes much higher than wide, pitted and

bare. Prescutellar acrostichal setae usually absent. Epandrium without tubercle-like setae on inner surface (Spencer and Steyskal 1986, Lonsdale 2021).

Key to the Brazilian species of *Cerodontha* (*Poemyza*)

1. First flagellomere rounded at apex; presutural dorsocentral absent; femora brown; distiphallus divided in two long and narrow tubules (Fig. 9C, D) .... *Cerodontha* (*P.*) *teresopoliensis* sp. nov.

1'. First flagellomere slightly angulate at apex; presutural dorsocentral present; femora yellow; distiphallus bifid at base, but fused and broad at apex (Fig. 7C, D) ....*Cerodontha* (*P.*) *rafaelii* sp. nov.

Cerodontha (*Poemyza*) *rafaelii* sp. nov.

Figs 6, 7

https://zoobank.org/f7bf5f70-150e-46ec-aa39-c2034636521f

Type material. HOLOTYPE: 1♂ INPA: Brasil, AC, Bujari, FES Antimary 9°20'01"S 68°19'17"W, 18–31.viii.2017, Malaise grande, E.F. Morato & J.A. Rafael cols. – Rede BIA. PARATYPES: 1♂ INPA, 1♂ MNRJ: MNRJ-ENT1-69664, same data as holotype.

Description. Wing length: 1.9–2.0 mm (♂). Length of ultimate section of vein M_4 divided by penultimate section: 0.7. Eye height divided by gena height: 10. Ocellar triangle short, ending before posterior ors. Fronto-orbital plate slightly prominent when viewed laterally. Parafacial not prominent. Lunule ending before the posterior ori. First flagellomere slightly pointed apically, with very short hairs. Arista short pubescent. Clypeus large. Gena narrow and rounded, not projecting posteriorly (Fig. 6A–C).

Chaetotaxy. Two incurved ori, three reclinate ors. Ocellar and postocellar setae subequal to fronto-orbitals. One row of long and reclinate orbital setulae. Eye with sparsely pilosity. One pair of prominent setae apically on each palpus. One presutural, fine and short, little more developed than acrostichals and three postsutural dorsocentral setae, third shorter and thinner than second and first. Six to seven rows of acrostichal setulae. Prescutellar acrostichal setae absent. Lateral scutellar setae fine and reduced, about 1/3 of the length of the apical setae. Mid tibia with one short and fine lateromedial seta.

Coloration. Body mostly shining dark brown. Fronto-orbital plate brown, slightly shining, with inner margin yellowish. Ocellar triangle slightly shining dark brown, with a yellowish edge. Frons dark brown, with grey pruinosity. Lunule yellowish brown, with grey pruinosity. Face and gena yellowish brown. Antennae yellowish brown. Arista brown, with base yellowish. Clypeus dark brown, slightly shining. Palpus yellowish brown. Labellum paler yellow. Scutum and scutellum shining dark brown. Pleurae dark brown, with a yellow stripe on superior and posterior margins of anepisternum. Notopleuron and posterior margin of postpronotum yellow. Katepimeron yellow basally. Wing hyaline, yellow at base. Calypter grey, margin and hairs brown. Halter yellow. Legs dark brown, except all femora yellow. Abdomen shining dark brown, yellow only to basal margins of tergites.

Genitalia. Epandrium with long, pointed supra-anal process and about six short spines on inner margin. Cerci long and narrow, long setulose. Surstylus small and narrow, incurved, with about 14 fine setae (Fig. 7A, B). Subepandrial sclerite pointed apically. Hypandrium U-shaped. Basiphallus medium size, tubular, sclerotized ventrally. Hypophallus large and sclerotized, with short and curved clear extension apically. Paraphallus narrow. Mesophallus short and straight, slightly wavy when viewed from lateral view. Distiphallus bifid at base, but fused and broad at apex (Fig. 7C, D). Ejaculatory apodeme with a large blade and very narrow stem with a small, rounded sub-basal process, sperm pump oval, with a rounded sclerotized process laterally (Fig. 7E).

Etymology. The name is in honor of the important Brazilian taxonomist, Dr. José Albertino Rafael from INPA, who contributed with part of the material herein studied.

Host. Unknown.

Distribution. Brazil.

Remarks. The distiphallus of this species is unusual when compared to other known *Cerodontha* species, which typically have a long and bifid distiphallus. In this species, the distiphallus is bifid at the base but fused and broad at the tip, resembling the distiphallus of a few other species such as *Cerodontha* (*C.*) *trispinella* Spencer, 1977 and *Cerodontha* (*C.*) *trispinosa* Spencer, 1977. Although these similar species belong to a different subgenus, the presence of lateral scutellar setae, the absence of acrostichal setae and the apex of first flagellomere only slightly angulate confirm that the new species belongs to the *Poemyza* subgenus.

Cerodontha (*Poemyza*) *teresopoliensis* sp. nov.

Figs 8, 9

https://zoobank.org/205023F4-6BC6-4490-AB8F-214F2DD0EEB1

Type material. HOLOTYPE: 1♂ MNRJ: MNRJ-ENT1-69661, Brasil, RJ, Teresópolis, PARNASO, casa do pesquisador,

Figure 6. *Cerodontha* (*Poemyza*) *rafaelii* sp. nov., habitus, male, paratype: (A) lateral view; (B) dorsal view; (C) head, frontal view. Scale bars: 1 mm.

Malaise, 22°27'19.4"S 042°59'51.7"W, 1148 m, 13.ix–25.x.2021, Eq. lab Dipneo col. PARATYPES: 1♂ MNRJ-ENT1-69660, 1♀ MNRJ-ENT1-69662, 2♂ MNRJ-ENT1-69663: same data as holotype. (All deposited in MNRJ).

Description. Wing length. 1.8–2.0 mm (♂), 2.0 mm (♀). Length of ultimate section of vein M_4 divided by penultimate section: 1.1–1.2. Eye height divided by gena height: 12–12.5. Ocellar triangle long, almost reaching to posterior ori. Fron-

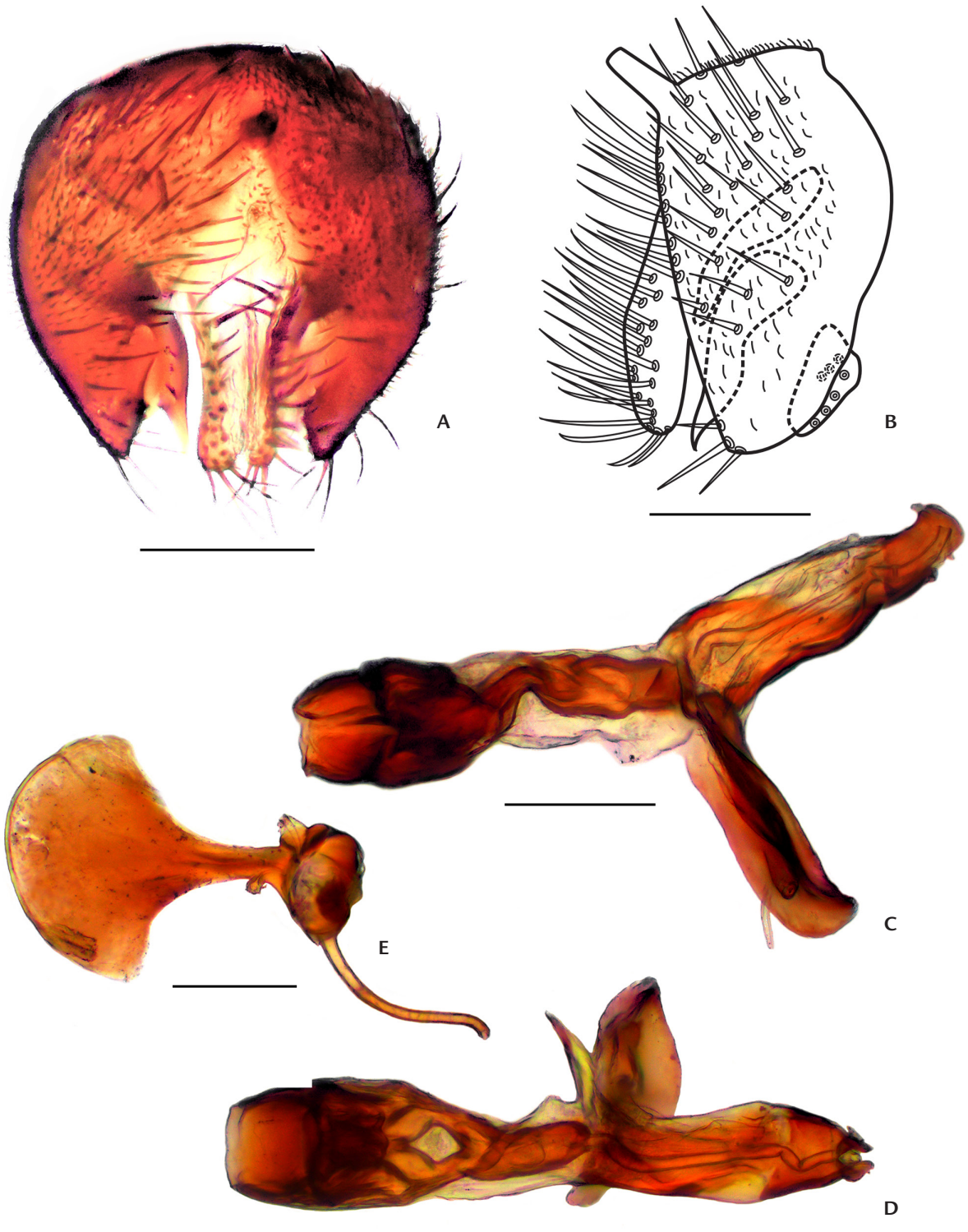

Figure 7. *Cerodontha* (*Poemyza*) *rafaelii* sp. nov., male genitalia, holotype: (A) cercal plate, dorsal view; (B) cercal plate, lateral view; (C) phallus, lateral view; (D) phallus, ventral view; (E) ejaculatory apodeme. Scale bars: 0.01 mm, except b = 0.1 mm.

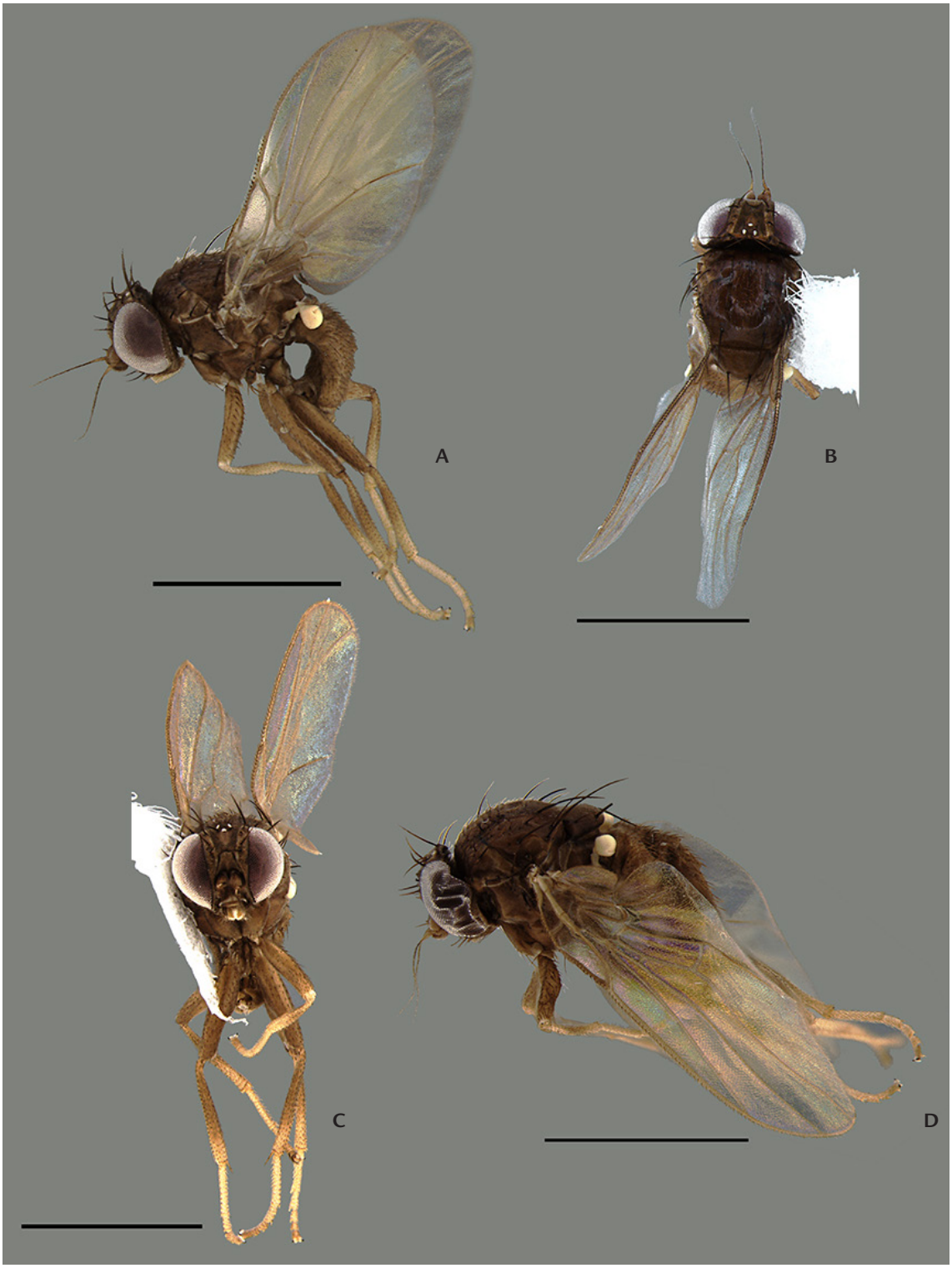

Figure 8. *Cerodontha* (*Poemyza*) *teresopoliensis* sp. nov., habitus, male, paratypes: (A) lateral view; (B) dorsal view; (C) head, frontal view; (D) female, habitus. Scale bars: 1 mm.

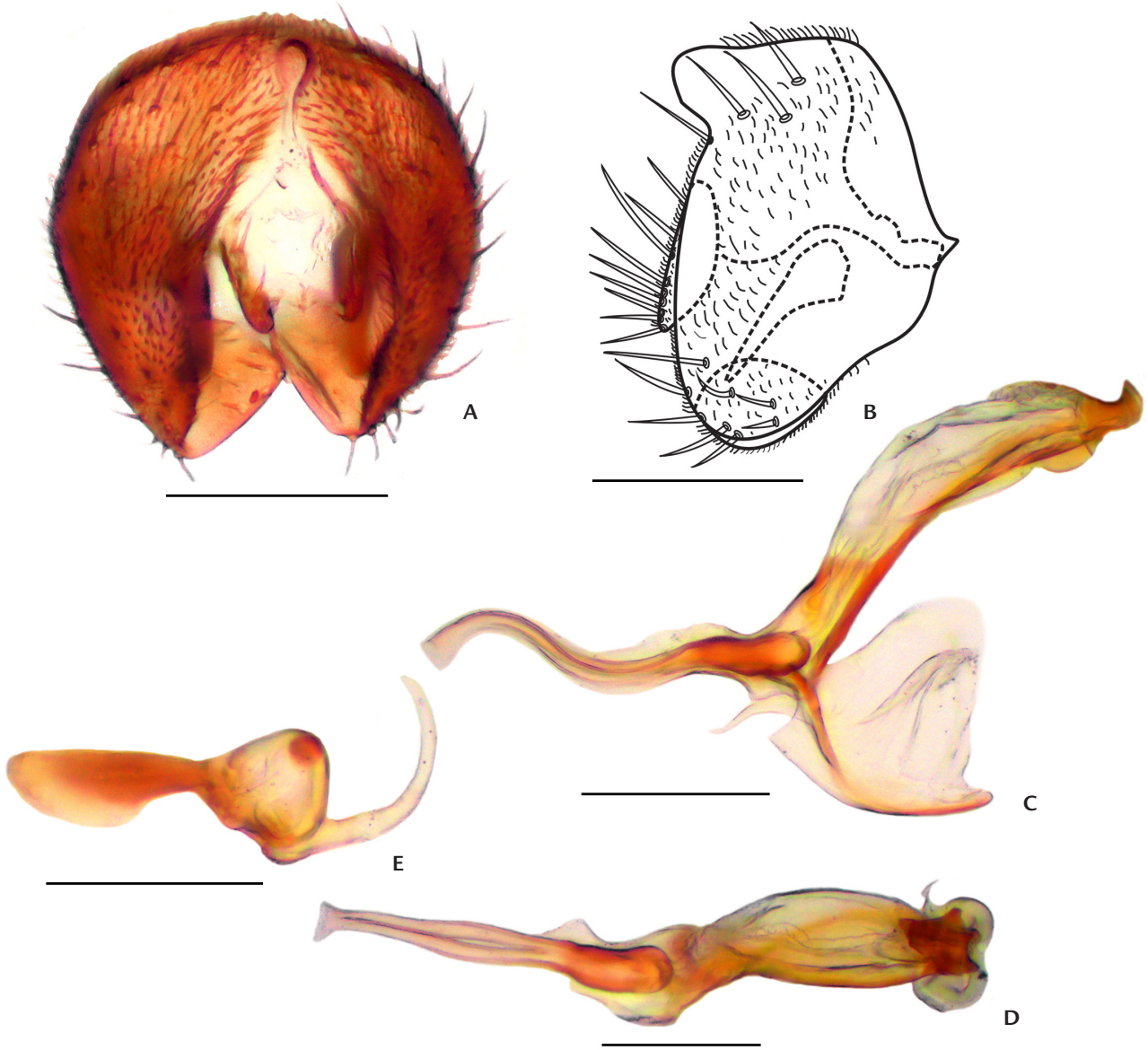

Figure 9. *Cerodontha* (*Poemyza*) *teresopoliensis* sp. nov., male genitalia, holotype: (A) cercal plate, dorsal view; (B) cercal plate, lateral view; (C) phallus, lateral view; (D) phallus, ventral view; (E) ejaculatory apodeme. Scale bars: 0.01 mm, except B = 0.1 mm.

to-orbital plate and parafacial not prominent. Lunule higher than wide, narrower near to suture and reaching anterior ori. First flagellomere short, oval, kidney-shaped and with small hairs. Arista long, short pubescent. Gena narrow and rounded, slightly projecting posteriorly (Fig. 8A–D).

Chaetotaxy. Two to three incurved ori, shorter than ors; two to three reclinate ors equally developed. Ocellar and postocellar setae subequal to ors. One row of long and reclinate orbital setulae. Eye pilose in males. Three setae apically on each palpus. Presutural dorsocentral absent, three postsutural dorsocentral setae decreasing in length. Four to five rows of acrostichal setulae. Prescutellar acrostichal setae absent. Lateral scutellar setae reduced, about half of the length of the apical setae. Mid tibia with one short and fine lateromedial seta.

Coloration. Body mostly brown. Fronto-orbital plate and ocellar triangle yellowish brown, slightly shining. Frons

brown, with pruinosity. Lunule and face yellowish brown with pruinosity. Scape and pedicel yellowish brown. First flagellomere yellowish brown, darker apically. Clypeus slightly shining brown. Palpus brown. Labellum yellow. Scutum and scutellum slightly shining. Pleurae brown, with a yellow stripe on superior and posterior margins of anepisternum. Wing hyaline, yellow at base. Calypter greyish yellow, margin and hairs brown. Halter yellow. Legs brown, with apex of fore femur and base of fore tibiae yellowish, tarsi yellowish on all legs. Abdomen slightly shining.

Genitalia. Epandrium with well-developed and rounded supra-anal process, without spines on inner margin. Cerci very short and narrow, setulose, with a distinct long apical seta. Surstylus directed inwards with some setae (Fig. 9A, B). Subepandrial sclerite slightly curved apically. Hypandrium U-shaped. Basiphallus long and tubular, sclerotized laterally. Hypophallus long and narrow, membranous dorsally, with a long and curved clear extension basally. Paraphallus absent. Mesophallus narrow. Distiphallus divided in two long, narrow and slightly S-shaped tubules that is 2.5 times longer than mesophallus, widening to little broad apical cup; slightly recurved apically (Fig. 9C, D). Ejaculatory apodeme small, with blade twice larger than stem; sperm pump round and clear, with a rounded sclerotized process laterally (Fig. 9E).

Etymology. The epithet refers to the type locality of holotype and paratypes.

Host. Unknown.

Distribution. Brazil.

Remarks. This species is very similar to *Cerodontha* (*P.*) *bambusae* Martinez, 1992, specially of the phallus shape. However, differs in the following characters: longer wing length, without presutural and three postsutural dorsocentrals, a shorter mesophallus with a rounded base, and a longer hypophallus. In contrast, *C.* (*P.*) *bambusae* has a shorter wing length of 1.55 mm, 2+1 dorsocentrals, a longer mesophallus, rectilinear at the base, and a shorter hypophallus.

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