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Two new Brazilian species of Cis Latreille, 1796
(Coleoptera: Tenebrionoidea: Ciidae)

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Abstract

In this paper, we present the descriptions of two species of Cis Latreille, C. fiuzai sp. nov. and C. gumiercostai sp. nov., based on external morphology including male genitalia. We propose that these new species belong to the C. comptus group. These species are known from Araponga and Cardeal Mota (Minas Gerais State, Southeastern Brazil), respectively. Cis gumiercostai is the fourth species of Ciidae reported from the Cerrado vegetation (Brazilian Savana).

Key words: Neotropical Region, Brazil, Ciinae, Ciini, comptus group, beetle, male genitalia

Introduction

Cis Latreille, 1796 (Coleoptera: Ciidae) is a worldwide genus, with around 370 described species (Abdullah 1973) and dozens of new species waiting to be described. The uncer-
tainty about the limits of this genus have already led to many cases of synonym, indicating that it urges a revision. The subgeneric division of Cis is unclear and not always adopted. Therefore, species groups are used more commonly than subgenera in the genus Cis. However, it should be emphasized that these species-groups are just taxonomic tools, and cannot be assumed as being monophyletic clades.

In the last eight years, the C. comptus group was one of the most studied species-groups of Cis. Since the delimitation of the group, the number of known species raised from four (Lawrence 1971) to nine (Lopes-Andrade et al. 2003). In this work, we describe two species of Cis from Brazil, C. fiuzai sp. nov. and C. gumiercostai sp. nov., both belonging to the comptus group.

Methods

Specimens of C. fiuzai sp. nov. and C. gumiercostai sp. nov. were collected in bracket mushrooms from two localities, Araponga and Cardeal Mota, respectively, both in Minas Gerais State (Southeastern Brazil).

For external morphology, some specimens were analysed and photographed in a scanning electron microscope. The specimens were dehydrated in a series of alcohol and acetone solutions, critical point dried, mounted on stubs and sputter-coated with gold. Genitalia extraction and examination followed Lopes-Andrade et al. (2003). Ten paratypes (5 males and 5 females) from each species were measured under a stereomicroscope (Leica MZ 12) according to Lawrence (1987).

We also analysed the male genitalia of other species of the comptus group for comparison: C. comptus Gyllenhal; C. leoi Lopes-Andrade et al.; C. striolatus Casey; C. tauriensis Krőlik; and C. versicolor Casey. Schematic representations of the male genitalia were provided by some authors for the following species: C. orius Kompantsev and C. seriatocribratus Reitter (Kompantsev 1996); C. striatulus Mellé (Lawrence 1971). The morphology of the male genitalia of C. clavicornis Baudi is unknown for us.

Cis fiuzai Almeida & Lopes-Andrade, sp. nov. (Figs. 1–5)


Diagnosis. This species can be distinguished from the other described Brazilian species of Cis, but C. leoi, by the following combination of characteristics: (i) distinct seriate and dual elytral punctuation; (ii) lack of conspicuous frонтoclypeal tubercles in both genders. It can be easily distinguished from C. leoi and C. gumiercostai sp. nov., and also from the other species of the comptus group, by the morphology of the male genitalia.
Description. Male. Body length (excluding head): 1.45–1.60 mm (mean = 1.54; S.D. = 0.05); elytral length: 1.0–1.1 mm (mean = 1.04; S.D. = 0.04); greatest elytral width: 0.65–0.70 mm (mean = 0.69; S.D. = 0.02); greatest pronotal width: 0.55–0.60 mm (mean = 0.58; S.D. = 0.03); greatest depth: 0.45–0.55 mm (mean = 0.52; S.D. = 0.04). Body 2.21–2.29 × as long as elytral width (mean = 2.23; S.D. = 0.03), convex, opaque on dorsum, dark yellowish brown; antennae, palpi and legs yellowish brown.

Head convex, slightly concave in the middle of vertex, sparsely and inconspicuously punctate; punctures uniform in size, each bearing one short and robust yellowish bristle; intervals among punctures finely reticulate; sides of clypeus angulate; antenna with 3rd segment as long as 4th; 5th to 7th subequal, each one with half the length of the 4th; 8th to 10th forming a loose club, each club segment bearing four “sensillifers” formed by a group of short, sparse and not well-organized sensillae.

FIGURES 1–4. Scanning electron microscopy of Cis fiuzai sp. nov. (males) evidencing some features of the external morphology. 1. Dorsal view, scutellum surrounded by part of elytra and pronotum. 2. Ventral view, prosternum and prosternal process. 3. Ventral view evidencing the protibia; note the angulate outer apex of protibia (arrow). 4. Detail of the first ventrite showing the setose patch (arrow). Scale bars: 50µm.
Pronotum 0.82–0.92 × as long as broad (mean = 0.86; S.D. = 0.05), convex; anterior margin broadly rounded, slightly curved inward in each side; anterior angles not produced; lateral margins narrowly ridge, finely crenulate, barely visible for their entire lengths from above; dorsum irregularly punctate; punctures uniform and similar in size to those on head. Each bearing a short, robust, yellowish bristle; intervals among punctures finely reticulate. Scutellum pentagonal (Fig. 1). Elytra 1.43–1.57 × as long as broad (mean = 1.51, S.D. = 0.05), 1.82–2.22 × as long as pronotum (mean = 2.09; S.D. = 0.16); sides subparallel in basal two thirds, then gradually converging to apex; lateral margins not visible from above, except for basal corners; disc with dual and seriate punctuation, but base subseriate, the larger punctures being two to four times the size of the smaller ones; the smaller punctures inconspicuous, bearing bristles similar to those on pronotum.

Prosternal disc weakly tumid medio-longitudinally; prosternal process parallel-sided, almost the same length as pro sternum and slightly curved (Fig. 2). Outer angle of protibial apex angulate (Fig. 3). Metasternum with a very small median suture (discrimen); disc of metasternum with a small concavity. First ventrite bearing a setose patch (Fig. 4).

**FIGURE 5.** Whole view of the male genitalia of *Cis fiuzai sp. nov.* (male) evidencing the ninth tergite (ix-T), eighth sternite (viii-S), basal piece (bp), tegmen (teg) and median lobe (ml). Scale bar: 100µm.
Male genitalia (Fig. 5). Eighth sternite subtrapezoidal, with its posterior margin deeply curved inward. Tegmen with parallel lateral margins; basiconical sensillae concentrated at apex; apical margin rounded, with a small but conspicuous emargination at middle; basal margin rounded. Median lobe 0.8 × as long as tegmen, parallel sided in its basal three-fourths, then converging to apex.

Female. Body length (excluding head): 1.55–1.75 mm (mean = 1.64; S.D. = 0.10); elytral length: 1.05–1.20 mm (mean = 1.12; S.D. = 0.08); greatest elytral width: 0.65–0.80 mm (mean = 0.70; S.D. = 0.06); greatest pronotal width: 0.55–0.70 mm (mean = 0.63; S.D. = 0.06); greatest depth: 0.50–0.60 mm (mean = 0.54; S.D. = 0.04). First ventrite without a setose patch.

Other specimens examined. Paratypes (51): 21 males, 30 females, same data as holotype. Besides a locality label, all paratypes have a yellow label with their identifications.

Host fungus. Bracket mushroom (Basidiomycetes: Polyporaceae sensu lato): Pycnoporus sanguineus and an unidentified species, both species growing in a fence made of “Candeia” wood (Vanillosmopsis sp.).

Etymology. This species is named in honor of Paulo Sérgio Fiuza Ferreira. Dr. Fiuza is currently a Major Professor in Universidade Federal de Viçosa (UFV), and is also the curator of the collection of “Museu Regional de Entomologia” (UFV/CCB). He is also advising and coadvising four graduating students, three of them working with Ephemeroptera. As a taxonomist, he has a huge experience with Miridae and is, with no doubt, one of the most important specialists of this family.

Distribution. Known from a single field collection in Araponga (Minas Gerais State, BRAZIL).

Depositories. Holotype (male), 1 male and 1 female paratype at “Museu de Zoologia da Universidade de São Paulo”, São Paulo, SP, BRAZIL. Two specimens will be deposited in the following personal or institutional collections: Mr. Ayr de Moura Bello, BRAZIL; Mr. Rafal Ruta, POLAND; Mr. Roman Królik, POLAND; Dr. Paulo Sérgio Fiuza Ferreira, “Museu de Entomologia da Universidade Federal de Viçosa”, Viçosa, MG, BRAZIL; Dr. John F. Lawrence, Australian National Insect Collection, CSIRO Entomology, Canberra, AUSTRALIA; Dr. Philip D. Perkins, Museum of Comparative Zoology, Harvard University, USA; Dr. Chuck Bellamy, California State Collection of Arthropods, Sacramento, USA. Remaining paratypes (35) are in the personal collection of the junior author.

Cis gumiercostai Almeida & Lopes-Andrade, sp. nov. (Figs. 6–10)


Diagnosis. This species can be distinguished from the other described Brazilian species of Cis, but C. leoi, by the following combination of characteristics: (i) distinct seriate
and dual elytral punctation; (ii) lack of conspicuous frontoclypeal tubercles in both genders. It can be easily distinguished from *C. leoi* and *C. fiuzai* sp. nov., and also from the other species of the *comptus* group, by the morphology of the male genitalia.

**Description.** Male. Body length (excluding head): 1.45–1.65 mm (mean = 1.55; S.D. = 0.09); elytral length: 0.95–1.1 mm (mean = 1.03; S.D. = 0.08); greatest elytral width: 0.60–0.70 mm (mean = 0.66; S.D. = 0.05); greatest pronotal width: 0.55–0.65 mm (mean = 0.60; S.D. = 0.05); greatest depth: 0.45–0.50 mm (mean = 0.48; S.D. = 0.03). Body 2.29–2.42 × as long as elytral width (mean = 2.35; S.D. = 0.07), convex, opaque on dorsum, dark yellowish brown; antennae, palpi and legs yellowish brown.

**FIGURES 6–9.** Scanning electron microscopy of *Cis gumiercostai* sp. nov. (males) evidencing some features of the external morphology. 1. Dorsal view, scutellum surrounded by part of elytra and pronotum. 2. Ventral view, prosternum and prosternal process. 3. Ventral view evidencing the protibia; note that the outer angle of the protibial apex is pronounced forming a tooth (arrow). 4. Detail of the first ventrite showing the setose patch (arrow). Scale bars: 50µm.

Head convex, deeply and ovaly concave in the middle of vertex, conspicuously punctate; punctures uniform in size, bearing short and robust yellowish bristles; intervals
among punctures finely reticulate; clypeus with one small, inconspicuous tubercle on each side; antennae with 3rd segment as long as 4th; 5th to 7th subequal, each one with approximately half the length of the 4th; 8th to 10th forming a loose club, each club bearing four “sensillifers” formed by a group of short, sparse and not well-organized sensillae.

Pronotum 0.77–0.92 × as long as broad (mean = 0.87; S.D. = 0.06), convex; anterior margin broadly rounded, each side curved inward; anterior angles slightly produced; lateral margins narrowly ridge, finely crenulate, barely visible for their entire lengths from above; dorsum irregularly and distinctly punctate; punctures uniform and similar in size to those on head, each bearing a short, robust, yellowish bristle; intervals among punctures finely reticulate. Scutellum subpentagonal (Fig. 6). Elytra 1.50–1.58 × as long as broad (mean = 1.56; S.D. = 0.04), 1.90–2.20 × as long as pronotum (mean = 1.98; S.D. = 0.13); sides subparallel in basal two-thirds, then gradually converging to apex; lateral margins not visible from above, except for basal corners; base and disc with dual and seriate punctuation, the larger punctures being two to four times the size of the smaller ones; the smaller punctures inconspicuous, bearing bristles similar to those on pronotum.

Prosternal disc slightly convex; prosternal process parallel sided, slightly curved and smaller in length than the prosternum (Fig. 7). Outer apical angle of protibia produced forming a tooth (Fig. 8). Metasternum with longitudinal suture (discrimen) in its middle, extending from base to disc. First ventrite bearing a setose patch (Fig. 9).

Male genitalia (Fig. 10). Eighth sternite subtrapezoidal, with its posterior margin slightly curved inward. Tegmen with diverging lateral margins; basiconical sensillae distributed along the apical and until the middle of the lateral margins; apical margin strongly emarginate at middle, forming two lateral lobes; basal margin rounded. Median lobe 0.67× as long as tegmen, subparallel sided in its basal three-fourths, then slightly constricted and expanded in a rounded apex, forming a somewhat globular apex.

Female. Body length (excluding head): 1.40–1.65 mm (mean = 1.56; S.D. = 0.10); elytral length: 1.0–1.15 mm (mean = 1.08; S.D. = 0.06); greatest elytral width: 0.65–0.65 mm (mean = 0.65; S.D. = 0.65); greatest pronotal width: 0.55–0.60 mm (mean = 0.58; S.D. = 0.03); greatest depth: 0.45–0.50 mm (mean = 0.48; S.D. = 0.03). First ventrite without a setose patch.

Other specimens examined. Paratypes (51): 24 males, 27 females, same data as holotype. Besides a locality label, all paratypes have a yellow label with their identifications.

Host fungus. Bracket mushroom (Polyporaceae sensu lato), unidentified species, growing in a wood fence.

Etymology. This species is named in honor of Fabiano Gumier-Costa, who was wandering around the Cerrado vegetation of Serra do Cipó while C. Lopes-Andrade collected this species. Fabiano is an enthusiastic of insect taxonomy, etology and ecology. Recently, he has got his Master Degree in Entomology with a dissertation on the ecology of Ciidae from the Amazon Forest.
FIGURE 10. Whole view of the male genitalia of *Cis gumiercostai* sp. nov. (male) evidencing the ninth tergite (ix-T), eighth sternite (viii-S), basal piece (bp), tegmen (teg) and median lobe (ml). Scale bar: 100µm.

**Distribution.** Known from a single field collection in Cardeal Mota (dist. Santana do Riacho, Minas Gerais State, BRAZIL; 19°30’S, 43°44’W).

**Depositories.** Holotype (male), 1 male and 1 female paratype at “Museu de Zoológia da Universidade de São Paulo”, São Paulo, SP, BRAZIL. Two specimens will be deposited in the following personal or institutional collections: Mr. Ayr de Moura Bello, BRAZIL; Mr. Rafał Ruta, POLAND; Mr. Roman Król, POLAND; Dr. Paulo Sérgio Fiuza Ferreira, “Museu de Entomologia da Universidade Federal de Viçosa”, Viçosa, MG, BRAZIL; Dr. John F. Lawrence, Australian National Insect Collection, CSIRO Entomology, Canberra, AUSTRALIA; Dr. Philip D. Perkins, Museum of Comparative Zoology, Harvard University, USA; Dr. Chuck Bellamy, California State Collection of Arthropods, Sacramento, USA. Remaining paratypes (35) are in the personal collection of the junior author.
Discussion

*Cis fiuzai* and *C. gumiercostai* are here placed in the *comptus* group due to the following combination of characteristics: (i) distinct seriate and dual elytral punctuation; (ii) lack of conspicuous frontoclypeal tubercles in male; and (iii) the morphology of the male genitalia. These characteristics were used by Lopes-Andrade et al. (2003) to place *C. leoi* Lopes-Andrade et al. in the same group. The tegmen of *C. fiuzai* is similar to that of *C. striolatus* and *C. versicolor*, and its median lobe resembles that of *C. comptus*, *C. striolatus* and *C. tauriensis* (pers. obs.). The tegmen of *C. gumiercostai* is most similar to that of *C. leoi*, but it also resembles other species of the *comptus* group such as *C. comptus*, *C. orius*, *C. seriatocribratus* and *C. tauriensis*. However, the median lobe of *C. gumiercostai*, with a somewhat globular apex, is quite different from that of the other known species of the *comptus* group (pers. obs.).

*Cis gumiercostai* was collected in Cerrado (Brazilian Savana), and it is the fourth Ciidae species reported from this vegetation. There are three other species of Ciidae that occur in Cerrado: (i) *Xylographus brasiliensis* Pic; (ii) *C. validithorax* Pic; and (iii) *Porculus grossus* Lawrence. The type locality of the former species is “Rio Verde” (Pic 1916a), which is probably the Rio Verde city of Goiás State, Mid-Western Brazil (Lopes-Andrade & Zacaro 2003). The type locality of *C. validithorax* is “Goyaz” (Pic 1916b), which is an old way to refer to the Goiás State. However, it should be noted that before 1988, the Goiás State also included which is nowadays the Tocantins State (Northern Brazil). The great part of the Goiás and Tocantins States is covered by Cerrado.

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References


