Papéis Avulsos de Zoologia
Museu de Zoologia da Universidade de São Paulo

ARTICLE

Reinstatement of the genus *Macrocis* Reitter, 1878 (Coleoptera: Ciidae), with the description of a new Brazilian species

Cristiano Lopes-Andrade[1,4]; Igor Souza-Gonçalves[1,2,5] & Vivian Eliana Sandoval-Gómez[3,6]

[1] Universidade Federal de Viçosa, Departamento de Biologia Animal, Laboratório de Sistemática e Biologia de Coleoptera. Viçosa, MG, Brasil.
[2] Universidade Federal Rural de Pernambuco, Departamento de Agronomia, Laboratório de Taxonomia de Insetos. Recife, PE, Brasil.
[3] Department of Primary Industries, Biosecurity Queensland, National Fire Ant Eradication Program. Logan, QLD, Australia.
[4] ORCID: 0000-0001-9652-1369. E-mail: cristiano.lopes@ufv.br
[5] ORCID: 0000-0002-7447-0764. E-mail: igao_bio@yahoo.com.br
[6] ORCID: 0000-0002-9115-8254. E-mail: vivian.sandoval@dpi.qld.gov.au

Abstract. The genus *Macrocis* Reitter, 1878, is reinstated to accommodate the species previously placed in the *Cis taurus* species group, as follows: *Macrocis bahiensis* (Pic, 1916), new combination; *Macrocis cornelli* (Lawrence, 1971), new combination; *Macrocis diabolicus* Reitter, 1878, reinstated status; *Macrocis grandicornis* Pic, 1917, reinstated status; *Macrocis longipilis* (Pic, 1930), new combination; *Macrocis pubescens* (Friedenreich, 1881), new combination; *Macrocis rufescens* Pic, 1922, reinstated status; *Macrocis setifer* Gorham, 1883, reinstated status; *Macrocis taurus* Reitter, 1878, reinstated status; *Macrocis testaceimembris* Pic, 1916, reinstated status; and *Macrocis testaceus* Pic, 1916, with the unnecessary replacement name *Cis kawanabei* Lopes-Andrade, 2002, proposed as its junior synonym. The genus *Trichapus* Friedenreich, 1881, previously synonymized with *Cis* Latreille, 1797 and treated as part of the *Cis taurus* species group, is here synonymized with *Macrocis*. In addition, we describe *Macrocis monnei* Lopes-Andrade, Souza-Gonçalves & Sandoval-Gómez **sp. nov.,** the first species of *Macrocis* recorded from the state of Tocantins, in the North Region of Brazil.

Keywords. Ciinae; Ciini; *Cis taurus* species group; Minute tree-fungus beetles.

INTRODUCTION

The *Cis taurus* group comprises 11 described species characterized by a robust, strongly to moderately convex body and a distinctive male anterocephalic edge bearing a pair of conspicuous 'horns' of varying shapes (Oliveira *et al.,* 2013). These species are primarily Neotropical, with the exception of the Nearctic *Cis cornelli* Lawrence, 1971, which is known from Florida, North Carolina, and South Carolina in the USA (Lawrence, 1971). Some of these species were originally assigned to the genus *Macrocis* Reitter, 1878, which was later synonymized with *Cis* Latreille, 1797 by Lawrence (1971). Although the described species of the *taurus* group have been taxonomically reviewed, its actual diversity is known to be much higher (Oliveira & Lopes-Andrade, 2013; Oliveira *et al.,* 2013).

Since the review of the *taurus* group, two phylogenetic analyses of Ciidae based on molecular data have shown that these species do not cluster with the core species of *Cis,* namely those in the *boleti* and *fuscipes* groups (Lopes-Andrade & Grebennikov, 2015; Kobayashi & Sota, 2021). Furthermore, the accumulation of new morphological and taxonomic data on Ciidae since the synonymization of *Macrocis* in 1971 has led to the proposal of better-defined genera and the resolution of taxonomic issues involving the strongly polyphyletic genera *Ceracis* Mellié, 1849, and *Cis* (Lawrence, 2016; Souza-Gonçalves & Lopes-Andrade, 2025). In light of the systematic advances in Ciidae over the past five decades, the inclusion of the *taurus* group within *Cis* has become untenable.

The aims of this study are twofold: (1) to revalidate the genus *Macrocis* and (2) to describe the first species from the state of Tocantins (North Region of Brazil).

MATERIAL AND METHODS

Museum acronyms are as follows (curator name in parentheses): **CELC** = Coleção Entomológica do Laboratório de Sistemática e Biologia de Coleoptera da Universidade Federal de Viçosa,

Pap. Avulsos Zool., 2026; v.66 (Special Issue 1): e202666si1026
https://doi.org/10.11606/1807-0205/2026.66.special-issue-1.026
https://revistas.usp.br/paz
https://www.scielo.br/paz
Guest Editor: Marianna Vieira dos Passos Simões*
Received: 25/08/2025
Accepted: 15/12/2025
Published: 01/06/2026

ISSN On-Line: 1807-0205
ISNI: 0000-0004-0384-1825
https://zoobank.org/E6E3A6C7-79B8-4902-9696-838DAE4CEB80

* Senckenberg Research Institute and Natural History Museum Frankfurt, Frankfurt, Germany. ORCID: 0000-0003-4401-5530. E-mail: marianna.simoes@senckenberg.de

Viçosa, Minas Gerais, Brazil (Cristiano Lopes-Andrade); **CERPE** = Coleção Entomológica da Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brazil (Paschoal Coelho Grossi); **MNRJ** = Museu Nacional do Rio de Janeiro, Rio de Janeiro, Brazil (Marcela Laura Monné).

Terms for external morphology and male terminalia of ciids follow Lawrence *et al.* (2011), Lawrence (2016), and Lopes-Andrade & Lawrence (2005, 2011), but see also Oliveira *et al.* (2013) for the use of "tegmen". The term "anterocephalic edge" is used in place of "frontoclypeal ridge" to refer to the anterior part of the dorsum of the head, whose constitution is not clearly known (Souza-Gonçalves & Lopes-Andrade, 2020). The terms "single" and "dual" refer to setae or punctures that fall into one or two size classes, respectively. Both terms are traditionally used in the taxonomy of Ciidae (Rosa-Oliveira & Lopes-Andrade, 2023). The following abbreviations are used for measurements (in mm) and ratios of body and exposed sclerites (based on Souza-Gonçalves *et al.,* 2020): BW (width of the anterior edge of scutellar shield), CL (length of the antennal club), EL (elytral length along the midline), EW (greatest width of elytra), FL (length of antennal funicle, which includes the antennomeres between the pedicel and the first antennomere of the club), GD (greatest depth of body measured in lateral view), GW (greatest diameter of the eye), PL (pronotal length along midline), PW (greatest pronotal width), SL (length of scutellar shield), TL (total length counted as EL+PL, *i.e.,* excluding head). The GD/EW and TL/EW ratios indicate the degree of body convexity and elongation, respectively. The sums and ratios of antenna measurements are based on gross values, while the provided measurements of each antennomere are based on approximate values.

All the described species of the *Cis taurus* species group were examined, and the material is detailed listed in Oliveira & Lopes-Andrade (2013) and Oliveira *et al.* (2013). The characteristics cited in the description are from the holotype, unless otherwise specified. Transcription of labels, dissection, photography, and measurement of specimens follow the methods provided by Araujo & Lopes-Andrade (2016). We measured the holotype and selected paratypes, considering the observed size variation. Differences are given in the "Variation" section, along with standard measurements (mean and standard deviation) and ratios. The terminalia of one male and one female paratype were extracted.

RESULTS

Family Ciidae Leach, 1819
Subfamily Ciinae Leach, 1819
Tribe Ciini Leach, 1819
Macrocis Reitter, 1878, reinstated status

Trichapus Friedenreich, 1881, **new synonym.**

Type species: *Macrocis taurus* Reitter, 1878 (subsequent designation by Lawrence, 1971).

Diagnosis: Body robust, plump, and stocky, moderately to strongly convex. Dorsal vestiture ranging from short, inconspicuous setae (*M. rufescens, M. taurus*) to long, slender setae or stout bristles. Antennae (Fig. 2A) with 10 antennomeres; club composed of 3 antennomeres, each bearing four multi-pronged sensilla (= sensillifers). Apical maxillary palpomeres (Fig. 2D) fusiform. Labial palps (Fig. 2C) with 3 palpomeres; basal palpomeres reduced and inconspicuous; median palpomeres approximately twice as long as the subcylindrical apical palpomeres. Elytra usually with dual punctation (setose and glabrous punctures apparently equal-sized in *M. bahiensis*), macropunctures not much larger than micropunctures; apices not inflexed. Prosternum in front of coxae elevated beyond the level of the procoxae at the longitudinal midline, usually carinate. Prosternal process 0.8×-2× longer than the prosternal disc at the midline, broad and comparatively narrower at the middle, expanded at the apex, never sublaminate or laminate. Protibiae (Fig. 2E-F) only slightly expanded toward the apex, with outer edge simple and devoid of spines; outer apical angle produced into a stout tooth; apical edge bearing a row of spines. Meso- and metatibiae similar to the protibiae, but outer apical angle not produced into a tooth. Anterocephalic edge of males bearing a pair of conspicuous horns of variable shapes (in *M. monnei* **sp. nov.,** produced as a plate, broadly emarginate apically, forming two horns), and that of females with two short projections in the same position as the males' horns. Males with a sex patch on the first abdominal ventrite (absent in a few undescribed species), never covered by a flap.

Comparative notes: *Grossicis* Antunes-Carvalho *et al.,* 2012 is similar to *Macrocis* in the configuration of the tibiae and the elevated prosternal disc, but it differs by having the apical maxillary palpomere abruptly expanded, a sublaminate prosternal process, subconical procoxae, elytral apex with a diverging sutural flange, markedly reduced female terminalia, and the male anterocephalic edge bearing a broad lamina not apically emarginate (Antunes-Carvalho *et al.,* 2012). The genus *Abebaeocis* Souza-Gonçalves & Lopes-Andrade, 2025 is similar to *Macrocis,* particularly in the presence of the anterocephalic projections of males, but differs in having antennae with nine antennomeres, a moderately tumid prosternum, the outer apical angle of the protibiae neither produced nor toothed, and a short ovipositor. *Alcecis* Souza-Gonçalves & Lopes-Andrade, 2025 also have a similar vestiture, a tumid and carinate prosternum, and males with two anterocephalic horns, but can be distinguished by their antennae with eight antennomeres and a short ovipositor. *Anartioscelos* Souza-Gonçalves & Lopes-Andrade, 2025 somewhat resembles *Macrocis,* particularly in having antennae with ten antennomeres, males with similar anterocephalic projections, and a strongly tumid and carinate prosternum, but differs in the outer edges of all tibiae regularly serrate and with socketed spines between the serrations, and a short ovipositor. *Lipedanicis* Souza-Gonçalves & Lopes-Andrade, 2025 also resembles *Macrocis,* especially in males with

similar anterocephalic projections, but differs in having a short ovipositor and the outer edge of the protibiae usually irregularly serrate, with or without socketed spines; when the outer edge of the protibiae is smooth, the antennae have eight antennomeres.

Comments: The combination of a prosternal disc elevated beyond the level of the procoxae and protibiae with a spinose apical edge and a projected outer apical angle supports the reinstatement of *Macrocis.* Furthermore, available molecular data on *Macrocis* species indicate that they do not cluster with the core of the genus *Cis,* particularly with the type species *Cis boleti* (Scopoli, 1763) (Lopes-Andrade & Grebennikov, 2015; Kobayashi & Sota, 2021). All species not originally described in *Macrocis* but included in the *taurus* group *sensu* Oliveira *et al.* (2013) are hereby transferred to *Macrocis,* as follows: *Malacocis bahiensis* Pic, 1916; *Cis cornelli* Lawrence, 1971; *Cis longipilis* Pic, 1930; and *Trichapus pubescens* Friedenreich, 1881. The latter is the type species of *Trichapus* Friedenreich, 1881, as designated by Lawrence (1987). As a consequence of the reinstatement of *Macrocis* and in the interest of taxonomic stability, the genus *Trichapus* Friedenreich, 1881 is hereby synonymized with *Macrocis* Reitter, 1878. *Cis longipilis* was doubtfully included in the *taurus* group by Oliveira *et al.* (2013), but V.E. Sandoval-Gómez examined syntypes deposited in the Museo Argentino de Ciencias Naturales and confirmed that the species belongs to *Macrocis.* Among the species originally described in *Macrocis,* all of which are reinstated here, the case of *Cis kawanabei* Lopes-Andrade requires detailed explanation. *Macrocis testaceus* Pic, 1916 was originally described in the genus *Macrocis,* which was later synonymized with *Cis* Latreille, 1797 by Lawrence (1971). Consequently, the species was transferred to *Cis* as *Cis testaceus* (Pic, 1916). However, this combination created a case of secondary homonymy with *Cis testaceus* Fåhraeus, 1871. To resolve this, *Cis kawanabei* Lopes-Andrade, 2002 was proposed as a replacement name for *Cis testaceus* (Pic, 1916). With the present revalidation of *Macrocis,* the species returns to its original combination, *Macrocis testaceus* Pic, 1916. According to Article 59.4 of the International Code of Zoological Nomenclature (ICZN, 1999): "A species-group name rejected after 1960 on grounds of secondary homonymy is to be reinstated as valid by an author who considers that the two species-group taxa in question are not congeneric, unless it is invalid for some other reason". Therefore, *Cis kawanabei* becomes an unnecessary replacement name and a junior synonym of *Macrocis testaceus* Pic, 1916. The female terminalia of *Macrocis* have not been extensively studied yet, but a tendency for the reduction of the paraprocts is a potential diagnostic character to be added for the genus. The ovipositor of *M. pubescens* is similar to that of *M. monnei,* particularly in the paraprocts slightly shorter than the gonocoxites combined and the gonocoxites transversely divided into two lobes ventrally (pers. obs.).

Included species. Below is a list of the *Macrocis* species, considering all the above-mentioned taxonomic acts and the new species described here.

Macrocis bahiensis (Pic, 1916), **new combination**
Macrocis cornelli (Lawrence, 1971), **new combination**
Macrocis diabolicus Reitter, 1878, **reinstated status**
Macrocis grandicornis Pic, 1917, **reinstated status**
Macrocis longipilis (Pic, 1930), **new combination**
Macrocis monnei Lopes-Andrade, Souza-Gonçalves & Sandoval-Gómez **sp. nov.**
Macrocis pubescens (Friedenreich, 1881), **new combination**
Macrocis rufescens Pic, 1922, **reinstated status**
Macrocis setifer Gorham, 1883, **reinstated status**
Macrocis taurus Reitter, 1878, **reinstated status**
Macrocis testaceimembris Pic, 1916, **reinstated status**
Macrocis testaceus Pic, 1916, **reinstated status**
Cis kawanabei Lopes-Andrade, 2002, **new junior synonym**

Macrocis monnei sp. nov. (Figs. 1A-F, 2A-G, 3A-F)

Type material: ♂ Holotype (CELC) "BR: TO, Araguaína, UFT-EMVZ, 07°06'09"S, 48°11'56"W, 207 m, ii.2015, leg. V.E. Sandoval [printed]\ *Macrocis monnei* Lopes-Andrade, Souza-Gonçalves & Sandoval-Gómez HOLOTYPUS [red paper; printed]". **Paratypes:** 15♂♂ and 20♀♀ as follows, same locality data as the holotype, 12♂♂ and 11♀♀ additionally labeled "Amostra 5" (10♂♂ and 9♀♀ CELC, 1♂ and 1♀ CERPE, 1♂ and 1♀ MNRJ), 3♂♂ and 9♀♀ additionally labeled "Amostra 6" (3♂♂ and 9♀♀ CELC, 1♂ and 1♀ completely dissected and mounted in card). All paratypes are additionally labeled "*Macrocis monnei* Lopes-Andrade, Souza-Gonçalves & Sandoval-Gómez PARATYPUS [yellow paper; printed]".

Etymology: The specific epithet is dedicated to the eminent coleopterist Miguel Angel Monné Barrios (1938-2024), in recognition of his outstanding contributions to the taxonomy and faunistics of Brazilian beetles, particularly the Cerambycidae. Noun in the Latin genitive singular.

Diagnosis: Body robust, strongly convex, with dorsal vestiture of conspicuous stout bristles. Dorsal punctation coarse, single on the pronotum and indistinctly dual on elytra, the latter with each bristle arising from a micropuncture. Lateral carinae smooth, slightly explanate, but completely concealed in dorsal view. Male anterocephalic edge produced as a plate, broadly emarginate apically, forming two parallel horns with rounded apices, which distinguishes the species from all other described *Macrocis,* in which the horns are well separated basally, not rising from a plate. Male abdominal sex patch about ⅕ the length of the first ventrite at midline. *Macrocis monnei* is most similar to *M. grandicornis,* particularly in the robust, convex body, with vestiture of long stout bristles, lateral pronotal carinae not visible from above, and male anterocephalic horns rounded apically, but the latter differs in the male abdominal sex patch located close to the posterior edge of the ventrite. Males

of *M. pubescens* and *M. testaceimembris* also have antero-cephalic horns rounded apically, but the lateral pronotal carinae are partially visible in dorsal view.

Description, adult male, holotype (Fig. 1A-E): Adult in good condition; fully pigmented, except for hypomera and coxae. Measurements in mm: TL 2.00, PL 0.88, PW 1.15, EL 1.13, EW 1.13, GD 0.93. Ratios: PL/PW 0.76, EL/EW 1.00, EL/PL 1.29, GD/EW 0.83, TL/EW 1.78. **Body** robust, strongly convex, sides subparallel for most of their lengths, dorsum brown; venter brown, except for pale hypomera and coxae, and light brownish prosternum and femora;

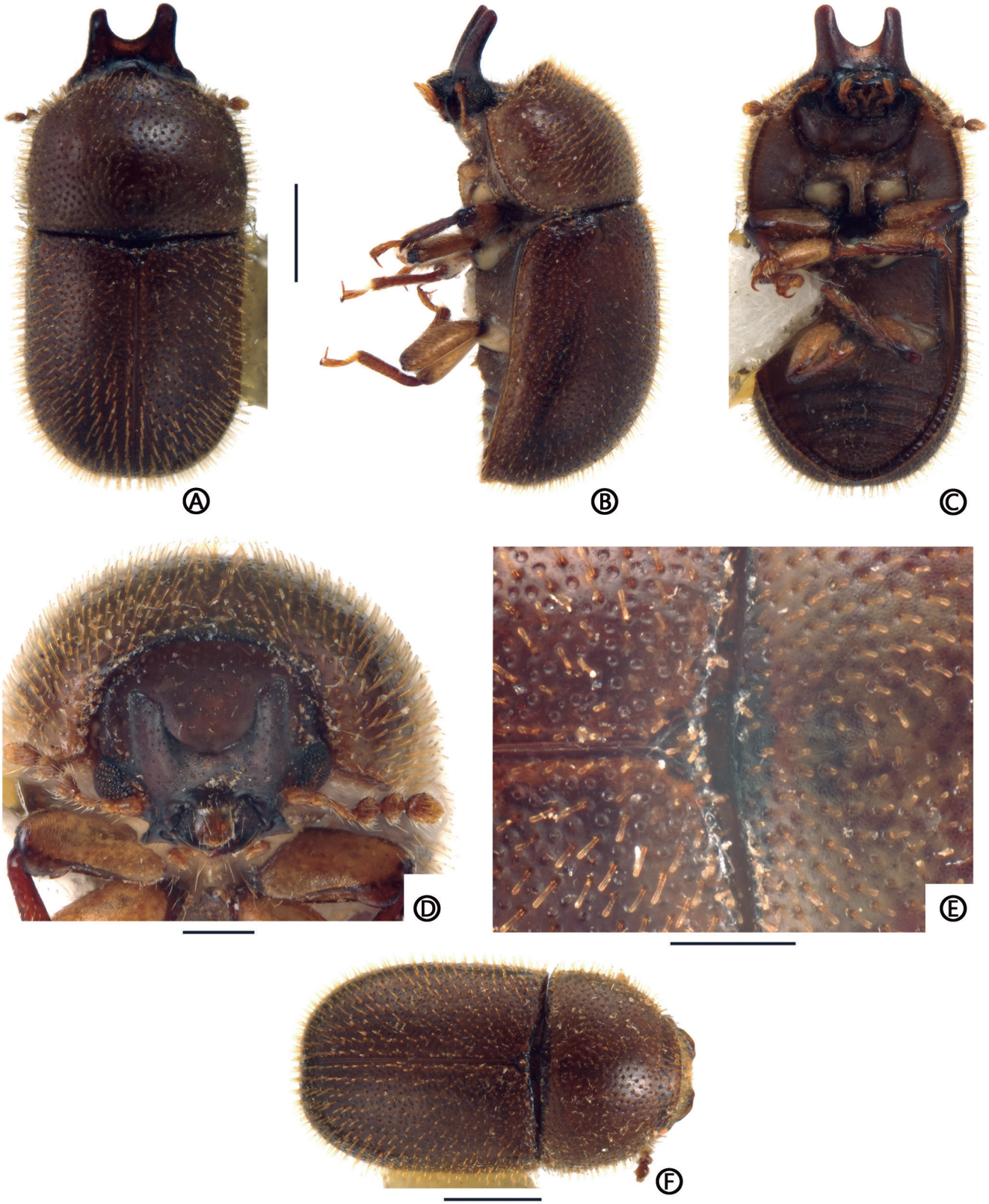

Figure 1. *Macrocis monnei* Lopes-Andrade, Souza-Gonçalves & Sandoval-Gómez **sp. nov.,** male holotype (A-E) and female paratype (F): (A) Dorsal view. (B) Lateral view. (C) Ventral view. (D) Frontal view. (E) Scutellar shield and part of the pronotum and elytra. (F) Dorsal view. Scale bars: 0.5 mm (A-C, F), 0.2 mm (D-E).

dorsal vestiture of conspicuous suberect to erect, stout yellowish bristles; ventral vestiture of decumbent, long, slender yellowish setae. **Head** not visible from above, except for anterocephalic projection; dorsum finely, markedly microreticulate; punctures and setae very sparse, smaller than those on pronotum; anterocephalic edge produced forward as a plate with parallel sides, with apical, deep emargination, broadly rounded, forming two horns with rounded apices (Fig. 1D). **Antennae** measurements as follows (in mm, left antenna measured): 0.08, 0.05, 0.06, 0.04, 0.03, 0.02, 0.02, 0.07, 0.07, 0.11 (FL 0.17, CL 0.25, CL/FL 1.52). **Eyes** subcircular, coarsely facetted, with more than 100 ommatidia; GW 0.16 mm. **Gula** 0.53× as wide as head. **Labrum** (Fig. 2B) elongated. **Pronotum** (Fig. 1E) punctation coarse; interspaces, finely microreticulate; punctures distanced from each other by 1-2 puncture-widths; each puncture bearing one slightly decumbent, stout bristle, 3.5×-4× a puncture-width; anterior edge broadly rounded; lateral carinae smooth (not crenulate), slightly explanate, completely concealed in dorsal view. **Scutellar shield** (Fig. 1E) subtriangular, with a few bristles; BW 0.06 mm; SL 0.05. **Elytra** (Fig. 1E) with dual, confuse punctation; punctures distanced from each other by 0.5-2 macropuncture-widths; micropunctures approximately 0.75× as wide as macropunctures; interspaces, smooth, shiny; vestiture of stout bristles approximately 6.5× as long as micropunctures, subseriate; each stout bristle arising from a micropuncture; macropunctures, glabrous. **Metathoracic wings** well developed, apparently functional for flight. **Hypomera** markedly microreticulate; punctation coarse, shallow, more conspicuous close to posterior edges. **Prosternum** biconcave, con-

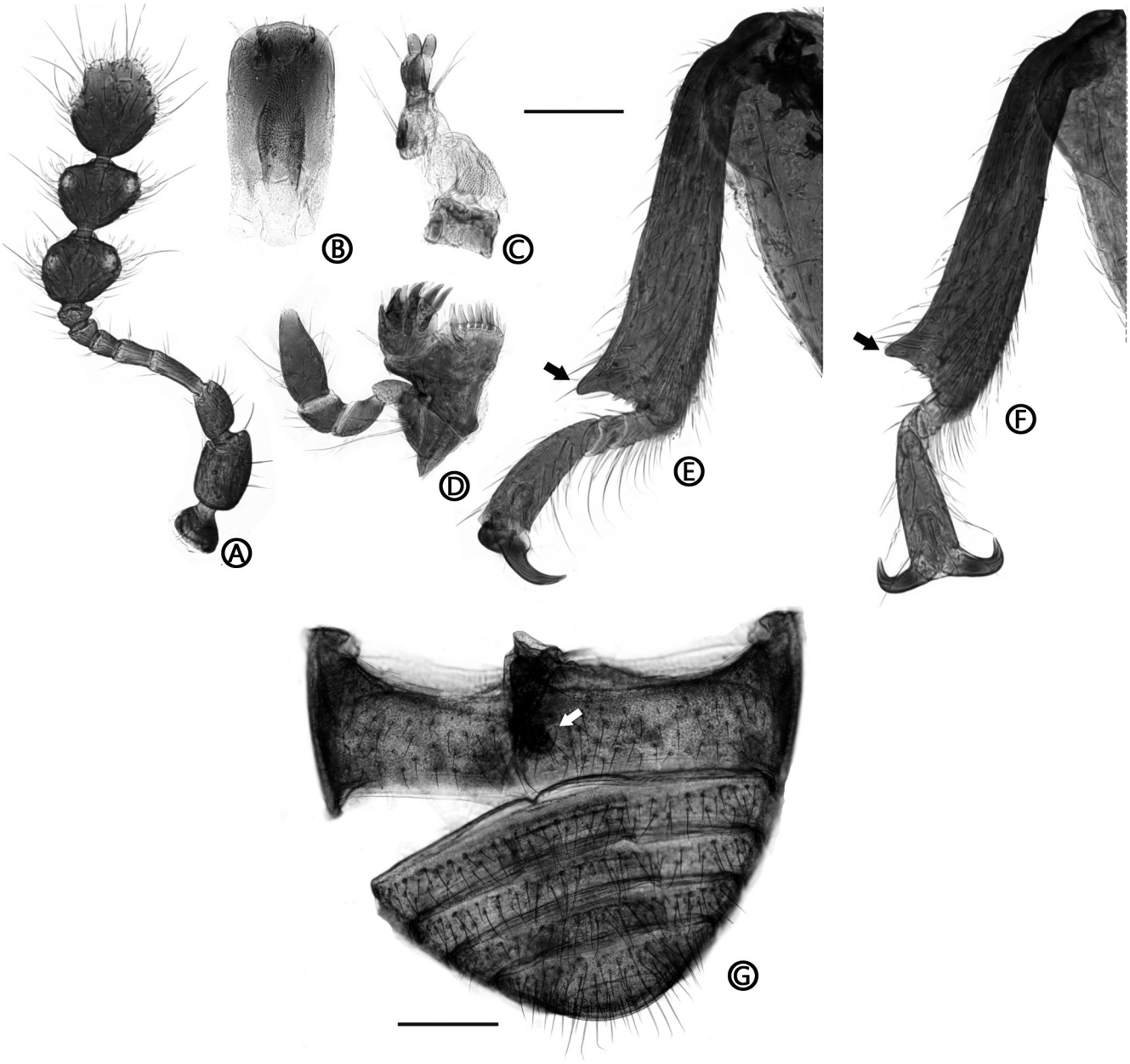

Figure 2. *Macrocis monnei* Lopes-Andrade, Souza-Gonçalves & Sandoval-Gómez **sp. nov.,** male (A-E, G) and female (F) paratypes: (A) Right antenna. (B) Labrum. (C) Labium with part of hypopharynx. (D) Right maxilla. (E-F) Right protibiae showing the outer apical tooth (arrows). (G) Abdominal ventrites showing the setose sex patch (arrow). Scale bars: 0.1 mm (A-F), 0.2 mm (G).

spicuously carinate at the longitudinal midline; apparently impunctate; surface finely microreticulate, somewhat stretched near the lateral edges. **Prosternal** process broad, slightly curved inwardly, approximately 2× as long as wide, 1.5× as long as prosternal disc at midline; apex slightly expanded; apical edge rounded. **Pro-, meso-, and metatibiae** 3.5×, 5.8×, and 6.2× as long as wide, respectively. **Metaventrite** finely microreticulate, shallowly punctate; discrimen conspicuous, about half the length of metaventrite at the longitudinal midline; median length about 0.7× the lateral length; minimum distance between meso- and metacoxae ⅓ the lateral length. **Abdominal ventrites** finely microreticulate, coarsely punctate; length of ventrites (in mm, from base to apex at the longitudinal midline) as follows: 0.25, 0.10, 0.10, 0.08, 0.15; first ventrite with one margined, subcircular setose sex patch at the center, about ⅕ as long as the ventrite at midline, with a transverse diameter of approximately 0.04 mm (Fig. 2G, arrow). **Male terminalia in a paratype** (Fig. 3A-D) with **sternite VIII** (Fig. 3A) with posterior edge deeply, roundly emarginate forming two subtriangular corners with long setae; edge between corners almost devoid of setae. **Basal piece** (Fig. 3B) subtriangular, approximately 1.7× as wide as long. **Tegmen** (Fig. 3C) subcylindrical, approximately 2.7× as long as wide, 0.22 mm long; anterior edge emarginated forming two lobes, each narrowed laterally by an excavation (Fig. 3C, black arrows); basiconical sensilla concentrated at the apical tips of lobes (Fig. 3C, red arrows). **Penis** (Fig. 3D) subcylindrical, approximately 5× as long as wide, 0.25 mm long; anterior portion membranous, with acute apex; lateral edges subparallel and more sclerotized at basal two-thirds, then converging to acute apex.

Adult females (Fig. 1): Similar to males, but the anterocephalic edge bearing two short, subrounded protuberances, slightly blunt apically; protibial tooth a bit less pronounced than in males. **Female terminalia** (Fig. 3E-F) with spiculum ventrale (Fig. 3E) approximately 1.13× as long as ovipositor; ovipositor (Fig. 3F) about 2× as long as wide, 0.5 mm long; paraprocts approximately 0.81× as long as gonocoxites (excluding gonostyli); gonocoxites transversely divided ventrally into two lobes; apices of distal gonocoxites sclerotized, extended beyond the opening of the vagina; gonostyli 2.25× as long as wide (excluding apical setae); proctigeral opening close to the border between basal and distal gonocoxital lobes.

Variation: Adult males, measurements in mm (n = 10, including the holotype): TL 1.78-2.10 (1.89 ± 0.11), PL 0.65-0.88 (0.77 ± 0.06), PW 0.90-1.15 (1.04 ± 0.08), EL 1.05-1.28 (1.12 ± 0.08), EW 1.00-1.15 (1.06 ± 0.05),

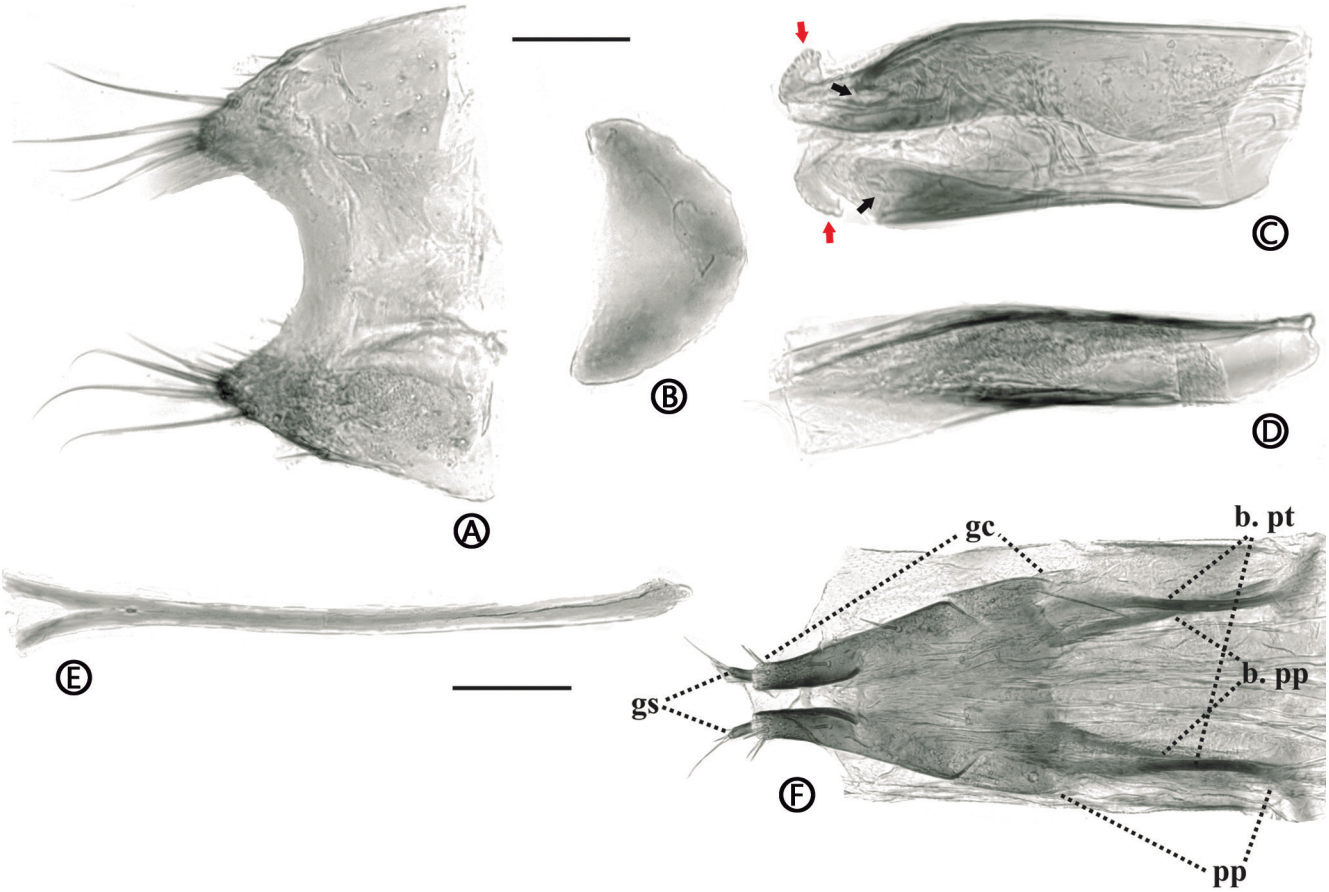

Figure 3. *Macrocis monnei* Lopes-Andrade, Souza-Gonçalves & Sandoval-Gómez **sp. nov.,** male (A-D) and female (E-F) paratypes: (A) Sternite VIII. (B) Basal piece. (C) Tegmen, note the lobes at the anterior edge, narrowed laterally by an excavation (black arrows), with basiconical sensilla concentrated at the apical tips of lobes (red arrows). (D) Penis. (E) Spiculum ventrale. (F) Ovipositor, showing gonostyli (gs), gonocoxites (gc), paraprocts (pp), baculi of paraprocts (b. pp), baculi of proctiger (b. pt). Scale bars: 0.05 mm (A-D), 0.1 mm (E-F).

GD 0.80-0.95 (0.89 ± 0.05), PL/PW 0.72-0.78 (0.74 ± 0.03), EL/EW 0.98-1.14 (1.05 ± 0.06), EL/PL 1.29-1.73 (1.46 ± 0.14), GD/EW 0.80-0.88 (0.84 ± 0.03), TL/EW 1.71-1.88 (1.78 ± 0.05). Adult females, measurements in mm (n = 10): TL 1.78-2.03 (1.89 ± 0.08), PL 0.68-0.83 (0.77 ± 0.05), PW 0.93-1.08 (1.01 ± 0.04), EL 1.05-1.23 (1.13 ± 0.06), EW 0.98-1.18 (1.07 ± 0.05), GD 0.83-0.95 (0.90 ± 0.04), PL/PW 0.73-0.79 (0.72 ± 0.02), EL/EW 1.00-1.17 (1.06 ± 0.06), EL/PL 1.33-1.63 (1.48 ± 0.10), GD/EW 0.77-0.90 (0.84 ± 0.04), TL/EW 1.72-1.90 (1.77 ± 0.06).

Host fungi: The specimens were collected from two distinct trametoid basidiomes in the same forest. The basidiomes were heavily degraded, with most of their tissues consumed by ciid beetles. It was not possible to accurately determine the species, but they resembled highly degraded basidiomes of *Trametes polyzona* (Pers.) Justo. Fresh basidiomes of this species were recently photographed at the same site.

Distribution: Neotropical. Known only from the type-locality Araguaína, in northern Tocantins (North Region of Brazil).

DISCUSSION

The genus *Macrocis* currently comprises 12 described species, but it is recognized as one of the most remarkable radiations among Ciidae. In the review of the *taurus* group, which corresponds to the genus *Macrocis* as reinstated here, the authors examined more than 80 Neotropical morphospecies (Oliveira *et al.,* 2013). Over the past 12 years, our research group has conducted numerous additional field collections (*e.g.,* Araujo *et al.,* 2015; Rosa-Oliveira & Lopes-Andrade, 2024), particularly in Colombia and Brazil, and has also received material from other researchers. As a result, a large number of undescribed species have accumulated in the CELC, many of them partially mounted and labeled, while thousands of specimens remain in ethanol, awaiting sorting. A very conservative estimate suggests that around one hundred new *Macrocis* species await description (Lopes-Andrade, pers. obs.). The number of new *Macrocis* species exceeds by far that of new species observed in other frequently collected Neotropical genera, such as *Ceracis* Mellié, 1849, *Cis* Latreille, 1797, and *Xylographus* Mellié, 1847. If all currently available new species of *Macrocis* were to be described, the genus would become the second most species-rich genus of Ciidae worldwide. However, at present, our efforts are focused on revising the limits of Neotropical genera and proposing new ones (Lopes-Andrade, 2024; Souza-Gonçalves & Lopes-Andrade, 2025; Souza-Gonçalves *et al.,* 2025a), rather than extensively describing the available new species.

Preliminary observations indicate that while some *Macrocis* species are polyphagous, others exhibit varying degrees of specialization and are associated with distinct fungal hosts. On Barro Colorado Island (Panama), about ten *Macrocis* species have been collected, each preferring different host fungi (Lawrence, 1973). *Macrocis pubescens* is polyphagous (Oliveira *et al.,* 2013; Rosa-Oliveira & Lopes-Andrade, 2024), as is *M. testaceus* (treated as *"Cis kawanabei"* in earlier works; Oliveira *et al.,* 2013; Rosa-Oliveira & Lopes-Andrade, 2024). Both species are widespread in the Neotropical region and are in need of taxonomic revision, as they may represent complexes of cryptic species. Notably, both exhibit polyphagous habits even within a single locality, with morphologically homogeneous populations (Rosa-Oliveira & Lopes-Andrade, 2024). *Macrocis cornelli* may be monophagous, with records only from *Nigrohirschioporus sector* (Ehrenb.) Y.C. Dai, Yuan Yuan & M. Zhou (Lawrence, 1973), whereas *M. setifer* and *M. taurus* may be oligophagous (Oliveira & Lopes-Andrade, 2013; Oliveira *et al.,* 2013). Such variation in host use among *Macrocis* species may be linked to the extensive radiation of the genus in the Neotropical region.

The known diversity of Brazilian Ciidae has increased considerably over the past 25 years. In Costa (2000), the family was represented by only 16 species in seven genera, whereas the most recent account of the Coleoptera of Brazil recorded 60 species in 12 genera (Caron *et al.,* 2024), placing Ciidae among the beetle families occurring in Brazil with the greatest proportional increase in documented diversity. In less than two years, these numbers rose to 81 species in 18 genera, including the results of the present work (Araujo & Lopes-Andrade, 2024; Lopes-Andrade, 2024; Rosa-Oliveira *et al.,* 2024; Souza-Gonçalves & Lopes-Andrade, 2024; Lopes-Andrade *et al.,* 2025; Rosa-Oliveira & Lopes-Andrade, 2025; Souza-Gonçalves *et al.,* 2025a, b; Souza-Gonçalves & Lopes-Andrade, 2025; Lopes-Andrade & Souza-Gonçalves, 2026).

Only two Ciidae species have been previously recorded from the state of Tocantins: *Ceracis furcifer* Mellié, 1849, and *Lipedanicis geminus* Souza-Gonçalves & Lopes-Andrade, 2025 (Pecci-Maddalena & Lopes-Andrade, 2017; Souza-Gonçalves & Lopes-Andrade, 2025). *Cis caramelo* Rosa-Oliveira *et al.,* 2024 probably occurs in the state, given a very close record from Riachão, state of Maranhão (Rosa-Oliveira *et al.,* 2024), about 60 km from the Tocantins-Maranhão border. None of these species is restricted to Tocantins: *Cer. furcifer* is a widespread Neotropical species, recorded from Antigua, Colombia, Costa Rica, French Guiana, Guadeloupe, Jamaica, Mexico, Panamá, Peru, and Brazil (in the states of Amazonas, Goiás, Mato Grosso do Sul, Minas Gerais, and Pará); *L. geminus* shares its type locality with *M. monnei,* but is also known from the Brazilian state of Pará and from Barro Colorado Island, Panama; *C. caramelo* is probably an introduced species, with Brazilian records in the states of Espírito Santo, Maranhão, Pará, and Pernambuco. The state of Tocantins, located in central northern Brazil, covers an area of approximately 277,620 km^2, which is between the sizes of the United Kingdom and Italy, and harbors diverse vegetation types along with an insect fauna that remains poorly studied. Given this ecological complexity, the actual diversity of Ciidae in the state is likely underestimated. Specimens collected by V.E.S. between

Figure 4. Type locality of *Macrocis monnei* Lopes-Andrade, Souza-Gonçalves & Sandoval-Gómez **sp. nov.** in Araguaína (Tocantins, North Region of Brazil), showing no evidence of significant habitat alteration ten years after the collection of the type series. Images by Silionamã Dantas, August 2025.

2015 and 2017 are still under analysis, suggesting that the known species richness is incomplete.

Although we have access to a large collection of *Macrocis* specimens from various Brazilian biomes, *M. monnei* is known only from the type locality. This species was collected in Araguaína, situated in northern Tocantins, a transitional (ecotonal) region between the Cerrado (Brazilian savanna) and the Amazon rainforest, particularly the Submontane Open Ombrophilous Forest (IBGE, 2007).

The type specimens were collected on two different basidiomes of an unidentified trametoid polypore fungus growing on dead trunks, within a well-preserved gallery forest at the campus of the School of Veterinary Medicine at the Universidade Federal do Tocantins. This forest is associated with a perennial creek known as "Córrego da Vaca" and is characterised by a closed canopy reaching 20 to 30 meters in height and a dense understory composed of shrubs, lianas, ferns, and herbaceous plants adapted to low-light conditions (Fig. 4).

Gallery forests in these ecotonal zones act as critical biological corridors and refuges for both Amazonian and savanna species, supporting high levels of biodiversity and structural complexity due to the convergence of contrasting biomes (Oliveira-Filho & Ratter, 1995; Passos *et al.,* 2018).

Authors' Contributions: CLA, ISG, VESG: Conceptualization, Methodology, Writing – original draft, Writing – review & editing, Funding acquisition. All authors actively participated in the discussion of the results, they reviewed and approved the final version of the paper.
Conflicts of Interest: The authors declare there are no conflicts of interest.
Ethical Statement: This study is based exclusively on preserved specimens and did not involve experiments on live animals. All material was collected legally (licence no. 47643-1 issued by SISBIO-ICMBio.) and in compliance with applicable regulations. The primary type of the species described here is deposited in a registered national collection (CELC: Coleção Entomológica do Laboratório de Sistemática e Biologia de Coleoptera da Universidade Federal de Viçosa, Viçosa, Minas Gerais, Brazil; SiBBr: https://collectory.sibbr.gov.br/collectory/public/show/co681).
Use of AI: Not used.

Data Availability: Inapplicable.
Funding: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq; research grant 3004339/2022-9 to C.L.A.), Fundação de Amparo à Ciência e Tecnologia do Estado de Pernambuco (FACEPE; postdoctoral fellowship BFP-0113-2.04/23 to I.S.G.), Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG), Museum of Comparative Zoology – Harvard University (MCZ: Ernst Mayr grant in animal systematics to V.E.S.) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES; finance code 001). This work was developed within the scope of the Instituto Nacional de Coleoptera (INCol) an INCT (National Institute of Science and Technology) by Brazil's CNPq (408430/2024-9).
Acknowledgments: We are grateful to Silonamã Dantas, Erisleny Santos Moraes and Walktom Higor Brandao (undergraduate research fellowship PIBIC – PROPESQ/UFT-CNPq) for their valuable assistance with field collections, visual documentation, and support with the setup and sorting of host fungi and beetle specimens in the laboratory. We also thank Ester H. Oliveira and John F. Lawrence for their valuable help with the initial sorting, organization, and provisional identification of *Macrocis* specimens.

REFERENCES

Antunes-Carvalho, C.; Sandoval-Gómez, V.E. & Lopes-Andrade, C. 2012. *Grossicis,* a new genus of Neotropical minute tree-fungus beetles (Coleoptera: Ciidae), with a detailed discussion on its systematic position in the family. *Comptes Rendus Biologies,* 335: 107-119. https://doi.org/10.1016/j.crvi.2011.11.006.

Araujo, L.S. & Lopes-Andrade, C. 2016. A new species of *Falsocis* (Coleoptera: Ciidae) from the Atlantic Forest biome with new geographic records and an updated identification key for the species of the genus. *Zoologia,* 33(1): 1-6, e20150173. https://doi.org/10.1590/S1984-4689zool-20150173.

Araujo, L.S. & Lopes-Andrade, C. 2024. Description of the first Brazilian species of the genus *Malacocis* Gorham (Coleoptera: Ciidae). *Zootaxa,* 5506(4): 548-554. https://doi.org/10.11646/zootaxa.5506.4.4.

Araujo, L.S.; Komonen, A. & Lopes-Andrade, C. 2015. Influences of landscape structure on diversity of beetles associated with bracket fungi in Brazilian Atlantic Forest. *Biological Conservation,* 191: 659-666. https://doi.org/10.1016/j.biocon.2015.08.026.

Caron, E.; Monné, M.L.; Ferreira, V.S.; Costa, C.; Cupello, M.; Aloquio, S.; Linzmeier, A.M.; Vaz-de-Mello, F.Z.; Leivas, F.W.T.; Souza-Gonçalves, I.; Mermudes, J.R.M.; Almeida, L.M.; Moura, L.A.; Ferreira Júnior, N.; Grossi, P.C.; Vanin, S.A.; Ślipiński, A.; Anichtchenko, A.; Newton, A.F.; Sampaio, A.; Carelli, A.; Puker, A.; Ferreira, A.S.; Fernandes, A.S.; Roza, A.S.; Cline, A.; Sampaio, B.H.L.; Clarkson, B.; Castro, C.F.; Bicho, C.L.; Benetti, C.J.; Ribeiro-Costa, C.S.; Lopes-Andrade, C.; Manfio, D.; Colpani, D.; Basílio, D.S.; Benà, D.C.; Pollock, D.A.; Souza, D.S.; Rodrigues, D.F.; Chandler, D.S.; Nascimento, E.A.; Spiessberger, E.L.; Agrain, F.A.; Barbosa, F.F.; Shockley, F.; Nascimento, F.E.L.; Biffi, G.; Powell, G.S.; Morse, G.E.; Flores, G.E.; Escalona, H.; Quintino, H.Y.S.; Rainho, H.L.; Pecci-Maddalena, I.S.C.; Hájek, J.; McHugh, J.V.; Botero. J.P.; Fuhrmann, J.; Churata-Salcedo, J.M.; Vieira, L.M.; Silveira, L.F.L.; Cruz, L.S.; Sekerka, L.; Bologna, M.A.; Bevilaqua, M.V.O.; Passos, M.I.; Chamorro, M.L.; Cherman, M.A.; Bento, M.; Gimmel, M.; Segura, M.O.; Ivie, M.A.; Thomas, M.C.; Monné, M.A.; Lord, N.; Hamada, N.; Degallier, N.; Santos, P.B.; Duarte, P.R.M.; Gnaspini, P.; Bulirsch, P.; Regalin, R.; Leschen, R.A.B.; Constantin, R.; Corrêa, R.C.; Gerstmeier, R.; Rosa, S.P.; Campos, S.V.N.; Peck, S.B.; Pacheco, T.L.; Polizei, T.T.S.; McElrath, T.C.; Grzymala, T.L.; Smith, T.R.; Costa-Silva, V.; Sandoval-Gómez, V.E.; Sousa, W.O. & Tomaszewska, W. 2024. Coleoptera of Brazil: what we knew then and what we know now. Insights from the "Catálogo Taxonômico da Fauna do Brasil". *Zoologia,* 41: e23072.

Costa, C. 2000. Estado de conocimiento de los Coleoptera neotropicales. *In:* Martin-Piera, F.; Morrone, J.J. & Melic, A. (Eds.). *Hacia un Proyecto CYTED para el Inventario y Estimación de la Diversidad Entomológica en Iberoamérica: PrIBES-2000.* Zaragoza, SEA. p. 99-114.

Fåhraeus, O.I. 1871. Coleoptera Caffrariae, Annis 1838-45 a J.A. Wahlberg collecta. Fam. Scolytidae, Paussidae, Bostrichidae et Cioidae. Forhandlingar Kongl. *Vetenskaps-Akademiens, Stockholm,* 28(6): 661-672.

Friedenreich, C.W. 1881. Trimere Cioiden in Sudbrasilien. *Entomologische Zeitung,* 42: 328-330.

Gorham, H.S. 1883. Cleridae, Ptinidae, Bostrychidae, Cioidae. *In:* Godman, F.D. & Salvin, O. (Eds.). *Biologia Centrali-Americana. Insecta. Coleoptera.* Vol. 3, Part 2. London, Porter. p. 169-224, pl. 10, figs. 23-27.

Instituto Brasileiro de Geografia e Estatística (IBGE). 2007. *Estado do Tocantins – Vegetação. Instituto Brasileiro de Geografia e Estatística, Goiás.* Available: https://geoftp.ibge.gov.br/informacoes_ambientais/vegetacao/mapas/unidades_da_federacao/to_vegetacao.pdf. Access: 25/08/2025.

International Commission on Zoological Nomenclature (ICZN). 1999. International Code of Zoological Nomenclature, 4.ed. London, International Trust for Zoological Nomenclature.

Kobayashi, T. & Sota, T. 2021. Evolution of host use in fungivorous ciid beetles (Coleoptera: Ciidae): Molecular phylogeny focusing on Japanese taxa. Molecular *Phylogenetics and Evolution,* 162: 1-10, 107197. https://doi.org/10.1016/j.ympev.2021.107197.

Latreille, P.A. 1797. *Précis des caractères génériques des insectes, disposés dans un ordre naturel.* Paris, Bordeaux. https://doi.org/10.5962/bhl.title.58411.

Lawrence, J.F. 1971. Revision of the North American Ciidae (Coleoptera). *Bulletin of the Museum of Comparative Zoology,* 142(5): 419-522.

Lawrence, J.F. 1973. Host preference in ciid bettles (Coleoptera: Ciidae) inhabiting the fruiting bodies of Basidiomycetes in North America. *Bulletin of the Museum of Comparative Zoology,* 145(3): 163-212.

Lawrence, J.F. 1987. A new genus of Ciidae (Coleoptera, Tenebrionoidea) from the Neotropical region. *Revista Brasileira de Entomologia,* 31(1): 41-47.

Lawrence, J.F. 2016. The Australian Ciidae (Coleoptera: Tenebrionoidea): A Preliminary Revision. *Zootaxa,* 4198(1): 1-208. https://doi.org/10.11646/zootaxa.4198.1.1.

Lawrence, J.F.; Ślipiński, A.; Seago, A.E.; Thayer, M.K.; Newton, A.F. & Marvaldi, A.E. 2011. Phylogeny of the Coleoptera based on morphological characters of adults and larvae. *Annales Zoologici,* 61: 1-217. https://doi.org/10.3161/000345411X576725.

Leach, W.E. 1819. Fam. XXXIX. Cisidae. Leach. *In:* Samouelle, G. (Ed.). *The entomologist's useful compendium.* London, Thomas Boys. p. 206.

Lopes-Andrade, C. 2002. Two cases of homonymy in the genus *Cis* Latreille (Coleoptera: Tenebrionoidea: Ciidae). *Dugesiana,* 9(2): 54.

Lopes-Andrade, C. 2024. A New Genus of Ciidae (Coleoptera: Tenebrionoidea) from the Cerrado Biome of Brazil. *Annales Zoologici,* 74(4): 593-602. https://doi.org/10.3161/00034541ANZ2024.74.4.005.

Lopes-Andrade, C. & Grebennikov, V.V. 2015. First record and five new species of Xylographellini (Coleoptera: Ciidae) from China, with online DNA barcode library of the family. *Zootaxa,* 4006(6): 463-480. https://doi.org/10.11646/zootaxa.4006.3.3.

Lopes-Andrade, C. & Lawrence, J.F. 2005. *Phellinocis,* a new genus of Neotropical Ciidae (Coleoptera: Tenebrionoidea). *Zootaxa,* 1034: 43-60. https://doi.org/10.11646/zootaxa.1034.1.3.

Lopes-Andrade, C. & Lawrence, J.F. 2011. Synopsis of *Falsocis* Pic (Coleoptera: Ciidae), new species, new records and an identification key. *ZooKeys,* 145: 59-78. https://doi.org/10.3897/zookeys.145.1895.

Lopes-Andrade, C. & Souza-Gonçalves, I. 2026. First record of the genus *Gyraleosomus* Souza-Gonçalves and Lopes-Andrade, (Coleoptera: Ciidae) in Brazil, with the description of a new species. *Journal of Natural History,* 60(1-4): 189-196. https://doi.org/10.1080/00222933.2025.2597955.

Lopes-Andrade, C.; Souza-Gonçalves, I.; Sandoval-Gómez, V. 2025. Ciidae. *In: Catálogo Taxonômico da Fauna do Brasil.* PNUD. Available: https://fauna.jbrj.gov.br/fauna/faunadobrasil/120919. Access: 12/08/2025.

Mellié, J. 1847. Mélanges et nouvelles. *Revue zoologique par la Société Cuvierienne,* 1847: 108-110.

Mellié, J. 1849. Monographie de l'ancien genre *Cis* des auteurs. *Annales de la Société entomologique de France,* (2)6: 205-274, 313-396, pls. 9-12.

Oliveira, E.H. & Lopes-Andrade, C. 2013. Redescription of *Cis taurus* (Reitter, 1878) (Coleoptera: Ciidae). *Zootaxa,* 3599(5): 483-489. https://doi.org/10.11646/zootaxa.3599.5.5.

Oliveira, E.H.; Lopes-Andrade, C. & Lawrence, J.F. 2013. Review of the Neotropical Ciidae (Insecta: Coleoptera) in the *Cis taurus* species-group. *Arthropod Systematics & Phylogeny,* 71(3): 181-210. https://doi.org/10.3897/asp.71.e31777.

Oliveira-Filho, A.T. & Ratter, J.A. 1995. A Study of the Origin of Central Brazilian Forests by the Analysis of Plant Species Distribution Patterns. *Edinburgh Journal of Botany,* 52(2): 141-194. https://doi.org/10.1017/S0960428600000949.

Passos, F.B.; Marimon, B.S.; Phillips, O.L.; Morandi, P.S.; Neves, E.C.; Elias, F.; Reis, S.M.; Oliveira, B.; Feldpausch, T.R. & Marimon Júnior, B.H. 2018. Savanna turning into forest: concerted vegetation change at the ecotone between the Amazon and "Cerrado" biomes. *Brazilian Journal of Botany,* 41: 611-619. https://doi.org/10.1007/s40415-018-0470-z.

Pecci-Maddalena, I.S.C. & Lopes-Andrade, C. 2017. Systematics of the *Ceracis furcifer* Species-Group (Coleoptera: Ciidae): The Specialized Consumers of the Blood-Red Bracket Fungus *Pycnoporus sanguineus. Insects,* 8(70): 1-33. https://doi.org/10.3390/insects8030070.

Pic, M. 1916. Diagnoses génériques et spécifiques. *Mélanges exotico-entomologiques, Moulins,* 18: 1-20.

Pic, M. 1917. Descriptions abrégées diverses. *Mélanges exotico-entomologiques, Moulins,* 26: 1-24.

Pic, M. 1922. Nouveautés diverses. *Mélanges exotico-entomologiques, Moulins,* 35: 1-32.

Pic, M. 1930. Coléoptères nouveaux de la Republique Argentine. *Bulletin de la Société Entomologique de France,* 55: 175-179.

Reitter, E. 1878. Neue Cioidae. *Mitteilungen des Munchener Entomologischen Vereins,* 2: 32-37.

Rosa-Oliveira, A. & Lopes-Andrade, C. 2023. *Cis occamy* sp. nov., the first representative of the *Cis bilamellatus* species-group (Coleoptera, Ciidae) in the Neotropical region. *Zootaxa,* 5323(2): 268-274. https://doi.org/10.11646/zootaxa.5323.2.6.

Rosa-Oliveira, A. & Lopes-Andrade, C. 2024. Specialization in Ciidae-host fungi communities in two Atlantic forest remnants of Southeast Brazil. *Food Webs,* 41: e00374. https://doi.org/10.1016/j.fooweb.2024.e00374.

Rosa-Oliveira, A. & Lopes-Andrade, C. 2025. *Ennearthron* Mellié (Coleoptera: Ciidae): composition of the genus, a new species from the Atlantic Forest and new geographic records in South America. *Journal of Natural History,* 59(33-36): 2203-2216. https://doi.org/10.1080/00222933.2025.2533317.

Rosa-Oliveira, A.; Borlini, P.V. & Lopes-Andrade, C. 2024. A new species of *Cis* Latreille (Coleoptera: Ciidae) widespread in Brazil but with similarities to the African fauna. *Zootaxa,* 5538(4): 381-390. https://doi.org/10.11646/zootaxa.5538.4.6.

Scopoli, J.A. 1763. *Entomologia Carniolica exhibens Insecta Carnioliae indigena et distributa in ordines, genera, species, varietates methodo Linnaeanna I.* Vindobonae, Iohanes Thomae Trattner. https://doi.org/10.5962/bhl.title.119976.

Souza-Gonçalves, I. & Lopes-Andrade, C. 2020. *Ceracis tzotzilicus* sp. nov. (Coleoptera: Tenebrionoidea: Ciidae) from Guatemala and Mexico. *Zootaxa,* 4780(2): 379-386. https://doi.org/10.11646/zootaxa.4780.2.10.

Souza-Gonçalves, I. & Lopes-Andrade, C. 2024. *Ceracis luci* sp. nov., the first Ciidae species (Coleoptera: Tenebrionoidea) from the Caatinga biome. *Zootaxa,* 5512(1): 67-79. https://doi.org/10.11646/zootaxa.5512.1.5.

Souza-Gonçalves, I. & Lopes-Andrade, C. 2025. Morphology-based phylogeny of the *Ceracis* Mellié (Coleoptera: Ciidae), with descriptions of seven new genera and twelve new species from the Neotropical region. *Annales Zoologici,* 75(1): 167-282. https://doi.org/10.3161/00034541ANZ2025.75.1.011.

Souza-Gonçalves, I.; Lopes-Andrade, C. & Lawrence, J.F. 2020. Three new species of *Hadreule* Thomson (Coleoptera: Ciidae) from the Southern Hemisphere with an identification key to world species. *Austral Entomology*, 59(1): 74-87. https://doi.org/10.1111/aen.12442.

Souza-Gonçalves, I.; Lopes-Andrade, C. & Grossi, P.C. 2025a. *Bucerocaputis* gen. nov. (Coleoptera: Ciidae) from the Cerrado and Caatinga of Brazil, with the description of two new species. *Austral Entomology,* 64(4): 1-15, e70025. https://doi.org/10.1111/aen.70025.

Souza-Gonçalves, I.; Lopes-Andrade, C.; Sandoval-Gómez, V.E. & Grossi, P.C. 2025b. Redescription of *Cis olivieri* Mellié, 1849 (Coleoptera: Ciidae), with a new synonym and the first records from Brazil. *Papéis Avulsos de Zoologia,* 65(4): 1-9, e202565004. https://doi.org/10.11606/1807-0205/2025.65.004.

Published with the financial support of the "Programa de Apoio às Publicações Científicas Periódicas da Universidade de São Paulo".