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NEW SPECIES OF *CANTHONELLA* CHAPIN (SCARABAEIDAE: SCARABAEINAE) FROM AMAZONIAN BRAZIL

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Abstract

Canthonella amazonica and *C. leptoculata,* **new species** of canthonine dung beetles, are described from Brazil's central Amazon region. A new key to the eight species that occur in South America is provided.

Resume

Duas novas espécies de besouros vira-bosta do Brasil e Região Amazónica, *Canthonella amazonica* e C. *leptoculata,* são descritos. Uma nova chave para oito espécies de *Canthonella* que ocorrem na América do Sul é apresentada.

The genus *Canthonella* Chapin (1930) was created for two species occurring in the West Indies: *C. pygmaea* (Harold) and *C. parvu* Chapin. Matthews (1966) described two additional species (*C. constans* and *C. isabellae),* and Ivie and Philips (1990) described two more (*C. howdeni* and *C. baorucensis),* all from the West Indies.

The genus *Ipselissus* Olsoufieff (1935) was described for a single species, *I. silphoides* (Harold), found in southern Brazil. Pereira and Martinez (1956) described two new species, *I. catharinensis* and *I. lenkoi,* from southern Brazil. Pereira and Martinez (1963) then described *I. alvarengai,* also from southern Brazil, and reaffirmed the synonymy established by Paulian (1939) for *I.* (formerly *Epilissus*) *instriatus* (Boucomont 1928) with *I. silphoides* (Harold 1867). Halffter and Martinez (1967) discussed the close similarities between *Ipselissus* and *Canthonella* and reviewed each of the four West Indian species of *Canthonella* and the four South American species of *Ipselissus.* They disagreed strongly with the assertion by Matthews (1966) that "*Canthonella* is taxonomically the most isolated genus of canthonines in the Western Hemisphere." Matthews (1969) later agreed with this observation.

A year later, Halffter and Martinez (1968) gave a detailed taxonomic and nomenclatural history of the genus *Ipselissus.* They synonymized *I. alvarengai* Pereira and Martinez with *I. silphoides* Harold. They noted that it was impossible to establish the status of *I. instriatus* (Boucomont) because the type was apparently lost and the original description was inadequate; in order to create less confusion, they considered it better to maintain its synonymy with *I. silphoides* as determined by Paulian. In addition, they described new species, *I. barrerai* from southern Brazil and Argentina and *I. gomezi* from Venezuela. *Ipselissus gomezi* was the first and only continental species described outside of the area of southern Brazil and Argentina, although we now know that *C. silphoides* also occurs in Amazonia. Lastly, they mentioned the possibility that *Canthonella* and *Ipselissus* might one day be considered subgenera of the same

genus. They noted that specimens of *Ipselissus* are rare and infrequently encountered, that their ecological niche is unknown, and that they may exist in other areas of central and northern South America.

Finally, Halffter and Martinez (1977) synonymized *Ipselissus* under *Can-thonella.* Moreover, they found the supposedly lost type of *Epilissus instriatus* in the Museum National d'Histoire Naturelle in Paris and determined that it was a valid species. We asked Francois Genier (Canadian Museum of Nature) to examine the type of *I. instriatus* for us when he traveled to Paris in June 1998; we were hoping to obtain character states so that we could include this species in the key. Unfortunately, the type specimen was not found, and this species remains unknown to us.

In this paper, we describe two new species of *Canthonella* from the central Amazon region of Brazil. Matthews (1966) reported that species of *Canthonella* are euryphagous coprophages, and that *C. parva* was observed feeding on bird, snail, and mammal dung (Matthews 1965). Our limited observations support this view of opportunistic coprophagy on patchy and ephemeral dung resources by *Canthonella* species. The two new species described herein, along with *C. silphoides,* are the only species known from the Amazon basin ... so far. We predict additional species will be discovered as more researchers use baited traps in areas where they have not been used before.

The genus *Canthonella* now consists of the following species:

1. *C. amazonica* Ratcliffe and Smith, new species. Brazilian Amazon.
2. *C. baorucensis* Ivie and Philips (1990). Dominican Republic.
3. *C. barrerai* (Halffter and Martinez 1968). Argentina, southern Brazil.
4. *C.catharinensis* (Pereira and Martinez 1956). Southern Brazil.
5. *C. constans* Matthews (1966). Hispaniola.
6. *C. gomezi* (Halffter and Martinez 1968). Venezuela.
7. *C. howdeni* Ivie and Philips (1990). Dominican Republic.
8. *C. instriata* (Boucomont 1928). Southern Brazil.
9. *C. isabellae* Matthews (1966). Hispaniola.
10. *C. lenkoi* (Pereira and Martinez 1956). Sao Paulo, Brazil.
11. *C. leptoculata* Ratcliffe and Smith, new species. Brazilian Amazon.
12. *C. parva parva* Chapin (1930). Puerto Rico.
13. *C. parva luquillensis* Matthews (1965). Puerto Rico.
14. *C. pygmaea* (Harold 1869). Cuba.
15. *C. silphoides* (Harold 1867). Southern and Amazonian Brazil.
    Ipselissus alvarengai Pereira and Martinez (1963).

Canthonella amazonica Ratcliffe and Smith, **new species**
Figs. 1-2

Type Series. Holotype and allotype labeled "BRAZIL: Amazonas, Rio Tar-uma Mirim NW Manaus, I–6 1977, J. Adis." Fourteen paratypes with same data; 30 additional paratypes with same locality data and collector but dates of: X-13-1976 (1), XI-10-1976 (3), XI-24-1976 (2), XII-8-1976 (3), XII-22-1976 (2), 1-15-1977 (6), II-2-1977 (2), II-9-1977 (1), III-24-1977 (4), V-11-1977 (1), X-27-1977 (1), XII-22-1977 (4). Three additional paratypes labeled "BRAZIL: Amazonas; Rio Taruma Mirim-Igapo; J. Adis, 6.1.1977, BOF-29-TM, Adis, 6.1.1977" (1), "BRAZIL: Amazonas; Rio Taruma Mirim-Igapo; J. Adis; 27.X.76, E-15-TM, Adis, 27.X.76" (1), and "BRAZIL: Amazonas; Rio Taruma Mirim-Igapo; J. Adis, 30.III.77, E-12-TM, Adis, 30.III.77" (1).

Holotype, allotype and 23 paratypes deposited at the Instituto Naçional de

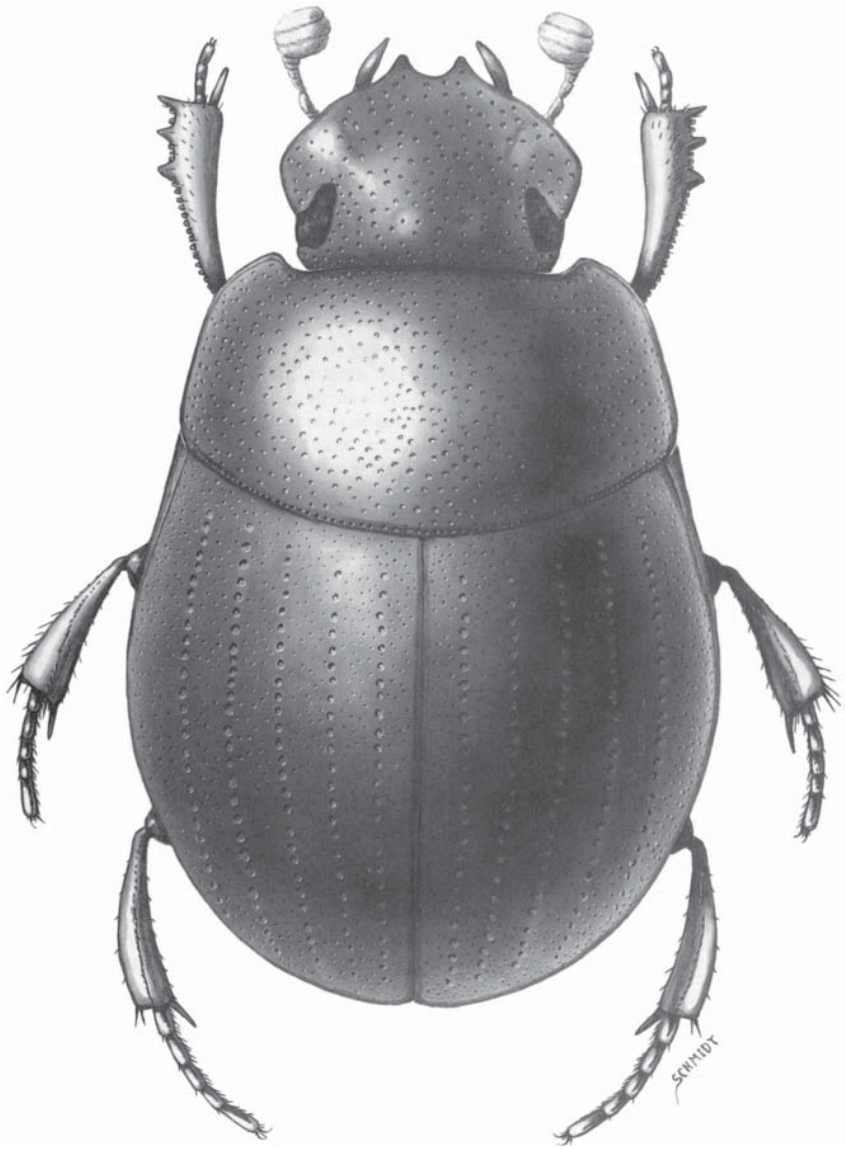

Fig. 1. Habitus drawing of *Canthonella amazonica.*

Pesquisas da Amazônia (Manaus, Brazil). Other paratypes deposited in the collections of the Museu de Zoologia, Universidade de São Paulo (Brazil), University of Nebraska State Museum (Lincoln, NE), United States National Museum (Washington, D.C.), Canadian Museum of Nature (Ottawa, Canada), Museum National d'Histoire Naturelle (Paris, France), Andrew B. T. Smith (Lincoln, NE), and Brett C. Ratcliffe (Lincoln, NE).

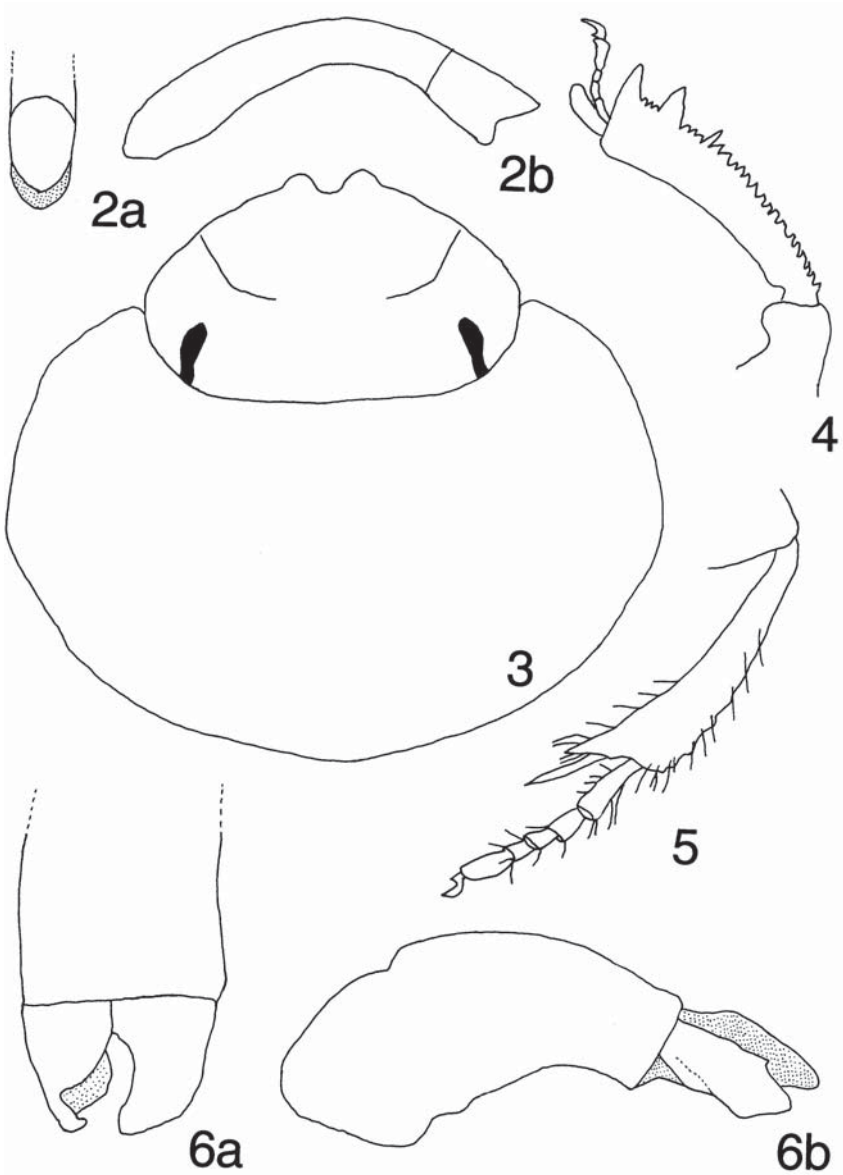

Fig. 2. Caudal **a**) and lateral **b**) views of parameres and phallobase of *C. amazonica.*

Figs. 3–6. *Canthonella leptoculata:* **3**) head and pronotum; **4**) right foretibia and tarsus, dorsal view; **5**) right metatibia and tarsus, dorsal view; **6**) caudal **a**) and lateral **b**) views of parameres and phallobase.

Holotype. Male. Length 3.0 mm; greatest width 1.9 mm. Color dark reddish-brown, weakly shining. *Head:* Surface glabrous. Frons and clypeus moderately densely punctate, punctures small. Clypeus weakly concave, apex reflexed and bidentate; teeth separated by slightly more than width of tooth. Eyes large, 1.2 times longer than wide; interocular width equals 5.9 transverse eye diameters (in dorsal view). *Pronotum:* Surface glabrous, moderately densely punctate, punctures small. Lateral margin subangulate at anterior third (in lateral view). Base with transverse row of small punctures. *Elytra:* Surface glabrous, each elytron with 7 striae; striae 1–6 distinctly punctate, not impressed, punctures separated by 1–2 puncture widths (6th difficult to see in dorsal view); 7th stria impressed, not punctate, extending from base of elytra to ⅔ distance to apex where it reaches lateral edge and terminates. Intervals moderately densely punctate, punctures small. *Pygidium:* Surface glabrous, moderately densely punctate, punctures small. Width 2.4 times length. In lateral view, surface evenly convex. Margin complete all around. *Legs*: Foretibia with 3 large teeth, teeth subequally spaced; 13 small teeth between base and first large tooth, 3 small teeth between first and second large teeth, 2 small teeth between middle and apical large teeth. First and second tarsomeres subequal on all legs. Tarsal claws dentate at base. *Parameres:* Fig. 2. Phallobase 5 times longer than para-meres. Parameres in caudal view symmetrical.

Allotype. Female. Length 3.2 mm; greatest width 2.2 mm. The allotype does not differ significantly from the holotype.

Variation. Length 2.4–3.2 mm; greatest width 1.6–2.2 mm. The paratypes do not differ significantly from the primary types.

Etymology. From the Latinized adjective for "Amazonian," referring to the region in which this species is found.

Distribution. This species is known only from the type locality, 20 km northwest of Manaus, Brazil.

Remarks. This species is distinguished from all other species in the genus by the following combination of characters: length 2.4–3.2 mm; dorsal surface glabrous; eyes large, only slightly longer than wide; elytral stria 1–6 punctate, not impressed.

Canthonella leptoculata Ratcliffe and Smith, **new species**
Figs. 3-6

Type Series. Holotype labeled "BRASIL: Mato Grosso, Reserva Humboldt, 10°11'S, 59°48'W, III-16-22-1977, B.C. Ratcliffe." Allotype and 19 paratypes with same data. Seventeen additional paratypes labeled "BRASIL: Amazonas, AM010, km. 268, 1-18-1977, B.C. Ratcliffe" (8); "BRASIL: Amazonas, Manaus, BR174, km. 30, 27-V-1977, N.D. Penny" (1); "BRASIL: Pará, Parq. Nac. Amazonia, 63 km SO de Itaituba, 14 Outubro 1977, Norman D. Penny" (1); "BRASIL: Amazonas, Reserva Ducke, 26 km NE Manaus, 1-12-1977, B.C. Ratcliffe" (2); "BRASIL: Amazonas, BR174, km. 153, VI-14-1977, Norman D. Penny" (5).

Holotype, allotype, and three paratypes deposited at the Museu de Zoologia, Universidade de São Paulo (Brazil). Remaining paratypes at University of Nebraska State Museum (Lincoln, NE), Canadian Museum of Nature (Ottawa, Canada), U.S. National Museum (Washington, D.C.), Instituto Nacional de Pesquisas da Amazônia (Manaus, Brazil), Museum National d'Histoire Natu-relle (Paris, France), Andrew B. T. Smith (Lincoln, NE), and Brett C. Ratcliffe (Lincoln, NE).

Holotype. Male. Length 2.8 mm; greatest width 2.1 mm. Color reddish brown, weakly shining; head slightly darker, pygidium a little lighter; base of pronotum and base of elytra narrowly edged in black. *Head:* Frons and clypeus glabrous, moderately densely punctate, punctures small. Clypeus with apex bidentate, space between teeth about size of single tooth (Fig. 3);

margin of clypeus and gena continuously arcuate. Eyes small, narrow, 3.3 times longer than wide; interocular width equals 10 transverse eye diameters (in dorsal view). *Pronotum*: Surface glabrous, with punctation similar to that of head but slightly less dense. Marginal bead present all around. In lateral view, lateral margin at middle angled; margin basal to angle arcuate, margin apical of angle nearly straight. *Elytra*: Surface glabrous, with 7 very finely impressed striae; each stria with small punctures, punctures separated by 2–4 puncture diameters. Intervals vaguely alutaceous. *Pygidium*: Size small, width 1.6 times length. Surface vaguely alutaceous. In lateral view, surface evenly convex. *Legs*: Foretibia (Fig. 4) with 3 large teeth, teeth subequally spaced; 16 small teeth between base and first large tooth, 3 small teeth between first and second large teeth, and 3 small teeth between middle and apical large teeth. Posterior tibia weakly crenulate on lateral edge in apical half. First tarsomere of posterior tarsus twice length of second, second slightly longer than third, third slightly longer than fourth, fifth about twice length of fourth (Fig. 5). *Parameres*: Fig. 6. Phallobase 2.3 times longer than parameres. Parameres in caudal view asymmetrical.

Allotype. Female. Length 2.8 mm; greatest width 2.2 mm. The allotype is not noticeably different than the holotype.

Variation. Length 2.5–3.2 mm; greatest width 1.9–2.3 mm. The paratypes do not differ significantly from the primary types. There are minor differences in the density of punctation on the pronotum.

Etymology. From the Greek *leptos,* meaning thin or slender, and the Latin *oculus* for eye; here meant to signify the slender-eyed *Canthonella.*

Distribution. *Canthonella leptoculata* is broadly distributed in central Amazonia and occurs in the three Brazilian states of Amazonas, Para, and Mato Grosso. Further sampling may reveal that it is found elsewhere in the forests of the Amazon basin.

Remarks. This species is distinguished from others in the genus *Canthonella* in South America by the absence of dorsal setae and the presence of small and slit-like eyes and distinctly impressed, punctate striae on the elytra. Only *C. barrerai* also has small eyes, but its elytral striae are indistinct and not impressed. In addition, the basal tarsomere of the posterior tarsus is about twice as long as the second in *C. leptoculata* whereas it is subequal to or a little shorter than the second segment in *C. barrerai.*

Key to the South American species of *Canthonella*

(*Canthonella instriata* (Boucomont) is unknown to us)

1 Dorsal surface glabrous 2
1' Dorsal surface with setae ..... *C. catharinensis* (Pereira and Martinez)
2 Eyes small, slit-like, longer than wide (Fig. 3) 3
2' Eyes large, length approximately equal to width (Fig. 1) 4
3 Elytral striae distinctly impressed. First tarsomere of posterior tarsus about twice as long as second ..... *C. leptoculata* Ratcliffe and Smith, new species
3' Elytral striae indistinct, not impressed. First tarsomere of posterior tarsus subequal to or a little shorter than second ..... *C. barrerai* (Halffter and Martinez)
4 Elytral striae punctate 5
4' Elytral striae indistinct, not punctate ..... *C. silphoides* (Harold)
5 Mesotarsus with sparsely scattered setae on first 4 segments. Tarsal claws dentate at base 6
5' Mesotarsus with dense pilosity on ventral surface of first 4 segments. Tarsal claws dentate at middle ..... C. *lenkoi* (Pereira and Martinez)

6 Foretibia with 2 small teeth between first and second large teeth, 1 small tooth between middle and apical tooth. Color black. Length 3.5–4.0 mm ..... ***C.*** *gomezi* (Halffter and Martinez)
6' Foretibia with 3 small teeth between first and second large teeth, 2 small teeth between middle and apical tooth. Color dark reddish-brown. Length 2.4-3.2 mm .. *C. amaonica* Ratcliffe and Smith, new species

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