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from the Mayan Biosphere Reserve, Petén, Guatemala

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A new *Anomiopus* Westwood (Coleoptera: Scarabaeidae: Scarabaeinae) from the Mayan Biosphere Reserve, Petén, Guatemala

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Abstract. *Anomiopus cirulito* Cano **n. sp.**, from the tropical forest of the Mayan Biosphere Reserve, Petén, Guatemala is described. This is the northernmost known species of the genus *Anomiopus* Westwood (Coleoptera: Scarabaeidae: Scarabaeinae) and is related to the Costa Rican and Panamanian *Anomiopus panamensis* (Paulian).

Key words. Rainforest, Central America, dung beetle, *Anomiopus panamensis*, Costa Rica, Panama.

Resumen. Se describe *Anomiopus cirulito* Cano **n. sp.** del bosque tropical de la Reserva de la Biósfera Maya, Petén, Guatemala. Es la especie más norteña conocida del género *Anomiopus* Westwood (Coleoptera: Scarabaeidae: Scarabaeinae) y está relacionada a la especie costarricense y panameña *Anomiopus panamensis* (Paulian).

Palabras clave. Bosque tropical, Centroamérica, escarabajo coprófago, *Anomiopus panamensis*, Costa Rica, Panamá.

Introduction

Anomiopus Westwood, 1842, is a Neotropical genus of dung beetles comprising 60 described species distributed among three species groups: the cuprarius group (9 species), the smaragdinus group (30 species) and the virescens group (21 species) (Canhedo 2004a, b, 2006; Edmonds and Figueroa 2013; Figueroa and Edmonds 2015). The genus diversified in South America (including Trinidad), except Chile (Canhedo 2004a, b, 2006). Until now, the northernmost known species was *Anomiopus panamensis* (Paulian), distributed in the Chocó-Magdalena region in Colombia (Escobar 2000) and southern Central America (Fig. 1) in Panama and Costa Rica (Paulian 1939; Howden and Young 1981; Canhedo 2006). A monitoring program of dung beetles in the Mayan Biosphere Reserve (MBR), Petén, Guatemala, produced one specimen of a new species of the cuprarius group. The type locality of this new species is 865 km to the north of the previous northern distributional limit of the genus (Fig. 1). Intense search in the MBR has yet to yield additional specimens, but because the holotype is so unique, it is worthy of formal taxonomic recognition.

Materials and Methods

For most characters I follow the terminology developed by Canhedo (2006). Measurements were taken with an ocular micrometer on a Wild Heerbrugg M3B stereomicroscope. Images of habitus and head were taken with a focus stacking system and detailed images of legs and metasternum were taken with a DP12 camera adapted to a SZX12 Olympus stereomicroscope. For description of the new species I compared the holotype with specimens of *A. panamensis* from the Darien National Park in Panama (Fig. 2) deposited in the Museo de Invertebrados G.B. Fairchild of Universidad de Panamá (MIUP), and with the online images of the holotype of *Onthocharis panamensis* Paulian (Type No. 23695 from MCZ type database) from Barro Colorado Island deposited in the Museum of Comparative Zoology, Harvard University (MCZ) (Perkins 2010). Figure 1 is based on distributional data of *A. panamensis* in Canhedo (2006), Howden and Young (1981) and Cambra (2006) for Panama, and Solís and Kohlmann (2012) for Costa Rica.

***Anomiopus cirulito* Cano, new species**

(Fig. 3–4)

Description. Holotype (sex unknown): Length 5 mm, elongate, almost parallel sided (Fig. 3a). Dorsal and ventral surface glossy, brownish black, with mostly cupreous reflections (occasionally green); legs, pygidium and last abdominal sternite reddish brown with cupreous and some green reflections; antennal club yellowish brown.

Head (Fig. 4a): Clypeal margin with four reflexed teeth distributed as follows: two elongate, median semi-cylindrical teeth separated by deep, U-shaped emargination; and shorter, triangular lateral teeth each separated from adjacent median tooth by wide notch. Genal border slightly arcuate, with weak, wide tooth forming shallow V-shaped notch with adjacent clypeal tooth. Posterior one-half of frontoclypeal suture deeper than anterior one-half. Frons with two weak, conical, tubercles. Vertex with medial area concave; occipital bead complete. Dorsal surface of head punctate, punctures separated by at least 2.5 diameters; anterior and lateral borders, and vertex behind tubercles, strongly and deeply punctate, punctures separated by at most 1.5 diameters. Maximum width of head 1.44 mm. Dorsal surface of eyes narrow and elongated (maximum width of one eye 0.07 mm); interocular distance 0.93 mm. Clypeal ventral process cariniform.

Thorax: Pronotum evenly, broadly convex, completely finely punctate, punctures denser at sides and more dispersed and minute at disc and posteriorly. Disc with medial longitudinal sulcus distinct, shallow; sulcus extending from middle and occupying 2/3 of posterior half but not reaching posterior margin. Pronotal anterior and lateral bead present, thickening and forming strong callus at postero-lateral end (Fig. 3c); posterior margin not beaded. Protoracic margin (Fig. 3c) with marked median angle; antero-lateral angles acute; posterolateral angles acute and forming a marked posteriorly-directed, tooth-like projection (Fig. 3c). Pronotal fossae visible and shallow. Propleuron with complete transverse carina; proepisternum widely and deeply concave, with scattered long setae; proepimeron shining and barely convex. Sternellum (prosternum) with acute apex. Mesosternum with median transverse carina, posterior half finely micro-striated. Metasternum shining, without micro-striations (Fig. 4c); disc flat, with medial longitudinal sulcus clearly impressed and 1.33 mm in length. Mesepimeron and metepisternum shining, without striations.

Elytra with seven moderately impressed striae; striae 3, 5, 6, and 7 effaced apically; third shorter than fourth with striae 8 and 9 absent. Interestriae moderately convex, with minute, sparse punctures.

Abdomen: Abdominal sternites smooth and shining, moderately convex; length of sternite VIII equal to combined lengths of sternites VI and VII. Pre-pygidium finely micro-striated.

Legs: Pro- meso- and metacoxae finely striated. Protibiae (Fig. 4a, 4b) with three apical teeth (wide at base in left tibia; slender and with an extra denticle between penultimate and antepenultimate teeth, and with two denticles between the last and penultimate teeth in the right tibia). Basal portion of lateral protibial margin with 8 (left leg) and 9 (right leg) denticles. Meso- and metatibiae rectangular, not appreciably narrowed at ends.

Metafemur with anterior longitudinal groove on ventral surface (Fig. 3c). Tarsi almost rectangular with the apical border truncated; length of first metatarsal segment slightly greater than that second and third combined.

Measurements: Total length (apex of clypeal teeth to pygidium): 5.0 mm; pronotal length: 1.62 mm; pronotal width: 2.25 mm; elytral length along suture: 2.31 mm; elytral length on sides: 2.75 mm; maximum elytral width: 2.25 mm.

Type material: Holotype: GUATEMALA, Petén Department, Mayan Biosphere Reserve, Río Azul National Park, El Cedro near aguada “Los Monifatos”; coordinates 17.72469, -89.50235; 299m elevation; 24 II 2004. A. Higueros. Deposited at the Colección Entomológica de la Escuela de Biología de la Universidad de San Carlos de Guatemala (USAC).

Ecology. The holotype was collected in a pitfall trap baited with rotten fish. Approximately the other 45,000 specimens collected in the area did not include additional specimens of the new species. The

type locality is dominated by tropical rain forest growing on karst (Fig. 5). According to González (2015) the predominant vegetation of the zone includes *Pseudobombax ellipticum* (Kunth) Dugand, *Guazuma ulmifolia* Lam., *Pouteria* spp., *Brosimum alicastrum* Sw., *Ampelocera hottlei* (Standl.) Standl., *Swartzia cubensis* (Britton & P. Wilson) Standl., *Ocotea lundelli* Standl., and *Lonchocarpus guatemalensis* Benth. Also ground vegetation includes escobo (*Cryosophila stauracantha* (Heynh.) R. Evans) and bayal (*Desmoncus* sp.). According to González (2015) mammals frequently observed by camera traps were *Cuniculus paca* (L.), *Dasyprocta punctata* Gray, *Leopardus pardalis* L., *Mazama* spp., *Nasua narica* (L.), *Panthera onca* (L.), *Puma concolor* (L.), *Tapirus bairdii* (Gill), and *Tayassu pecari* (Link).

Etymology. The specific epithet is a reference to the size of the new species. *Cirulito*, applied here as a masculine noun in apposition, is the colloquial name for any very small thing in Guatemala.

Comments. The presence of a ventral longitudinal groove on the metafemur and the two strong apical clypeal teeth place *Anomiopus cirulito* n. sp. near *A. panamensis* (Fig. 2), but it can be easily separated by its larger size (5 mm), the shallow and minute punctures on pronotum, and the smooth sternellum (prosternum), metasternum, and mesepimeron (Fig. 3–4). In *A. panamensis* the size varies between 3.3 and 4.4 mm, the punctures on pronotum are deeper and stronger (Fig. 2a, c), and notably the surfaces of the sternellum (prosternum), mesepimeron and sides of metasternum are micro-striated (Fig. 2d).

Within the cuprarius group the new species belongs to a small group of three species sharing the presence of two small conical processes on the frons. Accordingly, the following changes to the key of species of the cuprarius group of Canhedo (2006: 359) must be inserted to accommodate this new species:

1. Frons with two conical processes at ends of frontoclypeal suture 2
- Frons without conical processes
(to couplet 3 of the key to species of the cuprarius group in Canhedo (2006: 359))
- 2(1). Ventral surface of metafemur without anterior longitudinal groove; sternellum and metepisternum smooth, mesepimeron and sides of metasternum finely micro-striated. Colombia ***Anomiopus cuprarius* (Harold)**
- Ventral surface of metafemur with anterior longitudinal groove; sternellum, mesepimeron, metepisternum and sides of metasternum smooth or micro-striated. Central America, Colombia **3**
- 3(2). Sternellum, mesepimeron, metepisternum and sides of metasternum finely micro-striated; 3.3–4 mm in length. Costa Rica, Panama, Colombia ***Anomiopus panamensis* (Paulian)**
- Sternellum, mesepimeron, metepisternum, and metasternum smooth, without micro-striations; 5 mm in length. Guatemala ***Anomiopus cirulito* Cano n. sp.**

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Figure 1. Map of known distribution of *Anomiopus panamensis* and *Anomiopus cirulito* n. sp. *Anomiopus panamensis* is also reported from the Chocó-Magdalena region in Colombia (Escobar 2000: 206), without an exact locality.

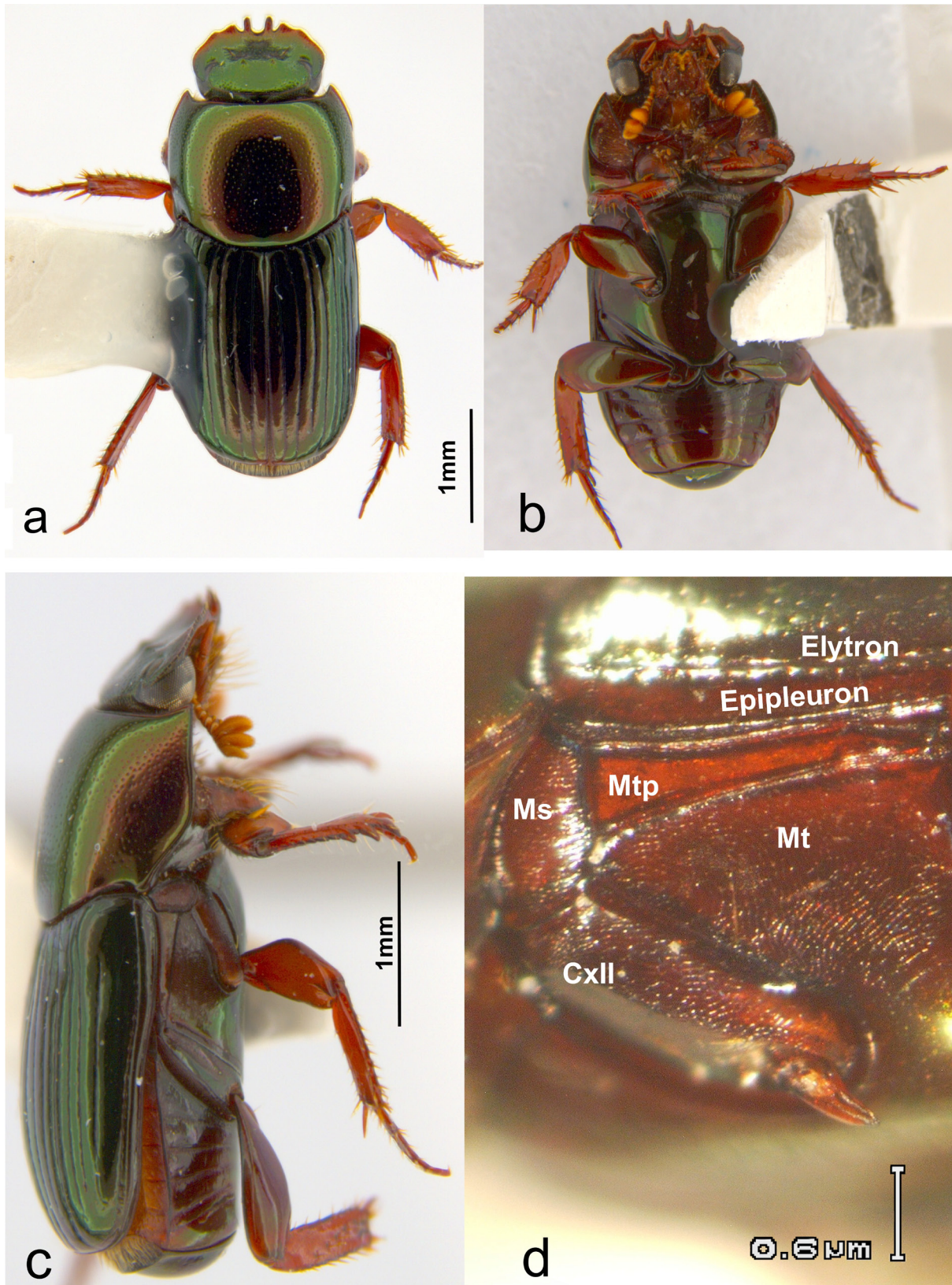


Figure 2. *Anomiopus panamensis*. a) Dorsal habitus. b) Ventral habitus. c) Lateral view. d) Details of metasternum in latero-ventral view. CxII = coxa II; Mt, metasternum; Mtp = metepisternum; Ms = mesepimeron.

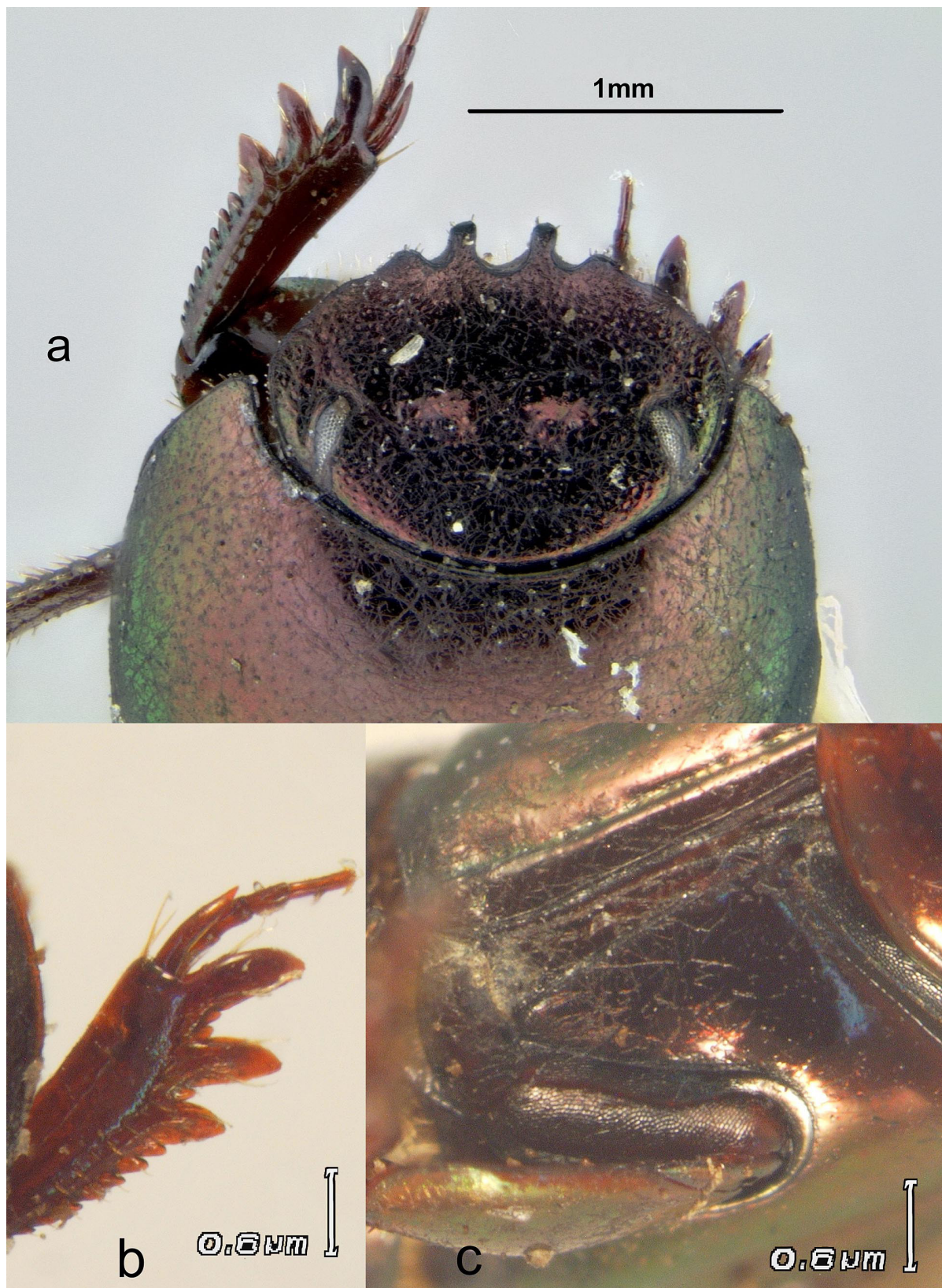


Figure 3. *Anomiopus cirulito* n. sp. a) Dorsal habitus. b) Ventral habitus. c) Lateral view.

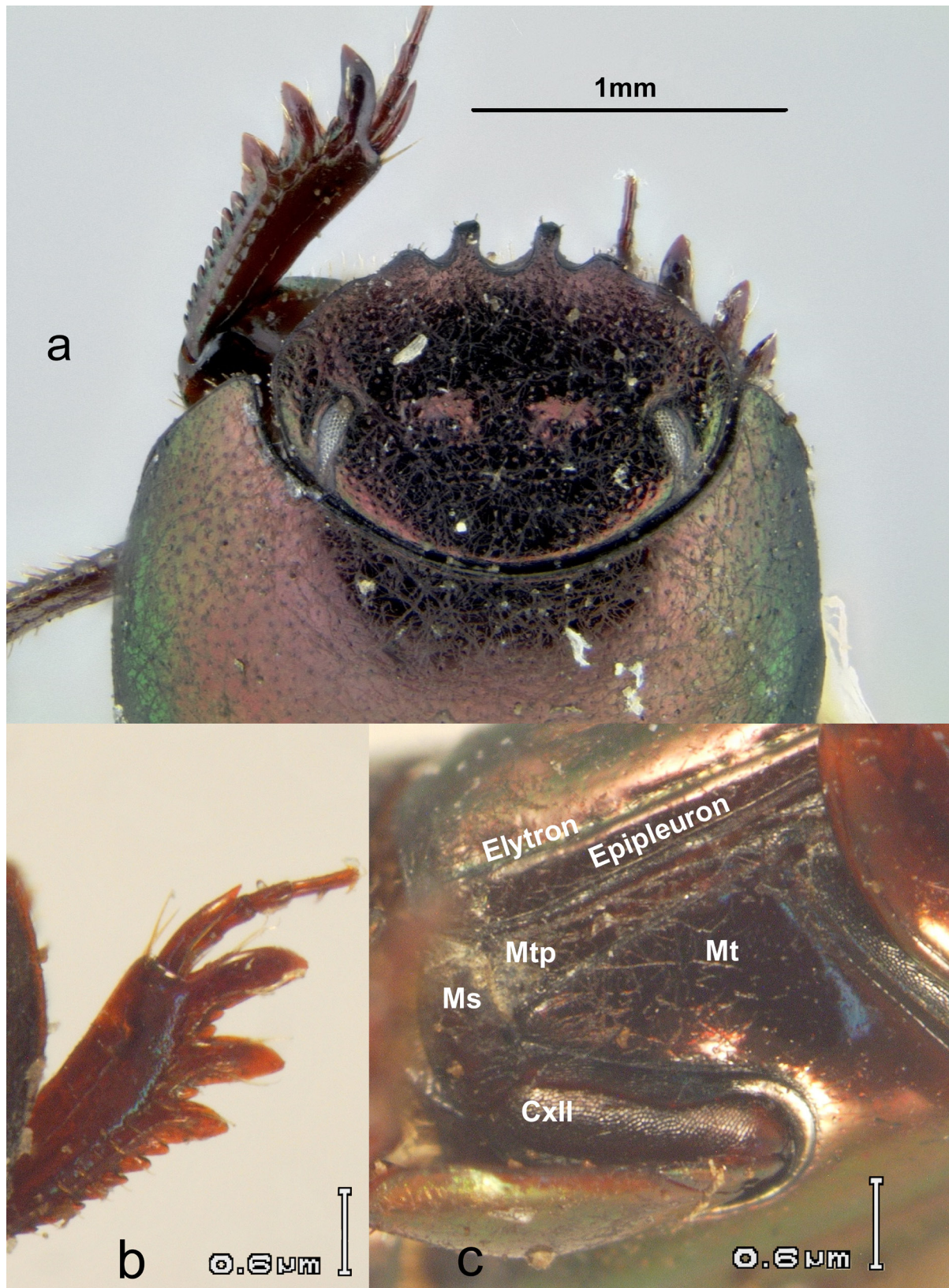


Figure 4. *Anomiopus cirulito*, n. sp. **a)** Head, pronotum and left tibia. **b)** Detail of right tibia. **c)** Details of metasternum in latero-ventral view. CxII = coxa II; Mt, metasternum; Mtp = metepisternum; Ms = mesepimeron.



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Figure 5. Vegetation and mammals at the “aguada” (wetland) Los Monifatos, the type locality of *A. cirulito* n. sp., in the Mayan Biosphere Reserve. Image from a camera-trap, 23 II 2015, 12:17:25 hrs, courtesy of WCS Guatemala.

