



## ***Ogyges* Kaup, a flightless genus of Passalidae (Coleoptera) from Mesoamerica: nine new species, a key to identify species, and a novel character to support its monophyly**

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### **Abstract**

Nine new species of *Ogyges* Kaup (Coleoptera: Passalidae) from the mountainous cloud forests of Mesoamerica are described: *O. handali* **new species** and *O. menchuae* **new species** from Guatemala; *O. cavei* **new species**, *O. laurae* **new species**, *O. llama* **new species**, *O. mutenroshii* **new species**, *O. ratcliffei* **new species**, and *O. toriyamai* **new species** from Honduras; and *O. sandinoi* **new species** from Nicaragua, the first objective record of the genus for this country. A key to the adult *Ogyges* is included. The work also shows that *Ogyges* possesses an exclusive autapomorphy: a trituberculate supra-intestinal tooth of each mandible (one long and wide apical tubercle and two connected, small, almost conical, basal tubercles). This character state is found in all known *Ogyges* species and is proposed as a synapomorphy that supports the monophyly of the genus.

**Key words:** Cloud Forest, Guatemala, Chiapas, Honduras, El Salvador, Nicaragua, synapomorphy, autapomorphy, *Proculis*, *Proculus*

## Introduction

*Ogyges* Kaup (Coleoptera: Passalidae) is a genus distributed in the mountainous cloud forests between 800–3000 m, from Chiapas (El Triunfo Reserve), Mexico to Guatemala, Honduras, El Salvador, and Nicaragua. It was synonymized under *Proculejus* Kaup by Hincks (1953) and later diagnosed and revalidated by Reyes-Castillo (1970); since then, Reyes-Castillo & Castillo (1986), Schuster & Reyes-Castillo (1990), and Schuster *et al.* (2005) described several new species, totaling 16 known valid species. All species of *Ogyges* are flightless, presenting reduced hindwings, rounded and fused elytra, and reduced eyes, four characters shared with other mountain living genera of Passalidae (e.g., *Xylopassaloides* Reyes-Castillo, Fonseca, & Castillo, *Proculus* Kaup, *Proculejus*, *Undulifer* Kaup, and *Pseudacanthus* Kaup). Based on morphological characters, particularly the clypeofrontal region and genitalia of both sexes, Boucher (2006: 346, 359–361) related *Ogyges* to the flightless genera *Proculejus* and *Proculus* in a clade with five synapomorphies (Boucher 2006: 359) and also noted (Boucher 2006: 346) that the genus, although recovered as monophyletic, is not supported by any autapomorphy. Recent field collections in Guatemala, Honduras, and northern Nicaragua provided nine new species of *Ogyges* that potentially can complicate the panorama of this genus; thus, the goals of this paper are to describe the new species with a key to the genus and provide a discussion about a novel diagnostic character that supports their monophyly.

## Material and methods

I follow the phylogenetic species concept of Wheeler & Platnick (2000), as the smallest group of populations or lineages diagnosable by a unique combination of character states. For terminology (see Fig. 1) I follow Boucher (2006), because homologies with other passalid taxa (related or unrelated) are well sustained. Nevertheless, instead of the terms central tubercle, orbital canthus, inner tubercles, and hypostomal plate, I use central horn, ocular canthus, internal tubercles, and hypostomal process, respectively. Primary types of most valid species of *Ogyges* were revised, except *O. laevissimus* (Kaup), *O. crassulus* (Casey), and *O. politus* (Hincks), for which pictures were analyzed and complemented with specimens of the species from the type locality (topotypes). Measurements were taken with a digital vernier caliper except for the antennal and ocular measurements, which were taken with an ocular micrometer in a Wild Heerbrugg M3B stereomicroscope. Total length was measured from the tip of the open mandibles to the terminal tip of elytra. All measures are in mm, the mean values ( $\bar{x}$ ) are given in parentheses. Drawings were made with the help of a drawing tube in a Wild Heerbrugg M3B stereomicroscope. Label data of specimens are verbatim. Images of specimens were taken with a Canon Eos Rebel camera with 100 mm macrolens with two flashes, except those of internal teeth of mandible, taken with a camera DP12 adapted to a SZX12 Olympus stereomicroscope. Distribution map for the species was made with the program ArcGis 9.2.

Acronyms of cited collections as follows:

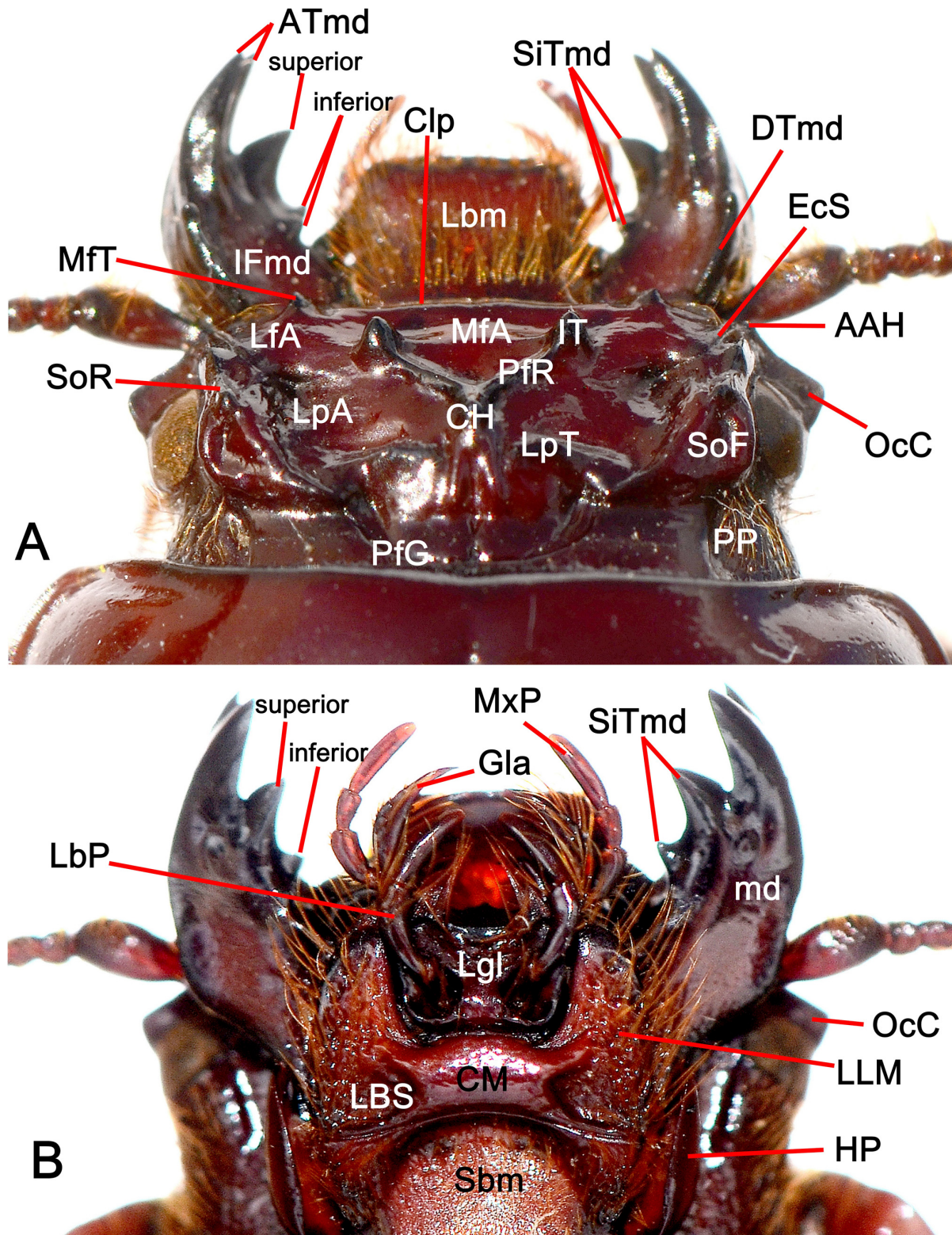
Instituto de Biología, Universidad Nacional Autónoma de México (IBUNAM); Instituto de Ecología, Xalapa, Veracruz, Mexico (IEXA); Muséum National d'Histoire Naturelle, Paris, France (MNHN); Ronald Cave, private collection, Fort Pierce, Florida, United States of America (RC); Senckenberg Research Institute and Natural History Museum, Frankfurt, Germany (SNM); Museo de Historia Natural, Escuela de Biología, Universidad de San Carlos de Guatemala, Guatemala City, Guatemala (USAC); and Arthropod Collection, Universidad del Valle de Guatemala, Guatemala City, Guatemala (UVGC).

## *Ogyges* Kaup 1871

**Type species.** *Proculejus laevissimus* Kaup, 1868, subsequent designation by Hincks & Dibb (1935: 20).

**References.** *Ogyges* Kaup, 1871: 69–70; Kuwert 1891: 192; Kuwert 1896: 291; Kuwert 1897: 291–292; Arrow 1906: 450; Reyes-Castillo 1970: 174–177; Schuster & Reyes-Castillo 1981: 109; Reyes-Castillo & Castillo 1986: 147–148; Reyes-Castillo, Fonseca, & Castillo 1987; Schuster & Reyes-Castillo 1990: 1–49; Schuster 1992: 361–362; Reyes-Castillo 2003: 167–168; Schuster *et al.* 2005: 118–130; Schuster 2006: 388; Boucher 2006: 319, 330, 343, 346, 355, 360–361, 364–365, 368–369; Fonseca *et al.* 2011: 3, 15–16.

*Oxyges* Wytzman 1884: 337 (incorrect subsequent spelling, not valid, introduced by Kaup 1871:58); Bates 1886: 7; Zang 1903: 419.



**FIGURE 1.** Characters of head used in the description of species of Passalidae. A. Dorsal view of head: AAH, anterior angles of head. ATmd, apical teeth of mandible. CH, central horn. Clp, clypeus. DTmd, dorsal teeth of mandible. EcS, epicranial sutures. IFmd, internal face of mandible. IT, internal tubercles. Lbm, labrum. LfA, laterofrontal areas. LpA, lateroposterior areas. LpT, lateroposterior tubercles. MfA, mediofrontal area. MfT, mediofrontal tubercles. OcC, ocular canthus; PFG, postfrontal groove. PfR, posterofrontal ridges. PP, postorbital pits. SiTmd, suprainternal teeth of mandible. SoF, supraorbital fossa. SoR, supraorbital ridge. Superior and inferior refers to suprainternal teeth of mandible. B. Ventral view of head. CM, center mentum. Gla, galea. HP, hypostomal process. LBS, lateral basal scars. LbP, labial palps. Lgl, ligula. LLM, lateral lobes of mentum. md, mandible. MxP, maxillary palps. Sbm, submentum.

*Pseudacanthus* Kaup, 1869: Hincks & Dibb 1935: 21; Blackwelder 1944: 190. Available genus.

*Proculejus* Kaup, 1868 (original combination): Harold 1868: 973; Hincks 1953: 30; Hincks & Dibb 1958: 10. Available genus.

**Nomenclatural commentary.** Rafinesque (1815: 135) placed the name *Ogyges* under the “Classe Helmsia, Les Vers [worms], Sous-Classe Annelidia, Ordre Endobranchia [internal or inconspicuous gills], Famille Chetopodia, Les Chetopodes [=Polychaeta], and S.F. [Subfamily] Euphrisea, Les Euphrysiens [tentacled head]”. Since the original publication, the name *Ogyges* Rafinesque has not been applied to any species of Polychaeta. In fact, neither Rafinesque (1815:135) nor any subsequent author made a diagnosis or designated a type species for this genus, failing to fulfill the requirements of availability of the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature 1999). Neave (1940: 398) considered *Ogyges* Kaup, 1871 as a junior homonym of *Ogyges* Rafinesque, 1815:135, but placed the name of Rafinesque as a *nomen nudum* “[n.n]”. Nonetheless, according to the Code (International Commission on Zoological Nomenclature 1999), *Ogyges* Rafinesque 1815 is unavailable because it lacks description (article 12.1) or indication (article 12.2). Therefore, it does not compete in priority with *Ogyges* Kaup 1871, which is an available and valid name.

## Description of newly discovered *Ogyges* species

### *Ogyges cavei* Cano, new species

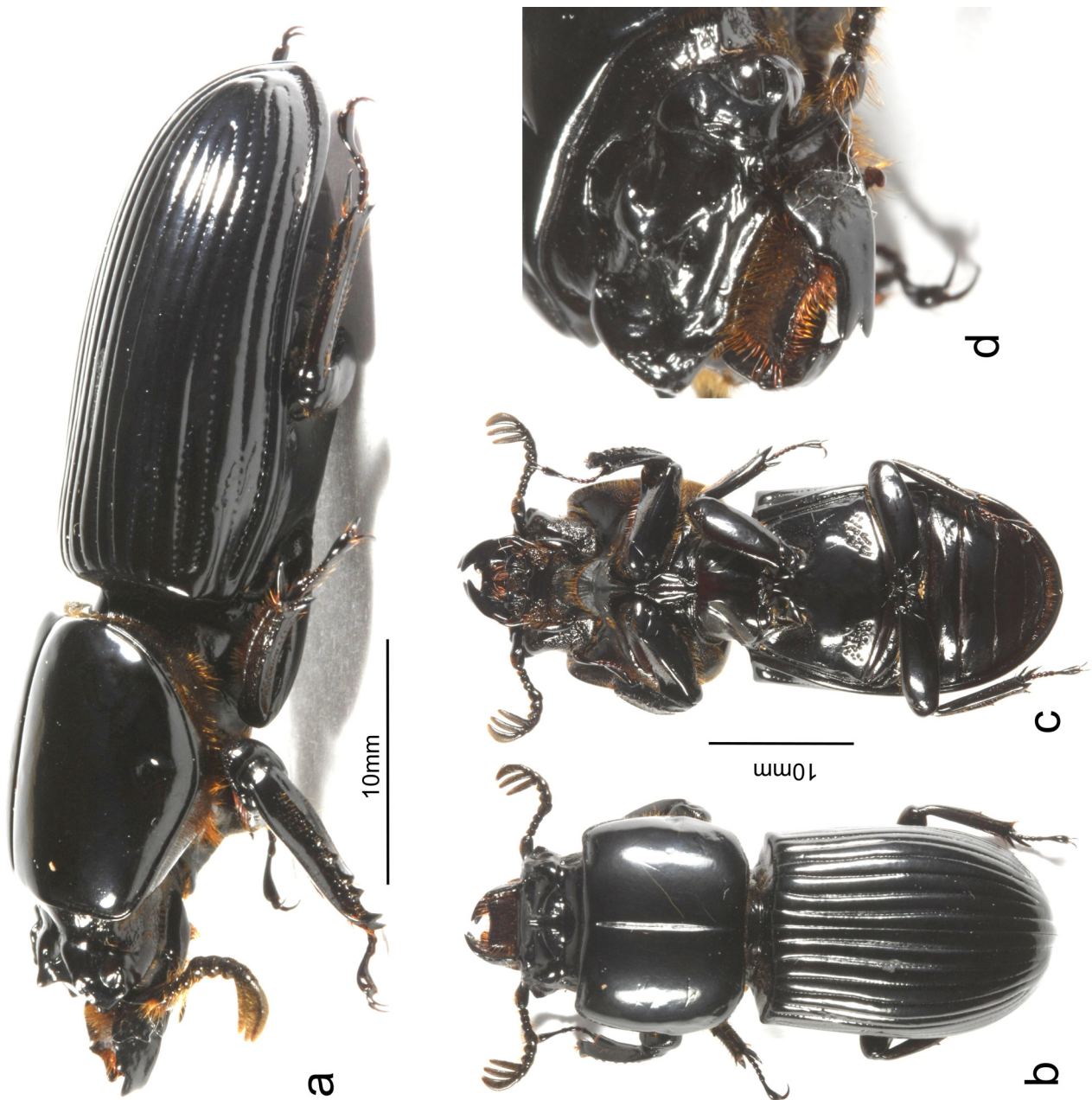
Figs. 2–3, 21d

**Diagnosis.** *Ogyges cavei* is a large species that resembles *O. nahuali* Schuster, Cano, & Boucher, by the indistinct elytral punctures and the metasternal disc delimited by strong punctures, but is easily separated by the presence of internal tubercles and the tip of central horn directed upward.

**Description.** Holotype female, black adult. Total length 40.78, elytral length 22.18, pronotal length 11.12, pronotal width 14.41, humeral width 13.64. Head: anterior border of labrum slightly concave. Clypeus inclined, anterior border straight, with two setae on lateral borders, with a weak platform separating it from the smooth mediofrontal area. Mediofrontal tubercles small and rounded; internal tubercles and posterofrontal ridges present. Laterofrontal areas smooth, with sparse, large setae on lateroclypeal pits. A small, bare, smooth fossa present in front of junction of mediopostfrontal structure and posterofrontal ridges. Lateropostfrontal areas glabrous and smooth. Central horn moderately long, with apex directed upward and slightly forward, without median longitudinal groove posteriorly; lateroposterior tubercles long, rounded, curved backward and almost reaching the supraorbital tumosity and not separated from central horn. Postfrontal groove smooth and shallow, barely deeper at sides. Supraorbital ridge with equal anterior tubercles; supraorbital fossae present and small, posterior 1/2 not bifurcate; external ridge not marked. Ocular canthus with apex slightly swollen, covering more than half of eye. Eyes reduced. Eye width = 0.42 mm. Interocular width = 7.85 mm. Head (measured between tips of canthi) = 9.37 mm; ratio width of both eyes/head = 0.09. Postorbital pits shallow, with minute, punctate setations. Ligula slightly protuberant basally with apical central tooth small with anterior ventral transversal carina present and complete; setose punctures on the median area. Lateral lobes of mentum with abundant setose punctures, except on the moderately protuberant rounded apex; medial basal mentum glabrous; lateral basal scars elongate to sides, punctate-setose and opaque. Hypostomal process elongate, without lateral depression, wide medially and narrow in the apical third. Infraocular ridge present, short and smooth, proximal area declivous and setose, distal area punctate-setose. Mandible with dorsal tooth occupying 1/2 of his length; internal face in dorsal view slightly opaque, not granular. Antennal club (Figs. 2–3) concave with all three antennomeres very wide and subequal; penultimate antennomere slightly wider than the antepenultimate.

Thorax: Lateral fossa of pronotum without punctures except minute, striate punctures ahead and behind, visible at high magnification. Pronotum with marginal groove narrow and smooth, anterior angles rounded, disc brilliant with numerous, minute, opaque punctures visible at moderate magnification. Prosternellum brilliant at center and posteriorly, opaque at anterior 1/3 and sides. Mesosternum with lateral depressions elongate and rugose (shagreened). Mesepisternum with elongate rugose area (shagreened), more marked and oval apically. Metasternum anterior angles with sparse, minute setae; disc delimited by 31–32 well-marked punctures on each side (some partially fused); marginal groove glabrous, narrow, rugose, posteriorly two times wider than medially.





**FIGURE 2.** Holotype of *Ogyges cavei*: a. lateral view. b. dorsal view. c. ventral view. d. anterolateral view of head.

Elytra: Striations marked; with minute, weakly-defined, superficial punctures, deeper and wider between striae 6–10; junctions of striations 1 and 10 with sparse extra punctures. Anterior border of elytra vertical, with minute setae on interstriae 2 (or 1) to 9.

Legs: Profemur with anterioventral groove marked; metafemur moderately elongate; mesotibia with one spine.

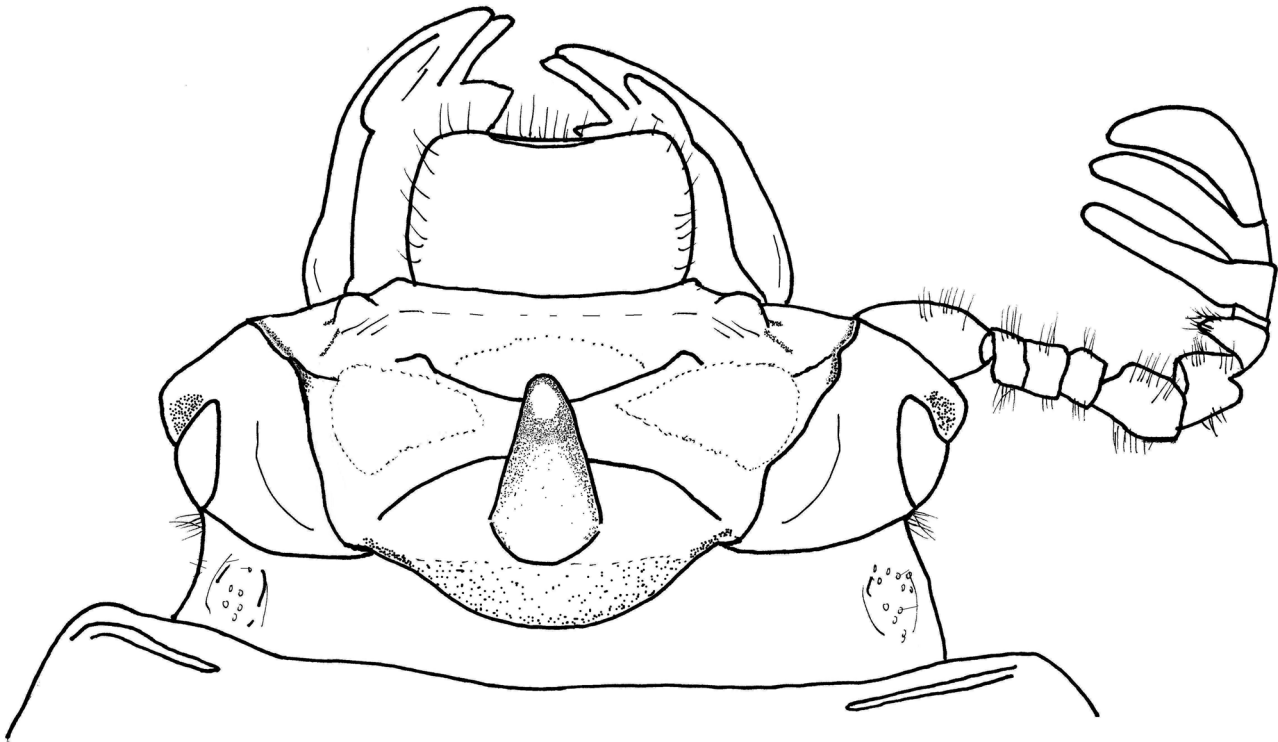
Abdomen: Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.

Variation in paratype: Total length 38.91, elytral length 20.8, pronotal length 10.75, pronotal width 13.64, humeral width 11.63. Disc of metasternum delimited by 35–38 well-marked punctures on each side and with 14–16 small punctures directly on sides of disc.

**Material examined.** 2 specimens.

**Type material.** Holotype: HONDURAS: Olancho, La Picucha, 11 km N Catacamas, 14.92740, -85.90983. Bosque nuboso, 1800–2100 m, 8–14 V 2010. L. Sáenz (LSD 451).

Paratype female: HONDURAS: Comayagua, 10 km E Comayagua, 14.45973, -87.54609, Bosque nuboso, 2000 m, 15–19 V 2010. L. Sáenz (LSD 459).



**FIGURE 3.** Dorsal aspect of head of *Ogyges cavei*.

Holotype and paratype deposited at UVGC.

**Etymology.** Named after the notable entomologist Ronald D. Cave, in honor of his studies on the entomological diversity of Honduras.

**Distribution.** The species is known only from two widely separated cloud forests between 1800–2100 m, from Olancho and Comayagua in Honduras (Fig. 4).

***Ogyges handali* Cano, new species**

Figs. 5–6, 21i

**Diagnosis.** *Ogyges handali* resembles *O. adamsi* Schuster & Reyes-Castillo, by the absence of internal tubercles, the transversal convex clypeus, and the form of the central horn and lateroposterior tubercles. The new species is easily separated of *O. adamsi* by the abundant setae on anterior corners of metasternum (sparse or bare in *O. adamsi*).

**Description.** Holotype male, black adult: Total length 33.67, elytral length 18.51, pronotal length 8.45, pronotal width 11.16, humeral width 10.31. Head: anterior border of labrum concave. Clypeus thickened, transversely convex, anterior border straight, with a central notch in form of “v”; with rugose sulcus separating from the inclined medifrontal area. Medifrontal tubercles small and rounded; internal tubercles absent. Laterofrontal areas roughened. Posterofrontal ridges absent; instead, a transversal ridge (tumose near the central horn) runs between the mediopostfrontal structure and the epicranial sutures, forming the anterior margin of lateropostfrontal areas. Medifrontal area with several grooves confluent to the clypeus, with a wide, bare, rough fossae present in front of the mediopostfrontal structure. Lateropostfrontal areas glabrous, deep, with several grooves. Central horn long, with apex short and free; posterior 1/3 tumose and clearly differentiated from the lower lateroposterior tubercles and with a deep median longitudinal groove; lateroposterior tubercles lower than central horn, barely marked, separated from central horn and directed forward. Postfrontal groove shallow at middle and laterally deep. Supraorbital ridge brilliant and rugose, with unequal anterior tubercles; posterior 1/2 barely bifurcate but with supraorbital fossae elongate, well marked; external ridge rounded. Ocular canthus with apex slightly swollen, rounded, ventrally extended just to half of eye. Eyes reduced. Eye width = 0.31 mm. Interocular

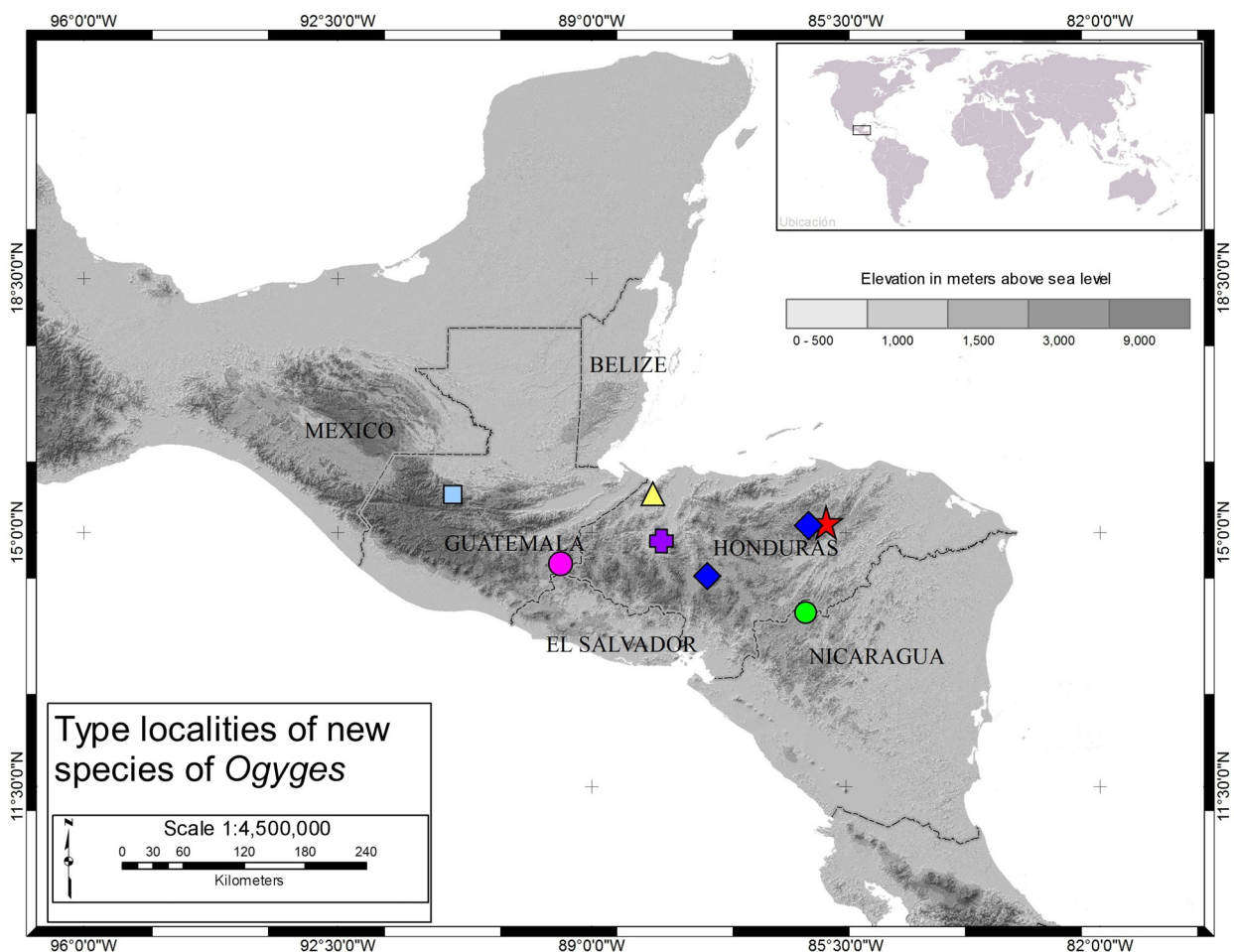
width = 6.61 mm. Head (measured from tips of canthi) 8.03 mm; ratio width of both eyes/head = 0.08. Postorbital pits punctate setose. Ligula slightly protuberant basally, with apical central tooth small and anterior transversal carina absent; abundant setose punctures on the median area, basally sparse. Lateral lobes of mentum with moderate setose punctures, more abundant towards the brilliant oval lateral basal scars; medial basal mentum glabrous and smooth. Hypostomal process elongate, without lateral depression, wide medially and narrow in the apical third. Infraocular ridge present, short and smooth, surrounded by setose punctures. Mandible with dorsal tooth occupying 1/2 of the length; internal face of mandible in dorsal view granular. Antennal club (Fig. 5) with all three antennomeres very wide and subequal measuring 1.77 mm long and 2.31 mm wide; antepenultimate antennomere narrower than penultimate.

Thorax: Lateral fossa of pronotum without punctures except sparse, rugose micropunctures ahead and behind, only visible at very great magnification. Pronotum with marginal groove narrow and smooth, anterior angles rounded, disc smooth at moderate magnification. Prosternellum wide and brilliant. Mesosternum bare and shiny, without definite opaque/rugose (shagreened) areas. Mesepisternum brilliant. Metasternum with anterior angles punctate setose; disc not delimited by punctures; marginal groove very narrow and rugose, with disperse setae in the anterior 4/5 of its length, posteriorly four times wider than medially.

Elytra: Brilliant, with well-marked striations; with small, defined, moderately deep punctures; junctions of striations 1 and 10 without extra punctures. Anterior border of elytra vertical, smooth, with minute scattered setae between interstriae 2–8.

Legs: Profemur with anterioventral groove marked; metafemur elongated; mesotibia with one spine.

Abdomen: Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.



**FIGURE 4.** Map of northern Central America showing the locality of the new species. Light blue square, *Ogyges menchuae*; rose circle, *O. handali*; blue rhombus, *O. cavei*; yellow triangle, *O. llama*, *O. mutenroshii*; purple cross, *O. toriyamai*; red star, *O. laurae*, *O. ratcliffei*, and light green circle, *O. sandinoi*.

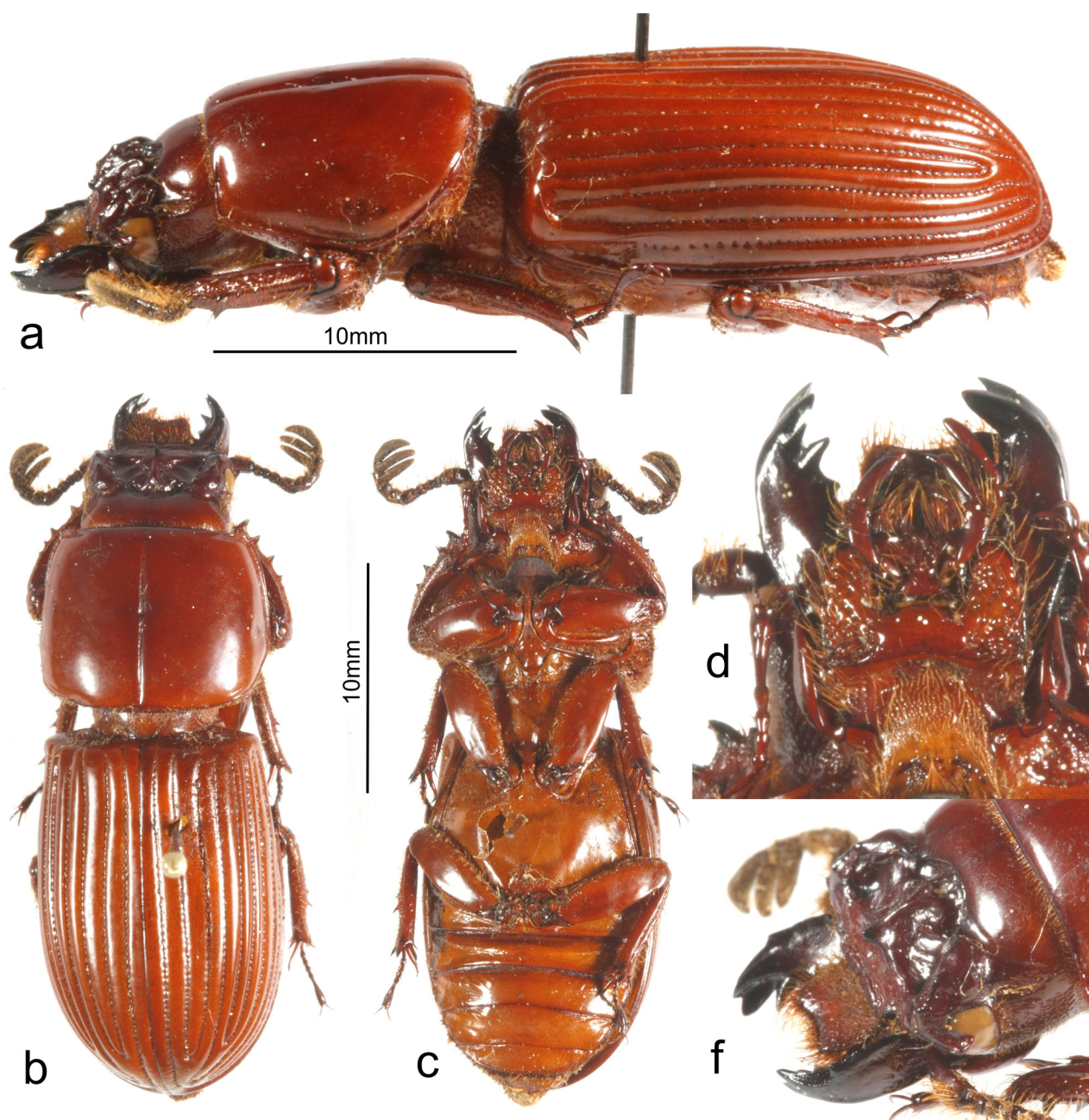


Aedeagus: In ventral view phallus globose; parameres and phallobase partially separated. In dorsal view, ventrodorsal basal sclerotizations of the phallus present (Fig. 6).

Variation in paratypes ( $n = 19$ ): Total length 30.54–35.58 ( $\bar{x} = 33.00$ ), elytral length = 16.06–19.17 ( $\bar{x} = 17.97$ ), pronotal length = 7.5–8.76 ( $\bar{x} = 8.44$ ), pronotal width = 9.7–11.54 ( $\bar{x} = 11.03$ ), humeral width = 9.16–11.27 ( $\bar{x} = 10.36$ ).

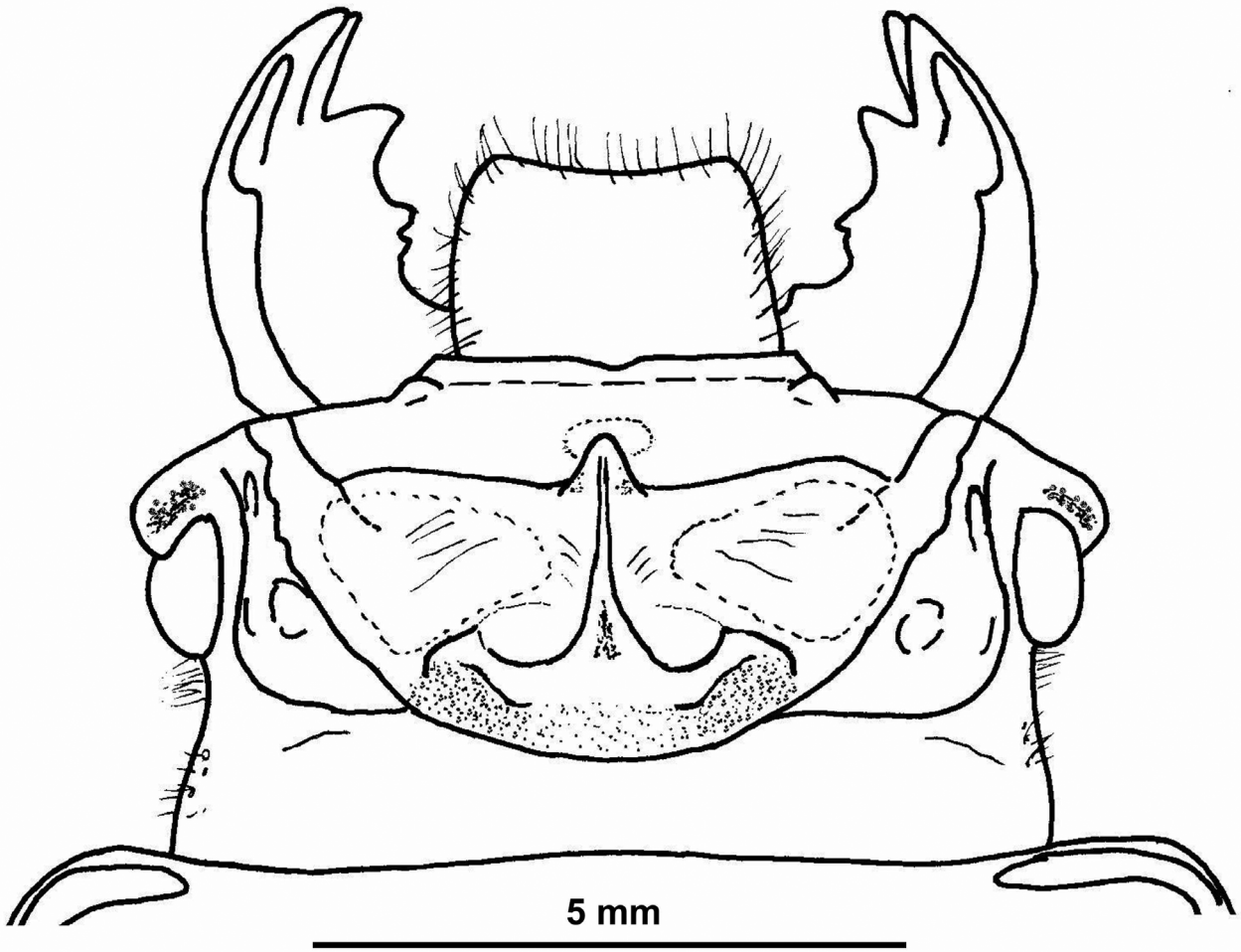
**Material examined.** 49 specimens.

**Type material.** Holotype male: GUATEMALA: Chiquimula, aldea Santa Rosalía, El Duraznal, cerca del Plan de la Arada, 11 VI 2011, 14°31'30.4"N, 89°22'47.3"W, 1668 m, bosque nuboso, Col. E.B. Cano. Paratypes: Same data as holotype (1 male, 1 female). Same data except 1–4 IV 2011, aprox. 1700 m, Col. C. Suchité (11 males, 14 females). Same data except aldea El Duraznal, cerca de La Mesilla, 1630 m, 20 VIII 1998, Cols. E. Cano & J. Monzón (5). Guatemala: Chiquimula, San José las Minas, camino entre caserío Las Presas y el Plan de la Arada, Bosque nuboso. 1900 m, 24 VI 1998, Col. E. Cano (16).

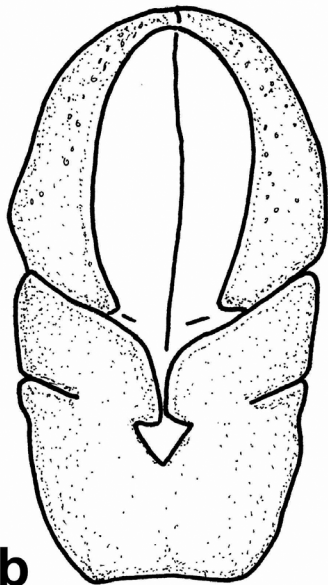


**FIGURE 5.** Paratype of *Ogyges handali*: a. lateral view. b. dorsal view. c. ventral view. d. ventral view of head and prothorax. e. anterolateral view of head.



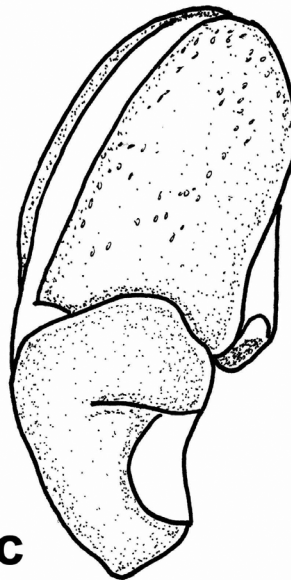


**a**

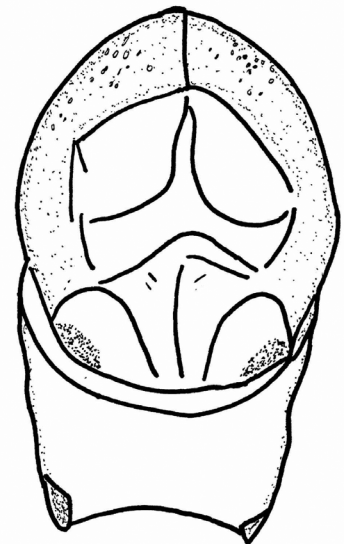


**b**

1mm



**c**



**d**

**FIGURE 6.** *Ogyges handali*: a. dorsal aspect of head. b. ventral view of aedeagus. c. lateral view of aedeagus. d. dorsal view of aedeagus.

Holotype deposited at UVGC, paratypes deposited in UVGC, USAC, IEXA, IBUNAM, SNM, and MNHN.

**Etymology.** Named in honor of Commander Dr. Schafik Handal, officially recognized as “Hijo Meritísimo de la Ciudad de San Salvador” and “Honor al Mérito Centroamericano”, for his efforts in favor of the peace in Central America.

**Distribution.** The species is known only from the fragmented cloud forests of Cerro Montecristo between 1640–1900 m in Guatemala (Fig. 4). The new species should be present in the protected forest of the El Salvador portion and the bigger forest of the Honduran portion.

### ***Ogyges laurae* Cano new species**

Figs. 7–8, 21m

**Diagnosis.** *Ogyges laurae* is the smallest species of the genus *Ogyges*. The elytra with wide and deep dorsal punctures are evidence that this species is closely allied to the “*O. crassulus*” lineage (as suggested by Schuster *et al.* (2005)). It is easily separated from *O. crassulus*, *O. monzoni* Schuster, Cano, & Boucher and *O. aluxi* Schuster, Cano, & Boucher, by the smaller size, the impunctate (or almost impunctate) medial basal mentum, the scarcely free central horn, and the mesotibia with only one spine.

**Description.** Holotype male, dark brown teneral, with blue iridescence. Total length 22.91, elytral length 12.53, pronotal length 6.55, pronotal width 8.1, humeral width 7.25. Head: anterior border of labrum slightly concave. Clypeus vertical; anterior border almost straight, with a very small central notch; with an incomplete sulcus formed by striate punctures of granular aspect separating it from the mediofrontal area. Mediofrontal tubercles rounded and defined. Mediofrontal area smooth, with sparse micropunctures; without internal tubercles and posterofrontal ridges. Laterofrontal areas smooth. Lateropostfrontal areas wide, glabrous, smooth, with a few rugosities and frequent micropunctations. Central horn long, basally wide, with apex moderately free and directed forward and slightly upward, without median longitudinal groove posteriorly; lateroposterior tubercles short, laterally rounded, separated from central horn by a sulcus or fossa. Postfrontal groove medially very narrow (constrained by the extended mediopostfrontal structure), gradually enlarged and deeper at sides and almost continuous with the lateropostfrontal areas. Supraorbital ridge with two unequal anterior tubercles; posterior 1/2 bifurcate with supraorbital fossa deep, external ridge well marked. Ocular canthus with apex swollen, almost oblique. Eyes reduced. Eye width = 0.38 mm. Interocular width = 4.61 mm. Head width (between apex of canthus) = 5.07 mm; ratio both eye widths/head = 0.15. Postorbital pits oval, bare, deep and smooth, separated by a keel from an external punctate setose area and located immediately behind the external supraorbital ridge. Ligula slightly protuberant basally, setose punctures present medially, with apical central tooth small and transversal anterior carina absent (a tumosity is present). Lateral lobes of mentum shagreened, with setose punctures; apical area strongly microstriate (except on lateral borders), reaching the anterior borders of center mentum; lateral basal scars oval and opaque; medial basal mentum bare, shiny, without or at most with a few punctures with slender and long setae. Hypostomal process elongate, wide medially and narrow in apical third, without lateral depression. Infraocular ridge present, external and basal area punctate or punctate-setose. Mandible with dorsal tooth occupying 1/2 of his length; internal face in dorsal view smooth. Antennal club (Figs. 7–8) 1.08 mm long, 1.23 mm wide, with last two antennomeres wider than antepenultimate.

Thorax: Lateral fossae of pronotum only on sides with some micropunctures of rugose aspect, visible with great magnification. Pronotum with marginal groove narrow and laterally with abundant micropunctures of rugose aspect (striate); anterior angles rounded; disc smooth, only with sparse micropunctures (visible at great magnification). Prosternellum completely shagreened. Mesosternum glabrous; lateral depressions elongate and rugose (shagreened), widened posteriorly. Mesepisternum with large, rugose (shagreened) area, anteriorly widened and elongate and narrow towards distal portion. Metasternum anterior angles bare or with sparse minute setae; disc delimited by 20–22 well marked punctures on each side; marginal groove bare, very narrow, smooth, posteriorly two times wider than medially.

Elytra: Opaque, with blue iridescence under light; striations marked and with well-defined punctures not connected, slightly deeper and wider between striae 5–10; with micropunctures present on interstria, more abundant and easily visible on 6–10; junctions of striae 1 and 10 with some extra punctures. Anterior border of elytra vertical, with minute setae on interstriae 2 to 7.

Legs: Profemur with anterioventral groove marked and long; metafemur widened; mesotibia with one spine.

Abdomen: Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.

Aedeagus: In ventral view phallus globose and elongate; paramerers and phallobase separated (Fig. 8).

Variation in paratypes ( $n = 10$ ): Total length 18.71–22.91 ( $\bar{x} = 21.34$ ), elytral length 11.53–12.53 ( $\bar{x} = 11.76$ ), pronotal length 5.51–6.55 ( $\bar{x} = 5.88$ ), pronotal width 7.24–8.10 ( $\bar{x} = 7.48$ ), humeral width 6.70–7.47 ( $\bar{x} = 7.08$ ). Disc of metasternum delimited by 19–25 well-marked punctures on each side. Elytra slightly brilliant in teneral (light brown) specimens; blue iridescence more easily visible in black specimens.

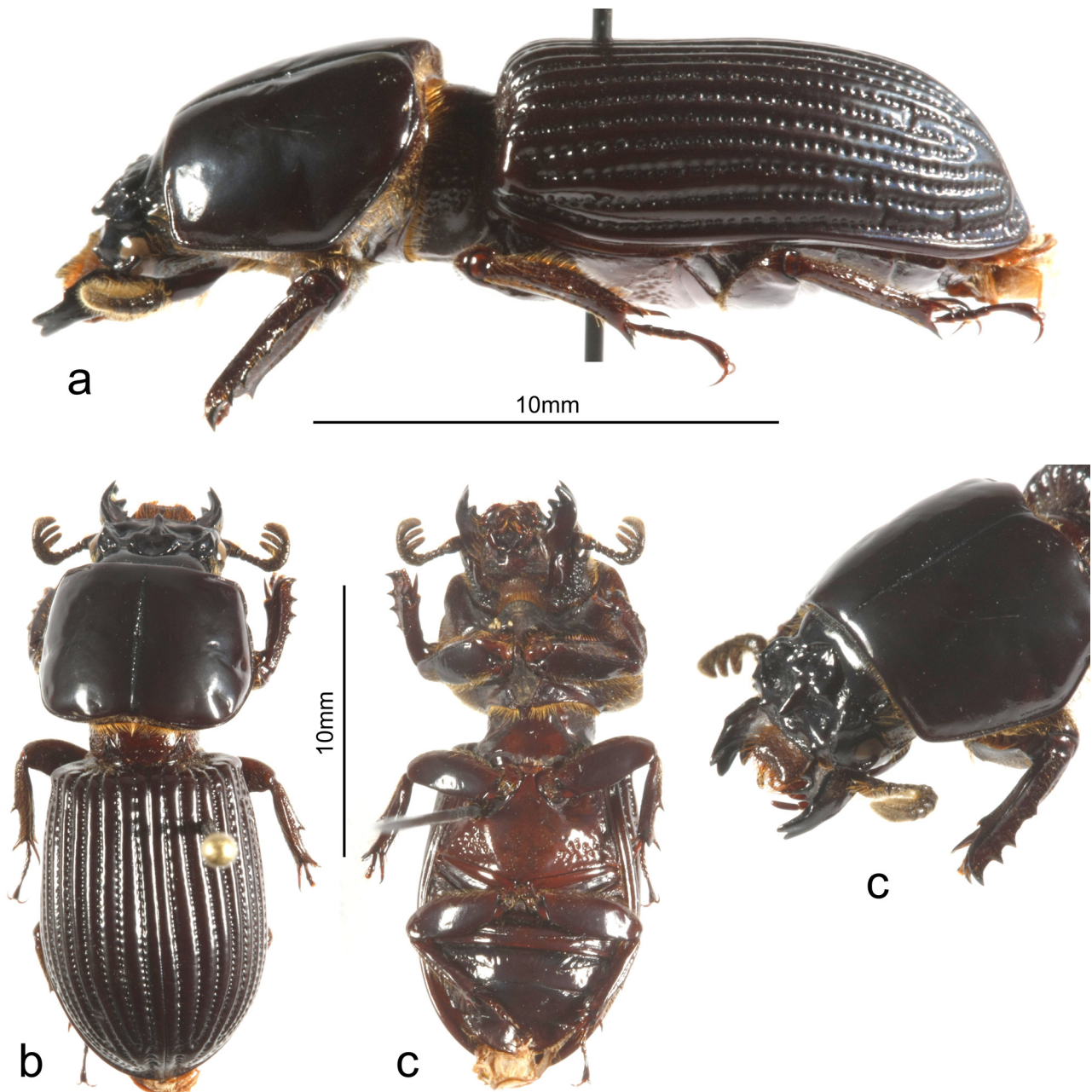
**Material examined.** 11 specimens.

**Type material.** Holotype male. Honduras, Olancho, 11 km N of Catamacas, mountain “La Picucha”, 14.92740, -85.90983, 1800–2100 m, 8–14 V 2010. L. Sáenz collector (LSD). Paratypes: Same data as holotype (10).

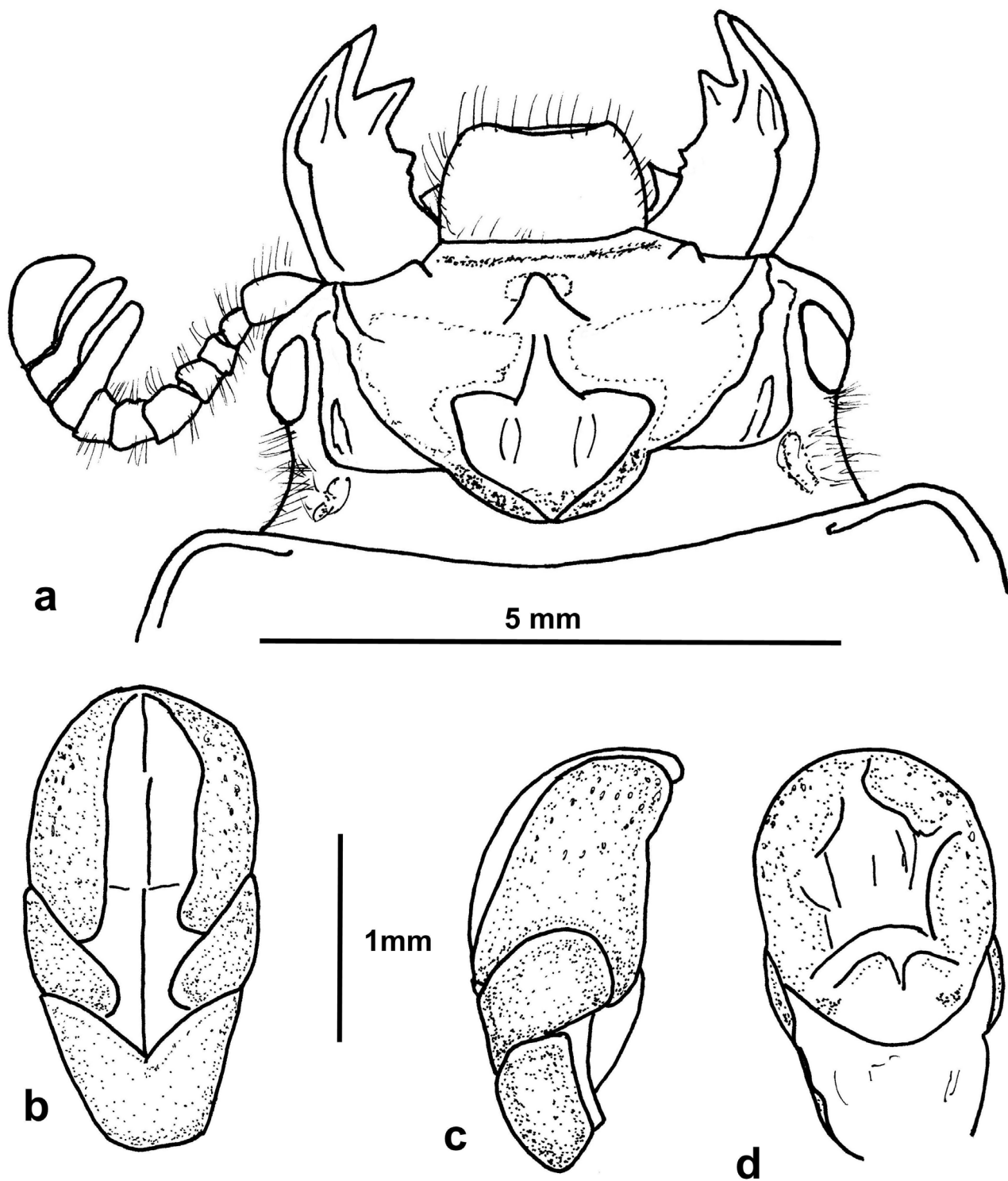
Holotype deposited in UVGC. Paratypes deposited in UVGC, IEXA, USAC, IBUNAM, SNM, and MNHN.

**Etymology.** The name of this species is in honor of my friend and myrmecologist Laura Sáenz.

**Distribution.** Only known from Cerro La Picucha, in Olancho, Honduras (Fig. 4), a mid-altitude cloud forest.



**FIGURE 7.** Paratype of *Ogyges laurae*: a. lateral view. b. dorsal view. c. ventral view. d. anterolateral view of head and pronotum.



**FIGURE 8.** *Ogyges laurae*: a. dorsal aspect of head. b. ventral view of aedeagus. c. lateral view of aedeagus. d. dorsal view of aedeagus.

***Ogyges llama* Cano, new species**

Figs. 9–10, 21n

**Diagnosis.** By the elytra with wide, deep dorsal punctures, *O. llama* is similar to the “*O. crassulus*” lineage (as suggested by Schuster *et al.* (2005)). It is easily separated from *O. monzoni* and *O. aluxi* by the smaller size, the

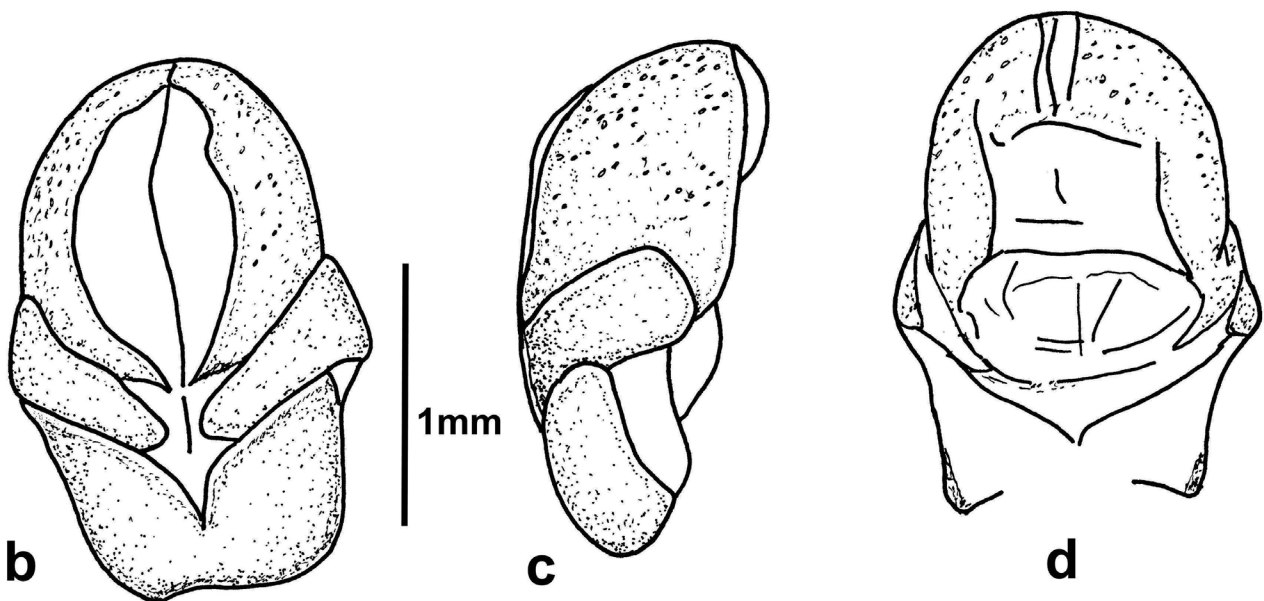
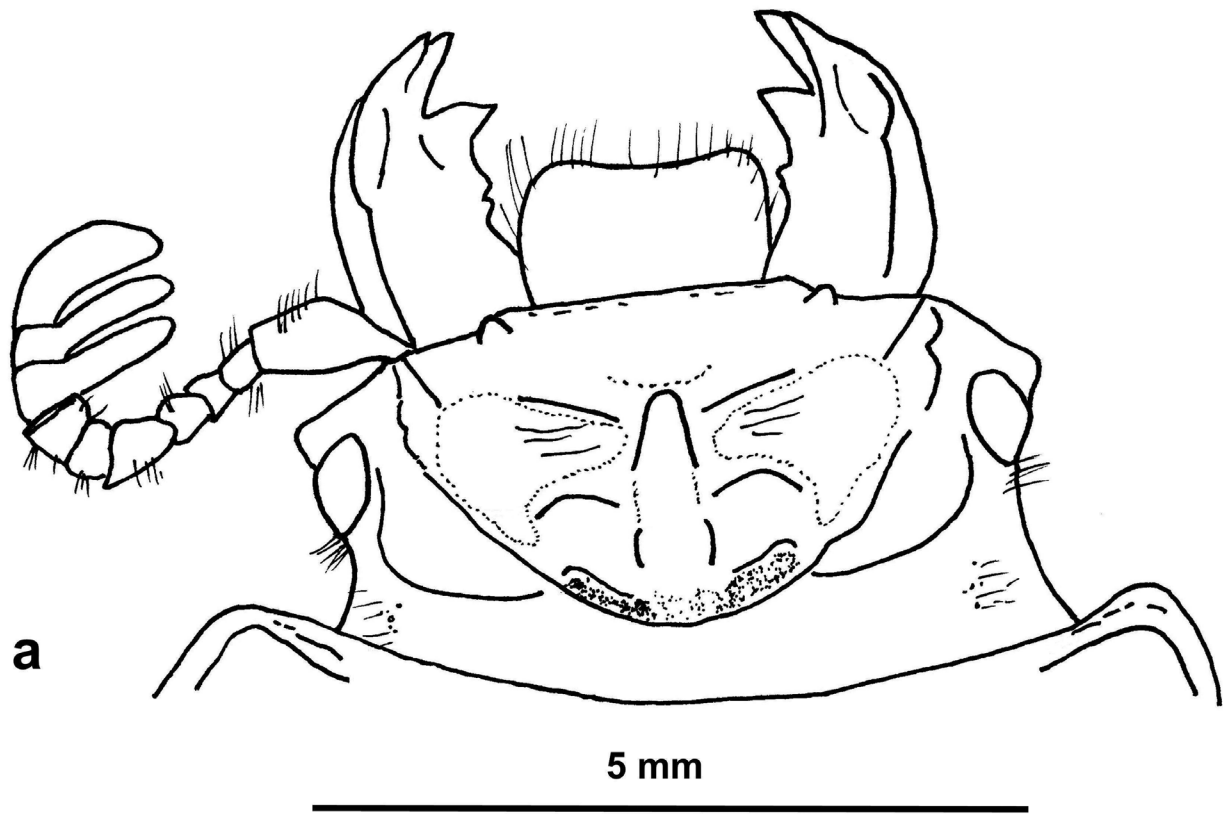


central horn not free or scarcely free and by the medial central mentum weakly rugopunctate. It can be separated from *O. laurae* by the mesotibia with two spines (instead of one) and the tumose posterior portion of central horn. From the sympatric or almost sympatric *O. crassulus* it is separated by the form of aedeagus, with lateral lobes separated from basal piece, and the widest punctures on posterior striae 6–9.

**Description.** Holotype male, black (dorsum) to dark brown (venter) teneral, with blue iridescence. Total length 22.61, elytral length 11.85, pronotal length 6.23, pronotal width 8.16, humeral width 7.56. Head: anterior border of labrum slightly concave. Clypeus inclined ( $> 90^\circ$ ); anterior border straight, lacking a central invagination, with a scabrose (to almost granular) sulcus separating it from the smooth (almost shagreened at great magnification) mediofrontal area. Mediofrontal tubercles rounded and defined; internal tubercles and posterofrontal ridges absent. Laterofrontal areas smooth. Lateropostfrontal areas wide, glabrous, and smooth; a marked or weakly marked keel



**FIGURE 9.** Paratype of *Ogyges llama*: a. lateral view of head. b. dorsal view. c. ventral view. d. lateral view.



**FIGURE 10.** *Ogyges llama*: a. dorsal aspect of head. b. ventral view of aedeagus. c. lateral view of aedeagus. d. dorsal view of aedeagus.

runs laterally from the mediopostfrontal structure, forming the anterior border of lateropostfrontal areas. A wide, bare, smooth fossa present in front of the mediopostfrontal structure. Central horn short, narrow, with apex weakly free (or almost not free), directed upward, without median longitudinal groove posteriorly; lateroposterior tubercles not elongate, forming an angle directed forward and sideways, separated from the central horn by a groove. Postfrontal groove shallow, medially very narrow (constrained by the extended mediopostfrontal structure), gradually enlarged at sides and almost continuous with the lateropostfrontal areas. Supraorbital ridge with equal

anterior tubercles; posterior 1/2 bifurcate with the supraorbital fossae deep; external ridge well marked. Ocular canthus with apex straight or slightly swollen, ventrally covering at least the half of eye. Eyes reduced. Eye width = 0.42 mm. Interocular width = 4.61 mm. Head width (measured between tips of ocular canthus) = 5.85 mm; ratio both eye widths/head width = 0.14. Postorbital pits oval, elongate and covered with sparse setae on external border. Ligula slightly protuberant basally, with small central tooth and without a ventral anterior transversal carina (a tumosity is present); medially with setose punctures. Lateral lobes of mentum with moderate setose punctures, lateral basal scars oval and opaque (shagreened); medial basal mentum shiny, with a few scattered small and scabrous setose punctures, setae long and slender. Hypostomal process elongate, without lateral depression, wide medially and narrow in apical third. Infraocular ridge present, short and smooth, surrounded by striate, setose punctures. Mandible with dorsal tooth occupying 1/2 of its length; internal face of mandible in dorsal view smooth, not granular. Antepenultimate antennomere of antennal club subequal in length but less wide than the penultimate (Figs. 9–10); antennal club measures 1.11 mm wide and 1.23 mm long.

Thorax: Lateral fossae and marginal groove of pronotum with abundant striate micropunctures, visible at great magnification; anterior angles rounded; disc smooth except for scattered shallow micropunctures visible at high magnification. Prosternellum opaque, completely shagreened. Mesosternum glabrous; lateral depressions elongate and rugose (shagreened). Mesepisternum with oval, very elongate shagreened area, reaching the posterior border. Metasternum anterior angles glabrous; disc delimited by 12–16 well marked punctures (some partially fused) on each side; marginal groove glabrous, narrow and smooth, posteriorly two times wider than medially.

Elytra: Opaque, with blue iridescence; striations well marked and with defined punctures, slightly deeper and wider between striae 5–10; anterior 1/3 of sixth interstriae of the width of a puncture of striae 6 or 7; junctions of striations 1 and 10 with some extra punctures.

Legs: Profemur with anteroventral groove marked; metafemur moderately widened; mesotibia with two spines.

Abdomen: Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.

Aedeagus: In ventral view phallus globose; parameres and phallobase separated (Fig. 10).

Variation ( $n = 30$ ): Total length 19.30–24.49 ( $\bar{x} = 22.95$ ), elytral length 11.7–13.24 ( $\bar{x} = 12.59$ ), pronotal length 5.60–7.18 ( $\bar{x} = 6.38$ ); pronotal width 7.55–8.69 ( $\bar{x} = 8.19$ ); humeral width 6.8–8.26 ( $\bar{x} = 7.71$ ). Disc of metasternum delimited by 12–24 well marked punctures (some striate or partially fused) on each side.

**Material examined.** 44 specimens.

**Type material.** Holotype male. Honduras: Cortés, cerca de San Pedro Sula, 15.512598°, -88.113660° 1580 m, 2 X 2011, Bosque nuboso. Coll. F. Camposeco. Paratypes: Same data as holotype (5 males, 7 females, 30 unknown). Honduras: Cortés Dept. 30 km W of S. Pedro Sula, 1550 m alt., 20-21 III 1987, bosque nuboso, J.C. Schuster, # VI3 female, Type C disturbance sound (1).

Holotype deposited at UVGC. Paratypes deposited in UVGC, IEXA, USAC, RC, SNM, and IBUNAM.

**Etymology.** Named after colleagues of the National Science Foundation project LLAMA (Leaf Litter Arthropods of Mesoamerica), led by Jack Longino and Bob Anderson. Several new species were collected under the umbrella of this project.

**Distribution.** This species is known from cloud forests of middle altitude near San Pedro Sula in Honduras (Fig. 4).

### ***Ogyges menchuae* Cano, new species**

Figs. 11–12, 21p

**Diagnosis.** *Ogyges menchuae* is most similar to *O. cakchiqueli* Schuster & Reyes-Castillo, *O. championi* (Bates), and *O. kekchii* Schuster & Reyes-Castillo. These species are in the “*O. laevior*” [= *O. championi*] lineage of Schuster & Reyes Castillo (1990). The large internal tubercles separate it from similar species, except from *O. tzutuhili* Schuster & Reyes-Castillo and *O. marilucasae* Reyes-Castillo & Castillo, but is easily separated by the narrow antennal club (very wide in *O. tzutuhili* and *O. marilucasae*), and the smaller size.

**Description.** Holotype male, black adult. Total length 29.24, elytral length 16.20, pronotal length 8.38, pronotal width 10.61, humeral width 10.03. Head: anterior border of labrum straight, dorsal surface granular. Clypeus vertical, anterior border straight, posteriorly microgranulate, separated from the mediofrontal area by an

inflection; mediofrontal tubercles conical, with apex rounded, moderately enlarged and markedly visible in lateral view. Mediofrontal area slightly microtuberculate, moderately roughened; internal tubercles present and well developed, directed forward and slightly upward, connected to the curved and strongly marked posterofrontal ridges; angle of posterofrontal ridges concave and united to the central horn. Laterofrontal areas roughened, with sparse granulations. Lateropostfrontal areas glabrous, smooth, somewhat roughened and with sparse microtubercles or granulations. Central horn short with apex conical, not free and with median longitudinal (mostly deep) groove dorsally in basal half; lateroposterior tubercles elongate, rounded, directed forward, separated from the central horn by a small groove with sparse or moderate microgranulations. Postfrontal groove deeper at sides and separated from lateropostfrontal areas. Supraorbital ridge with mostly unequal or almost equal anterior tubercles; posterior 1/2 bifurcate, with the supraorbital fossae very deep; external ridge well marked. Ocular canthus with apex swollen, apex forming a right angle. Eyes reduced, width = 0.54 mm (each eye). Interocular width = 6.15 mm. Head width (measured between tips of canthi) = 6.92 mm; ratio both eyes/head = 0.16. Postorbital pits situated immediately behind supraorbital ridges, almost rectangular, shallow and with a few punctures; external borders with setose punctures. Ligula slightly protuberant basally; with a central apical tooth small and with a transversal, well marked anterior ventral ridge; setose punctures present medially. Lateral lobes of mentum with abundant setose punctures; lateral basal scars oval, brilliant and punctate setose, internal border longitudinally striate. Medial basal mentum bare and with sparse micropunctures visible at great magnification. Hypostomal process elongate, wide medially and narrow in apical third, without lateral depression. Infraocular ridge short, external and basal area punctate-pubescent. Dorsal tooth of mandible occupies 1/2 length of the mandible; internal face of mandible in dorsal view, granular. Antennal club (Figs. 11–12) 1.88 mm long, 1.31 mm wide; with last two antennomeres wider than the antepenultimate, this slightly more than twice as wide as long.

Thorax: Lateral fossae of pronotum with micropunctures of rugose aspect, visible with moderate magnification. Pronotum with marginal groove narrow, widened at anterior margin; anterior angles rounded, slightly projected anteriorly immediately behind eyes. Pronotum with dense and shallow micropunctures of rugose aspect, visible at moderate magnification, running from the lateral fossae to the anterior border, internal to marginal groove; disc with sparse micropunctures visible at great magnification. Hypomerone with abundant small shallow punctures. Prosternellum completely shagreened. Mesosternum bare, lateral depressions elongate, rugose (shagreened). Mesepisternum with large and oval rugose (shagreened) area extended to posterior margin. Metasternum with anterior angles bare; disc not delimited by punctures; marginal groove bare and narrow, posterior part 1.5–2.0 times wider than the median part.

Elytra: Striations marked and with small but defined punctures, wider and deeper from 5–10; interstriae 1–7 with sparse micropunctures, more abundant and visible at moderate magnification on interstriae 8–10; junctions of striations 1 and 10 without extra punctures.

Legs: Profemur with anterioventral groove marked, metafemur widened; mesotibia with two (rarely three) spines.

Abdomen: Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.

Aedeagus: In ventral view phallus globose; parameres and phallobase separated; in dorsal view, ventrodorsal basal sclerotizations of the phallus present (Fig. 12).

Variation ( $n = 20$ ): Total length 29.36–33.15 ( $\bar{x} = 31.43$ ), elytral length 16.11–18.66 ( $\bar{x} = 17.29$ ), pronotal length 7.40–9.13 ( $\bar{x} = 8.56$ ), pronotal width 10.12–11.72 ( $\bar{x} = 10.93$ ), humeral width 9.46–10.71 ( $\bar{x} = 10.17$ ). Mediofrontal area more or less smooth to somewhat or moderately roughened, with scarce to barely visible microgranulations. Some specimens present an anterior keel in the concavity of the angle of posterofrontal ridges.

**Material examined.** 35 specimens.

**Type material.** Holotype: GUATEMALA: Quiché, Uspantán, aldea Laj Chimel, montaña al norte de la aldea, 2100 m., VII 1998, bosque nuboso. E.B. Cano collector.

Paratypes: GUATEMALA: same data as holotype (1 male, 7 unknown); same data except Norte Laj Chimel, San Pedro, 2100m (1 male, 1 unknown); same data except Aldea Laj Chimel, A.González-Madrid, 30 V 2011 (13); same data except, Aldea Laj Chimel, road to San Pablo, 30 IV 2011, 15°27'30.69"N, 90°46'26.11"W, 2035 m, A. González-Madrid 30 V 2011 (3 male, 1 unknown); same data except, Aldea Laj Chimel, road to San Pablo, 30 IV 2011, 15°27'30.69"N, 90°46'26.11"W, 2035 m (6); same data except, Montaña El Amay, in logs 15 VI 2012, A. Zamora (2 males).

Holotype deposited in UVGC. Paratypes deposited in UVGC, IEXA, USAC, IBUNAM, SNM, and MNHN.

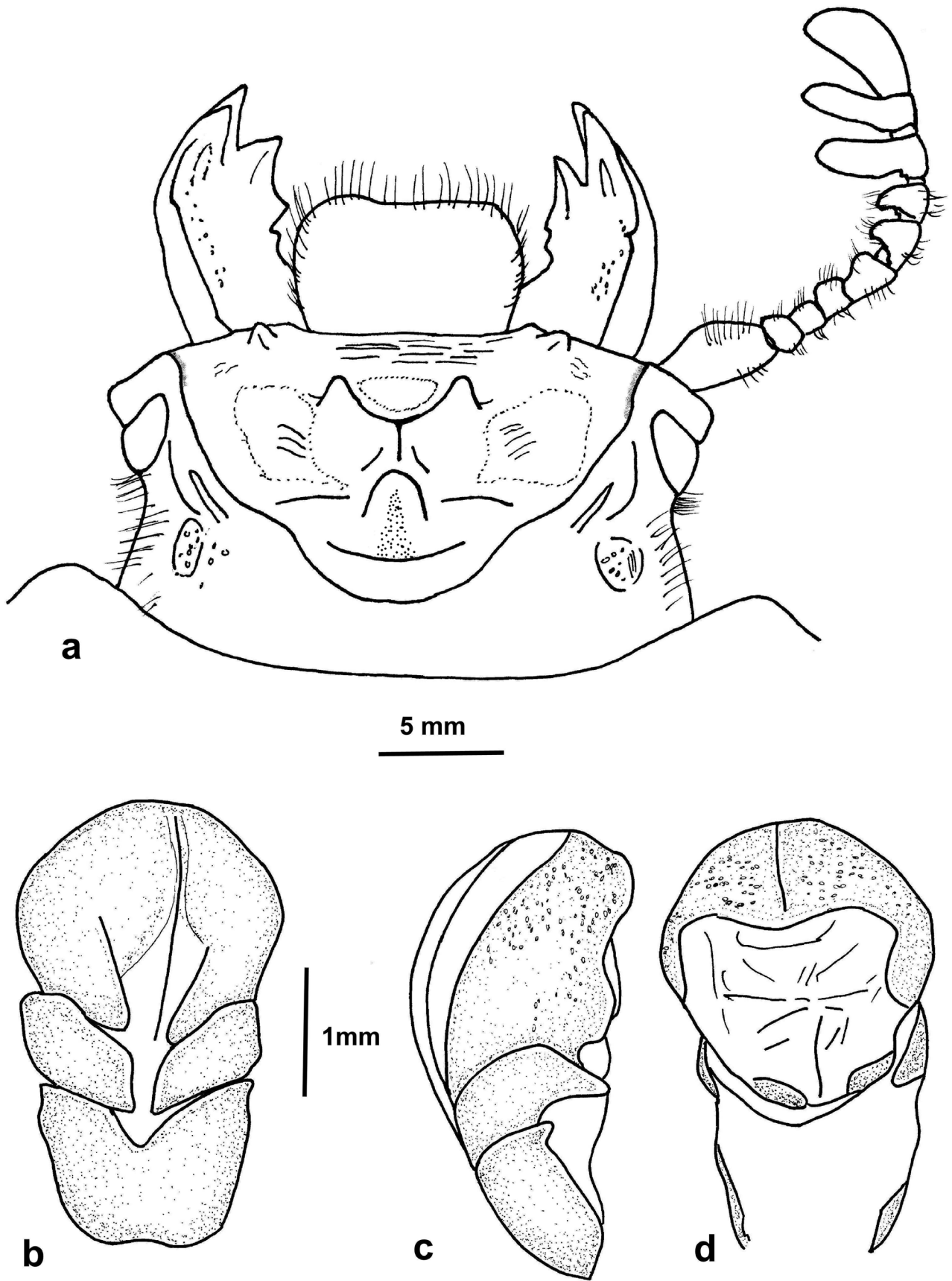


**Etymology.** Named in honor of the Nobel Prize winner, Dr. Rigoberta Menchú, who was born in Laj Chimel.

**Distribution and ecology.** Known only from middle altitude cloud forest at Cerro El Amay, of Laj Chimel, Quiché, Guatemala, 1800–2100 m altitude (Fig. 4).



**FIGURE 11.** Paratype of *Ogyges menchuae*: a. lateral view of head. b. dorsal view. c. ventral view. d. lateral view.



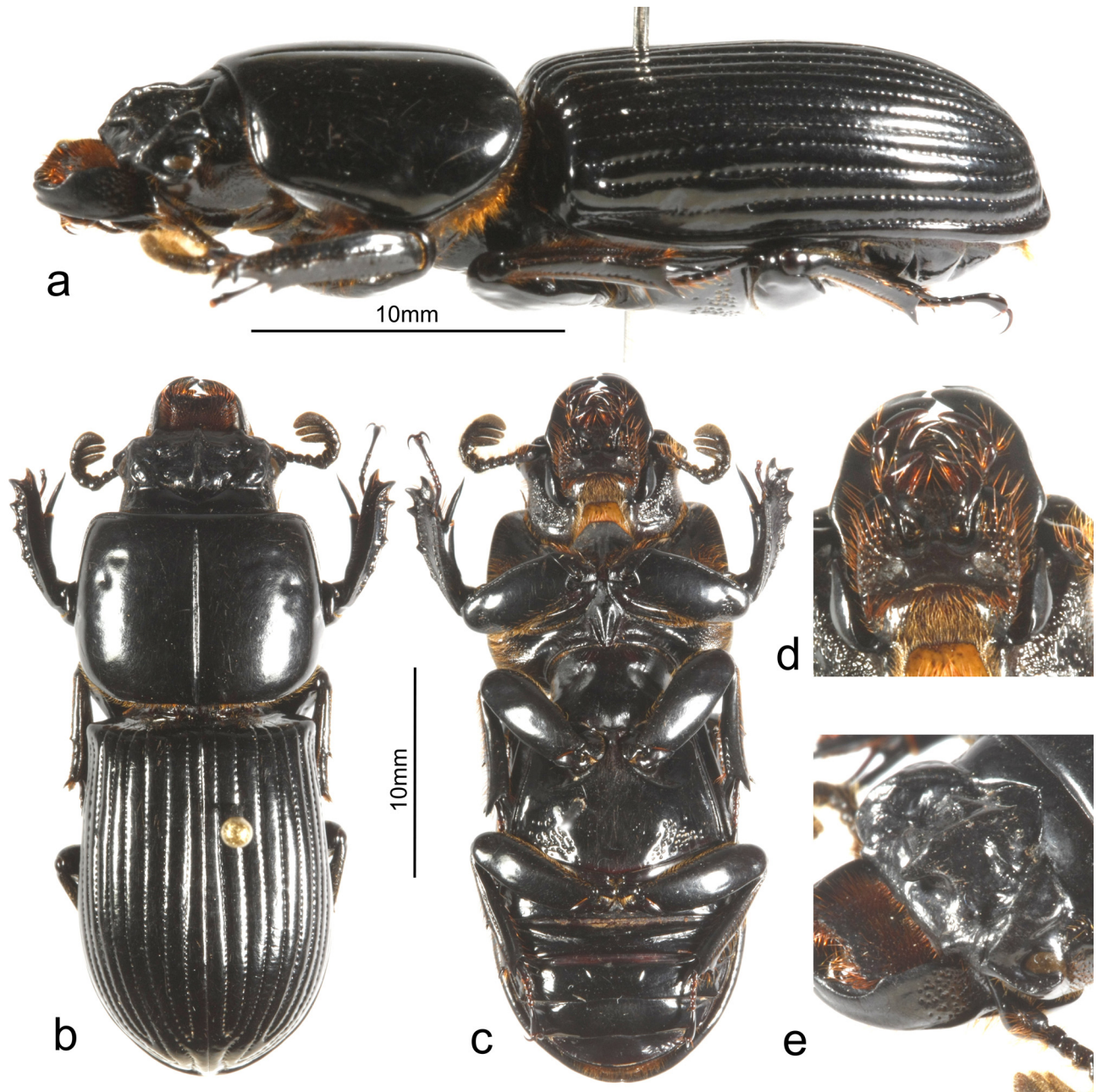
**FIGURE 12.** *Ogyges menchuae*: a. dorsal aspect of head. b. ventral view of aedeagus. c. lateral view of aedeagus. d. dorsal view of aedeagus.



*Ogyges mutenroshii* Cano, new species

Figs. 13–14, 21r

**Diagnosis.** *Ogyges mutenroshii* is most similar to *O. nahuali*, *O. cavei*, and *O. toriyamai* new species, by the small dorsal punctures on elytra and strong punctures on metasternum. Is easily distinguished by the brilliant elytra, the very wide protibia, the form of central horn, the absence of postorbital pits, and the greater reduction in the eye.



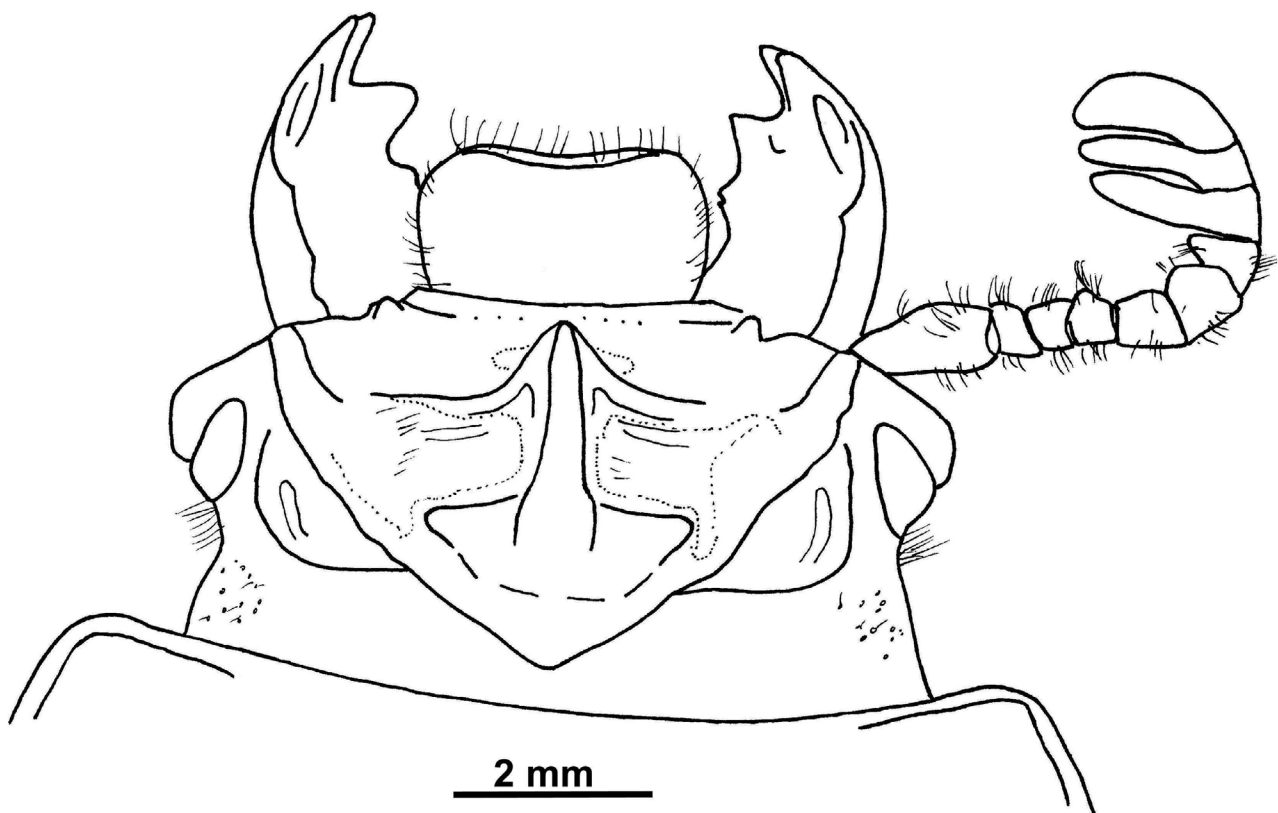
**FIGURE 13.** Holotype of *Ogyges mutenroshii*: a. lateral view. b. dorsal view. c. ventral view. d. detail of mentum. e. anterolateral view of head.

**Description.** Holotype, sex unknown, black adult. Total length 34.56, elytral length 18.44, pronotal length 9.24, pronotal width 12.05, humeral width 10.95. Head: anterior border of labrum slightly concave. Clypeus inclined (45°); anterior border straight and thin, with very small, central invagination, without suture separating it from the mediofrontal area (except an indication of slightly rugose area that runs between mediofrontal tubercles). Mediofrontal tubercles rounded and well defined. Mediofrontal area smooth, without internal tubercles and posterofrontal ridges. Laterofrontal areas roughened. Lateropostfrontal areas wide, glabrous and roughened at

sides. Central horn long and very narrow, apical 1/3 declivous in lateral view, dorsally excavated on both sides up to the level of the lateroposterior tubercles, with apex free and slightly directed upward, without median longitudinal groove posteriorly; lateroposterior tubercles somewhat elongate, separated from the posterior keel of the central horn. Postfrontal groove laterally deep. Supraorbital ridge with equal anterior tubercles; posterior 1/2 bifurcate with the supraorbital fossae very deep; external ridge well marked. Ocular canthus with apex swollen, dorsally covering more than 2/3 of eye. Eyes reduced. Eye width = 0.38 mm. Interocular width = 6.92 mm. Head width = 8.46 mm; ratio both eye widths/head width = 0.09. Postorbital pits, immediately behind the external ridge, punctate setose. Ligula almost flat basally, with eroded (also in the paratype) central tooth, with setaceous punctures medially; anterior ventral transversal carina clearly present. Lateral lobes of mentum with abundant setose punctures; lateral basal scars oval, opaque (shagreened), and punctate setose; medial basal mentum bare and shiny, with one-three punctures on each side. Hypostomal process elongate, without lateral depression, wide medially and narrow in apical third. Infraocular ridge present, short and smooth, surrounded by striate, setose punctures. Mandible with dorsal tooth occupying 1/2 of the length; internal face of mandible in dorsal view, smooth. Antepenultimate antennomere of antennal club slightly longer (or subequal) than penultimate, less wide than the penultimate; antennal lamellae slightly concave dorsally (Figs. 13–14), 1.69 mm wide and 1.92 mm long.

Thorax: Lateral fossae of pronotum only with sparse and very shallow micropunctures, visible at great magnification. Pronotum with marginal groove narrow and smooth, laterally with scattered micropunctures of rugose aspect (striate), visible at great magnification, more abundant in front of lateral fossae; anterior angles rounded; disc smooth. Prosternellum brilliant at center, shagreened at anterior 2/5 and posterior (except on sides) 1/5. Mesosternum glabrous; lateral depressions elongate and rugose (shagreened). Mesepisternum with oval, elongate, shagreened area. Metasternum anterior angles glabrous; disc delimited by 38 and 40 well-marked punctures (some striate) on each side; marginal groove glabrous, narrow and slightly striate, posteriorly two times wider than medially.

Elytra: Brilliant; striations well marked and with weakly defined punctures between striae 1–3, gradually wider between striae 4–10 and apical 1/3; junctions of striations 1 and 10 with some extra punctures. Vertical anterior border of elytra with sparse, minute setae on interstriae 2–6.



**FIGURE 14.** Dorsal aspect of head of *Ogyges mutenroshii*.



Legs: Protibia very wide. Profemur with anterioventral groove marked; metafemur elongate; mesotibia with one spine.

Abdomen: Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.

Variation in paratype: Total length 33.19, elytral length 17.74, pronotal length 8.83, pronotal width 11.52, humeral width 10.18. Disc of metasternum delimited by 31 and 45 well-marked punctures (some striate) on each side.

**Material examined.** 2 specimens.

**Type material.** Holotype: HONDURAS: Cortés, Parque Nacional Cusuco, 2nd. broadleaved forest. Nr. UTM 16P 369210 1713408. Ca. 1656 m alt., 07–11 VIII 2007. Coll. S. Beynon. Paratype: One specimen, unknown sex, same data as holotype except: UTM 16P 369795 1714017. Alt. aprox. 1550 m. 16–20 VII 2006. Dung baited pitfall trap. Coll. E. Marabuto.

Holotype and paratype deposited at UVGC.

**Etymology.** Named after Muten Roshi (Master Roshi), a principal character of the Akira Toriyama's series of manga and anime, "Dragon Ball".

**Distribution.** This species is known from the middle altitude cloud forest of the Cerro Azul Meambar National Park, in Comayagua Department, Honduras (Fig. 4).

### ***Ogyges ratcliffei* Cano new species**

Figs. 15–16, 21v

**Diagnosis.** *Ogyges ratcliffei* seems most similar to *O. nahuali* and *O. cavei*. The smaller size, the noticeable blue reflections on brilliant areas, the narrow and flat lamellae and the shagreened metasternal marginal groove, separate *O. ratcliffei* from *O. cavei*. The lack of punctures surrounding metasternal disc and central horn directed upward, distinguish the new species from *O. nahuali*.

**Description.** Holotype, female, black adult with blue iridescence. Total length 33.02, elytral length 17.9, pronotal length 8.21, pronotal width 11.95, humeral width 11.12. Head: anterior border of labrum slightly concave. Clypeus slightly inclined, transversely convex, anterior border straight and thick, with very small central invagination and with external anterior angles acute; separated from the mediofrontal area by a rugose sink running between the conical and moderate mediofrontal tubercles. Mediofrontal area smooth, without internal tubercles and posterofrontal ridges. A small, bare, smooth fossa present in front of the mediopostfrontal structure. Lateropostfrontal areas glabrous and smooth. Central horn moderately long, with apex directed upward and forward, with unclear median longitudinal groove on posterior 1/3; lateroposterior tubercles short, rounded, curved backward and separated from central horn. Postfrontal groove smooth and shallow, deeper at sides. Supraorbital ridge with equal anterior tubercles; posterior 1/2 not bifurcate with supraorbital fossae small; external ridge marked. Ocular canthus with apex straight covering half of one eye. Eyes reduced. Eye width = 0.61 mm. Interocular width = 6.61 mm. Head width (measured between tips of canthi) = 8.06 mm. Ratio width of both eyes/head = 0.15. Postorbital pits located between supraorbital ridge and eye, punctate setose. Ligula slightly protuberant basally, with apical central tooth eroded, anterior ventral carina absent, setose punctures on the median area. Lateral lobes of mentum with abundant setose punctures; medial basal mentum glabrous (except two punctures on one side near the lateral scar); lateral basal scars elongate to external side, punctate-setose and brilliant. Hypostomal process elongate, with poorly marked lateral depression, wide medially and narrow in the apical third. Infraocular ridge present, short and smooth, proximal area declivous and setose, distal area punctate-setose. Mandible with dorsal tooth occupying 1/2 of its length; internal face in dorsal view slightly opaque, not granular. Antennal club not concave, penultimate antennomere wider than the antepenultimate (Figs. 15–16).

Thorax: Lateral fossa of pronotum without punctures except minute striate-punctures ahead and behind, visible at high magnification. Pronotum with marginal groove narrow and smooth, with minute striate-punctures visible at high magnification; anterior angles rounded. Prosternellum opaque on anterior half (or slightly more) and shiny on posterior half. Mesosternum with lateral depressions elongate and rugose (shagreened). Mesepisternum with elongate rugose area (shagreened), more marked and oval apically. Metasternum anterior angles without setae, apical borders shagreened; disc without punctures; marginal groove glabrous, narrow and shagreened throughout, posteriorly two times wider than medially.

Elytra: Shiny, with blue reflections that give a dull appearance. Striations well marked; with minute, superficial punctures on striae 1–4, gradually deeper and wider between 5–10 and well marked from 1–10 on posterior 1/3; junctions of striae 1 and 10 with sparse extra punctures. Anterior border of elytra vertical, with a few minute setae on intrestriae 3–6.

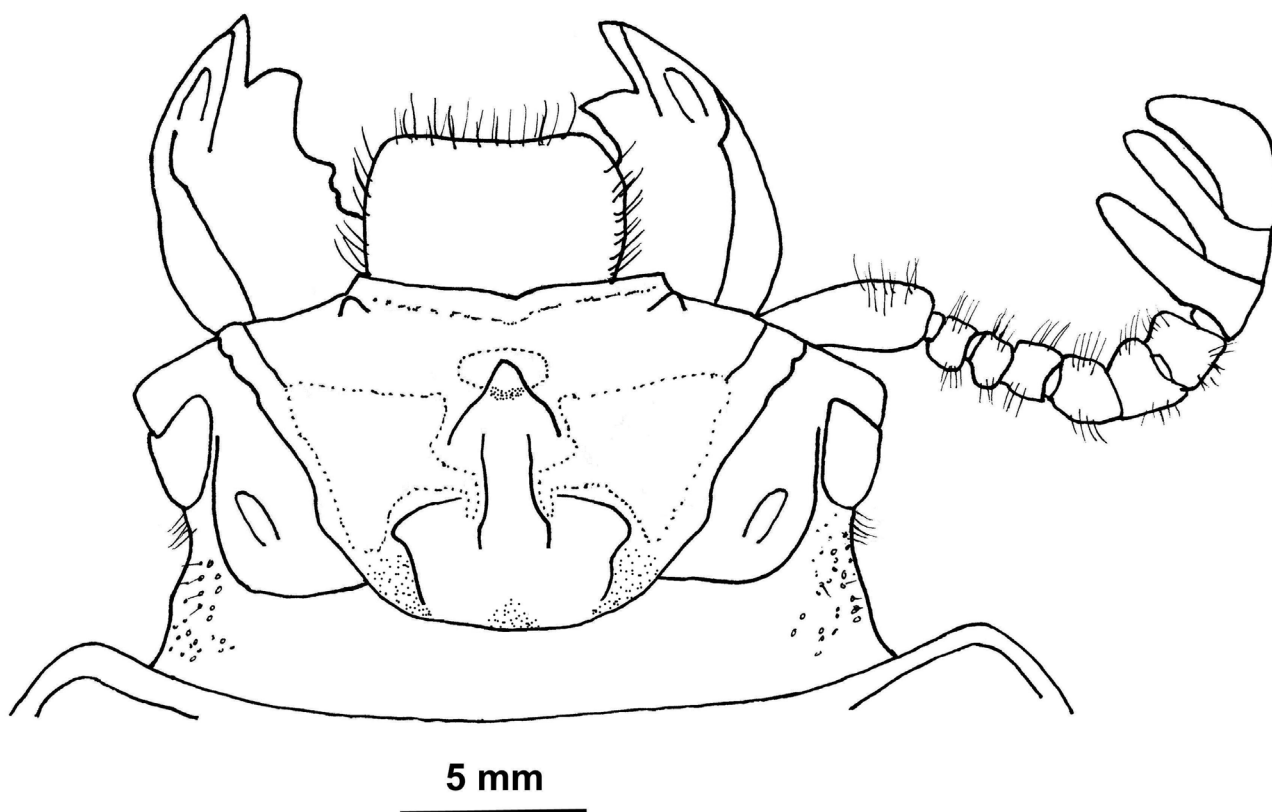
Legs: Profemur with anterior-ventral groove marked; metafemur moderately widened; mesotibia with one spine.

Abdomen: Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.

**Material examined.** 1 specimen.



**FIGURE 15.** Holotype of *Ogyges ratcliffei*: a. lateral view of head. b. dorsal view. c. ventral view. d. lateral view.



**FIGURE 16.** Dorsal aspect of head of *Ogyges ratcliffei*.

**Type material.** Holotype deposited at UVGC: HONDURAS: Olancho, La Picucha, 11 km N Catacamas, 14.92740, -85.90983. Bosque nuboso, 1800–2100 m, 8–14 V 2010. L. Sáenz (LSD 451).

**Etymology.** Named after the Team Scarab leader, Brett C. Ratcliffe, honoring his studies on the dynastine beetles of the world.

**Distribution.** The species is known only from the holotype collected in cloud forest between 1800–2100 m, in Olancho, Reserva La Picucha, Honduras (Fig. 4).

### ***Ogyges sandinoi* Cano new species**

Figs. 17–18, 21w

**Diagnosis.** Based on the form of clypeus, the central horn, and the mediopostfrontal structure, and the presence of setae on anterior corners of metasternum (sparse in *O. adamsi*), *O. sandinoi* seems closely allied to *O. adamsi* and *O. handali*. This new species is easily distinguished by the smaller size (29–32 mm) and the presence of internal tubercles.

**Description.** Holotype male, black adult with dark-brown areas in venter. Total length 29.68, elytral length 16.00, pronotal length 8.26, pronotal width 10.27, humeral width 9.81. Head: anterior border of labrum concave or slightly concave. Clypeus thickened, convex, anterior border straight or slightly inclined laterally, with a small central indentation in form of “v”; with a moderately defined punctate sulcus separating it from the mediofrontal area. Mediofrontal tubercles rounded and well defined, with a well or barely defined anterofrontal ridges directed but not connected with the internal tubercles. Mediofrontal area smooth, with conical internal tubercles connected to the short and slightly curved posterofrontal ridges. A wide, bare, hemicircular smooth fossa present in front of the mediopostfrontal structure. Lateropostfrontal areas glabrous and slightly rugose towards lateral sides. Central horn very narrow and long, with apex not free, declivous towards the posterofrontal ridges, with dorsal micropunctations; without median longitudinal dorsal groove; lateroposterior tubercles short, not clearly delineated, rounded, directed slightly posteriorly, not separated from the central horn by a groove. Postfrontal groove shallow,

deeper at sides. Supraorbital ridge with unequal anterior tubercles; posterior half not bifurcate with supraorbital fossa small; external ridge poorly marked; supraorbital fossa shallow and short. Ocular canthus with apex straight or slightly swollen, ventrally covering 3/4 of eye. Eyes reduced. Eye width = 0.38 mm. Interocular width = 5.77 mm. Head width = 7.38 mm; ratio both eye widths/head width (measured between tips of canthi) = 0.10. Postorbital pits located immediately behind supraocular ridge and eye, punctate setose. Ligula almost flat basally, with small central apical tooth, ventral transversal anterior carina absent, with setaceous punctures medially. Lateral lobes of mentum setose punctate; lateral basal scars oval and brilliant; medial basal mentum bare and shiny. Hypostomal process elongate, with shallow lateral depression and with one or two minute setae, wide medially and narrow in apical third. Infraocular ridge present, short and smooth, surrounded by striate, setose punctures. Dorsal tooth of mandible occupies 1/2 length; internal dorsal face of mandible granular. Antennal club concave, measures 1.92 mm long and 2.15 mm wide; antepenultimate antennomere of antennal club less wide than penultimate (Figs. 17–18).

**Thorax:** Lateral fossae of pronotum without punctures but, together with the marginal grooves, with sparse micropunctations of rugose aspect, visible with great magnification. Pronotum with marginal groove narrow and smooth; disc smooth, slightly opaque; anterior angles rounded; with a small, but present, posterior medial notch. Prosternellum shagreened on anterior half and brilliant posteriorly, except slightly opaque on sides. Mesosternum glabrous; lateral depressions wide, elongate and rugose (shagreened). Mesepisternum with oval, elongate, shagreened area. Metasternum anterior angles with moderate setae; disc not delimited by punctures; marginal groove with setose punctures anteriorly; narrow and smooth, posteriorly two times wider than medially.

**Elytra:** Brilliant, striations marked, with small, defined, moderately deep punctures; junctions of striations 1 and 10 without extra punctures. Vertical anterior area smooth, with minute to small, scattered setae between portion of interstriae 1–8.

**Legs:** Profemur with anterioventral groove poorly marked, but present; metafemur elongate; mesotibia with one spine.

**Abdomen:** Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.

**Aedeagus:** In ventral view phallus globose; parameres and phallobase scarcely separated laterally; ventrodorsal basal sclerotizations of the phallus present (Fig. 18).

Variation in paratypes ( $n = 4$ ): Total length 30.02–31.63 ( $\bar{x} = 30.68$ ), elytral length 15.62–17.62 ( $\bar{x} = 16.60$ ), pronotal length 7.76–8.91 ( $\bar{x} = 8.20$ ), pronotal width 10.23–11.19 ( $\bar{x} = 10.58$ ), humeral width 9.53–10.31 ( $\bar{x} = 9.80$ ). One specimen with the antennomeres of the left antennal club fused (a teratology).

**Material examined.** 5 specimens.

**Type material.** Holotype: NICARAGUA, Nueva Segovia, nr Jalapa, Cerro Jesús. 13.98079, -86.17922. 28–31 May 2011, L. Sáenz collector (LSD). Paratypes (4): Same data as holotype.

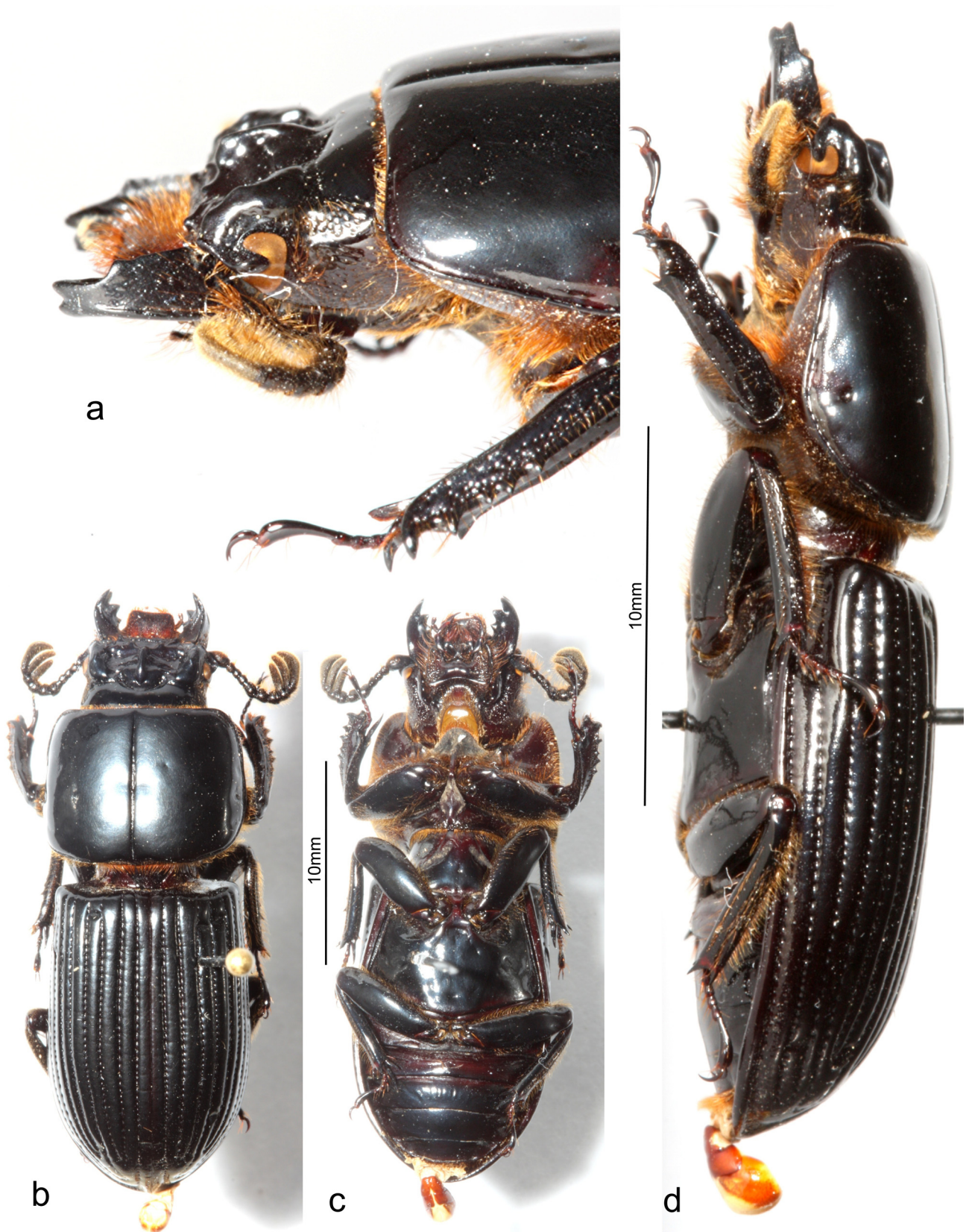
Holotype deposited in UVGC. Paratypes deposited in UVGC, IEXA, and USAC.

**Etymology.** The name of this species is in honor of Augusto César Sandino, a Nicaraguan hero, born in the Segovia Mountains.

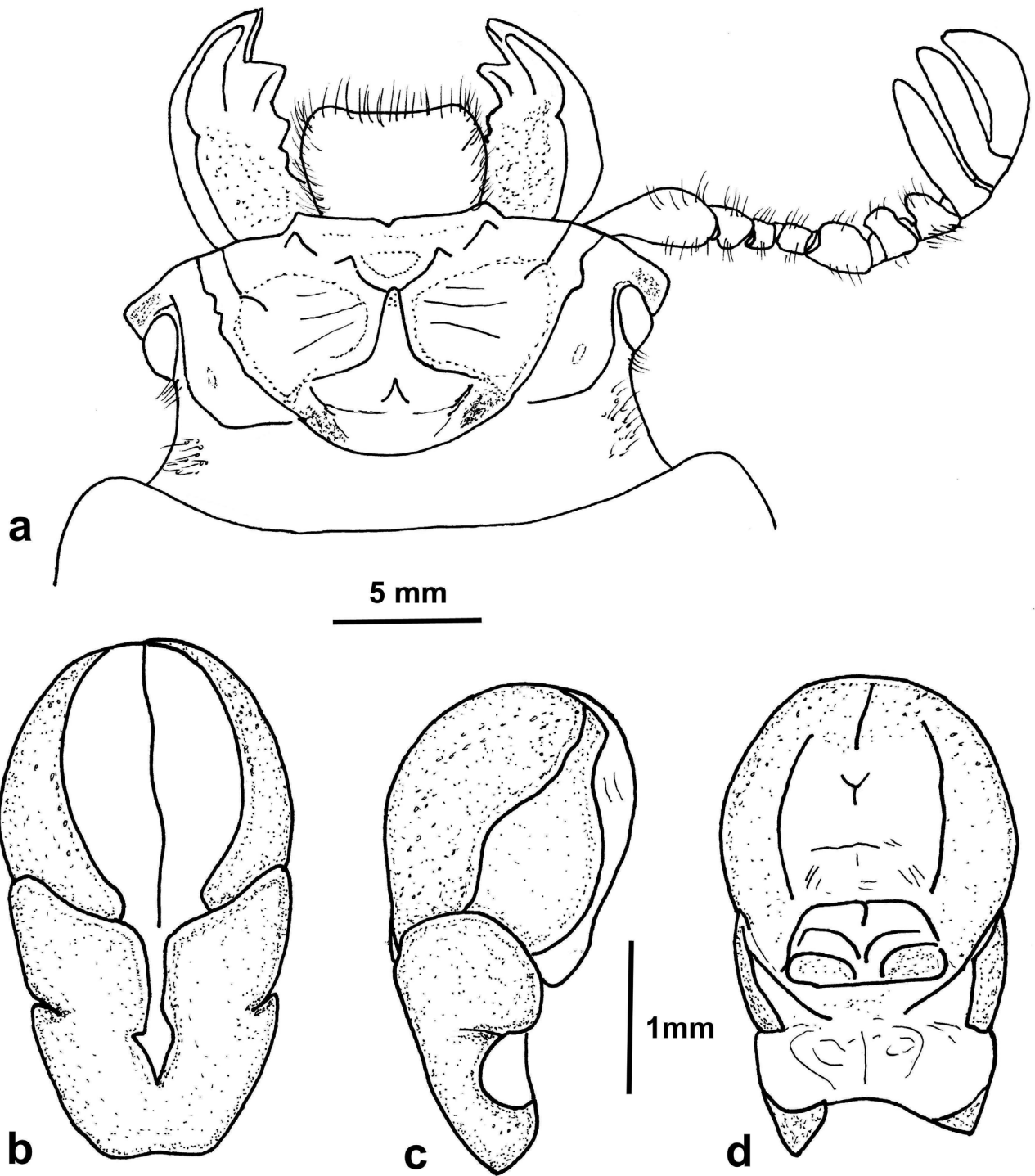
**Distribution.** Only known from Cerro Jesús, at the Nicaraguan-Honduran border (Fig. 4), at mid-altitude cloud forest (1600 m).

**Comments.** This is the first objective record of the genus *Ogyges* from Nicaragua. Previously, two species, *Ogyges laevissimus* and *O. championi* [as *O. laevior*] have been cited from that country (summarized in Schuster & Reyes-Castillo 1990: 19, 32–33). Because these citations are ambiguous, and following Schuster & Reyes-Castillo (1990) who restricted the species to Guatemala (*O. laevissimus*) and Guatemala and Mexico (*O. championi*), I consider these or any other citation of *O. laevissimus* and *O. championi* from Nicaragua as erroneous. As evidence of this ambiguity, the records of *O. laevissimus* from Nicaragua (Kuwert 1897: 291, Hincks & Dibb 1935: 21, Reyes-Castillo 1970: 177) apparently were based on one specimen at the MNHN, identified by Kuwert (Schuster & Reyes-Castillo 1990: 20 attribute the handwritten label to Kaup), with the locality data (in the same label) indicating Guatem.[ala]/Nicaragua. The specimen of *O. championi* from the MNHN, with the label “Nicaragua”, cited by Schuster & Reyes-Castillo (1990), by the barely marked lateral punctures on elytra, apparently belongs to the population of Alta and Baja Verapaz in Guatemala.





**FIGURE 17.** Holotype of *Ogyges sandinoi*: a. lateral view of head. b. dorsal view. c. ventral view. d. lateral view.



**FIGURE 18.** *Ogyges sandinoi*: a. dorsal aspect of head. b. ventral view of aedeagus. c. lateral view of aedeagus. d. dorsal view of aedeagus.

***Ogyges toriyamai* Cano new species**

Figs. 19–20, 21x

**Diagnosis.** *Ogyges toriyamai* seems closely related to *O. mutenroshii* from Cusuco National Park, by the size, the elytral and metasternal punctures and the medially constrained central horn. Is distantly similar to *O. nahuali* and *O. cavei* by the small and shallow elytral punctures, and by the strong punctures surrounding the metasternal disc. The new species is easily distinguished by the opaque aspect of elytra.



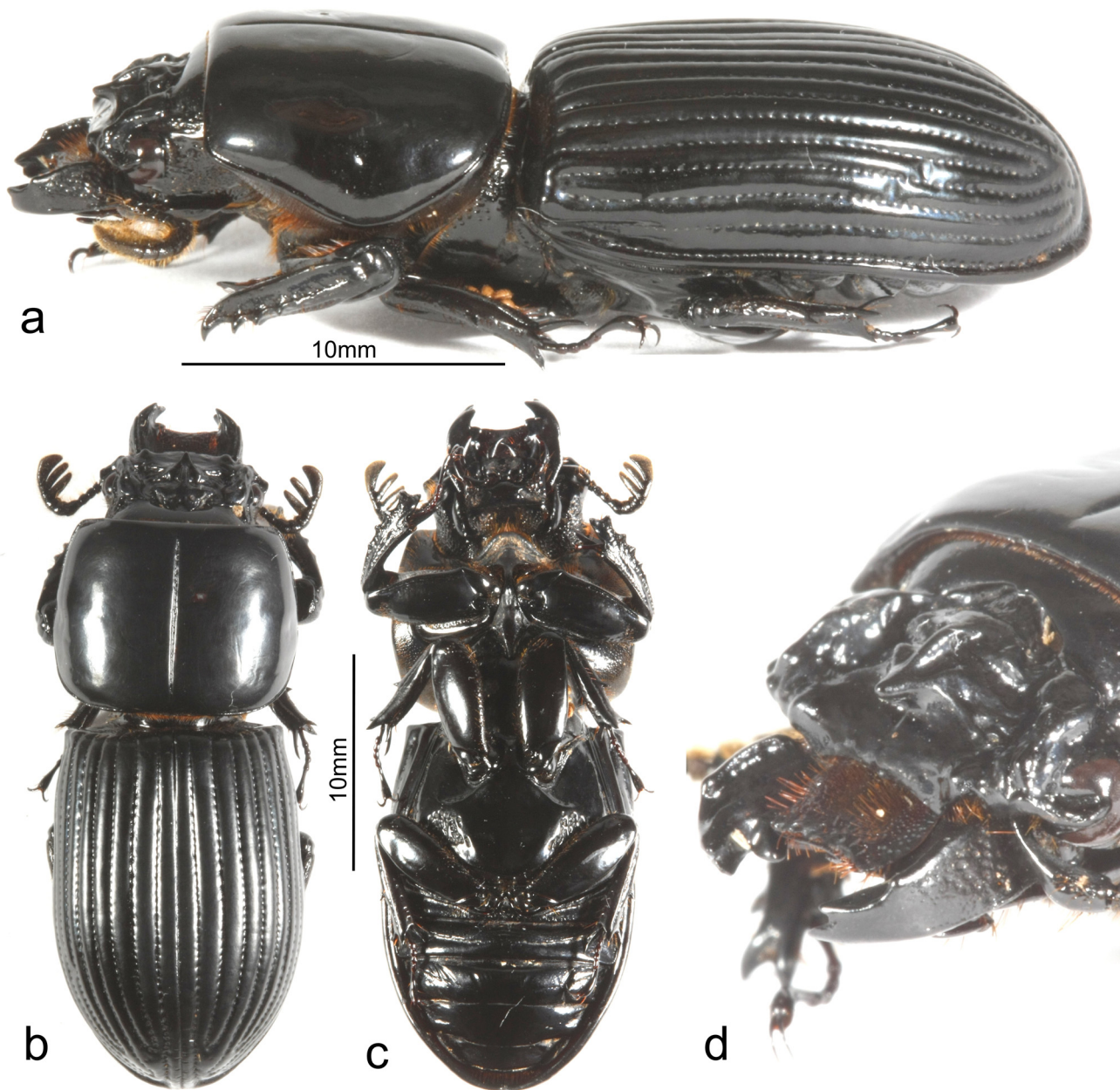
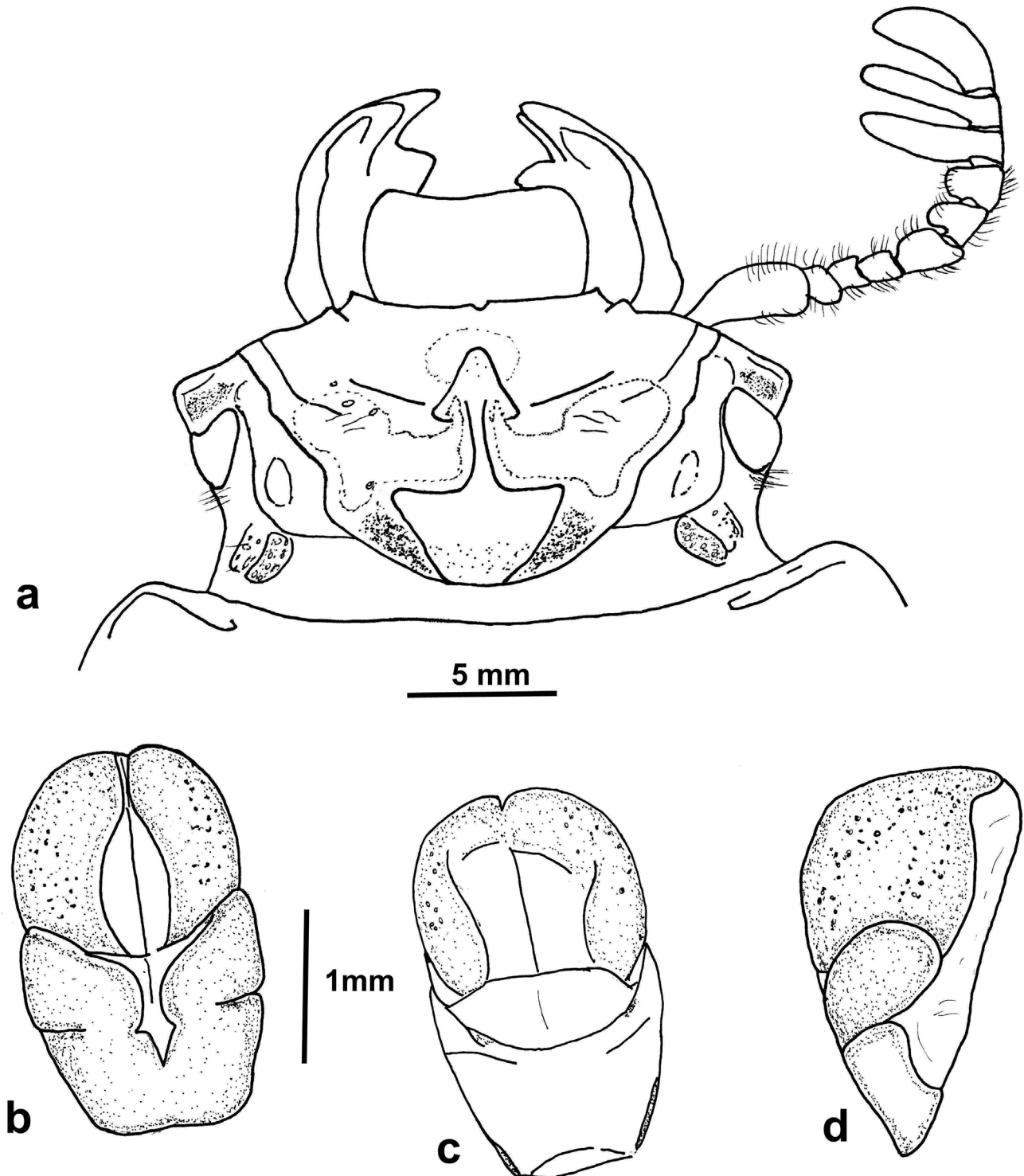


FIGURE 19. Holotype of *Ogyges toriyamai*: a. lateral view. b. dorsal view. c. ventral view. d. anterolateral view of head.

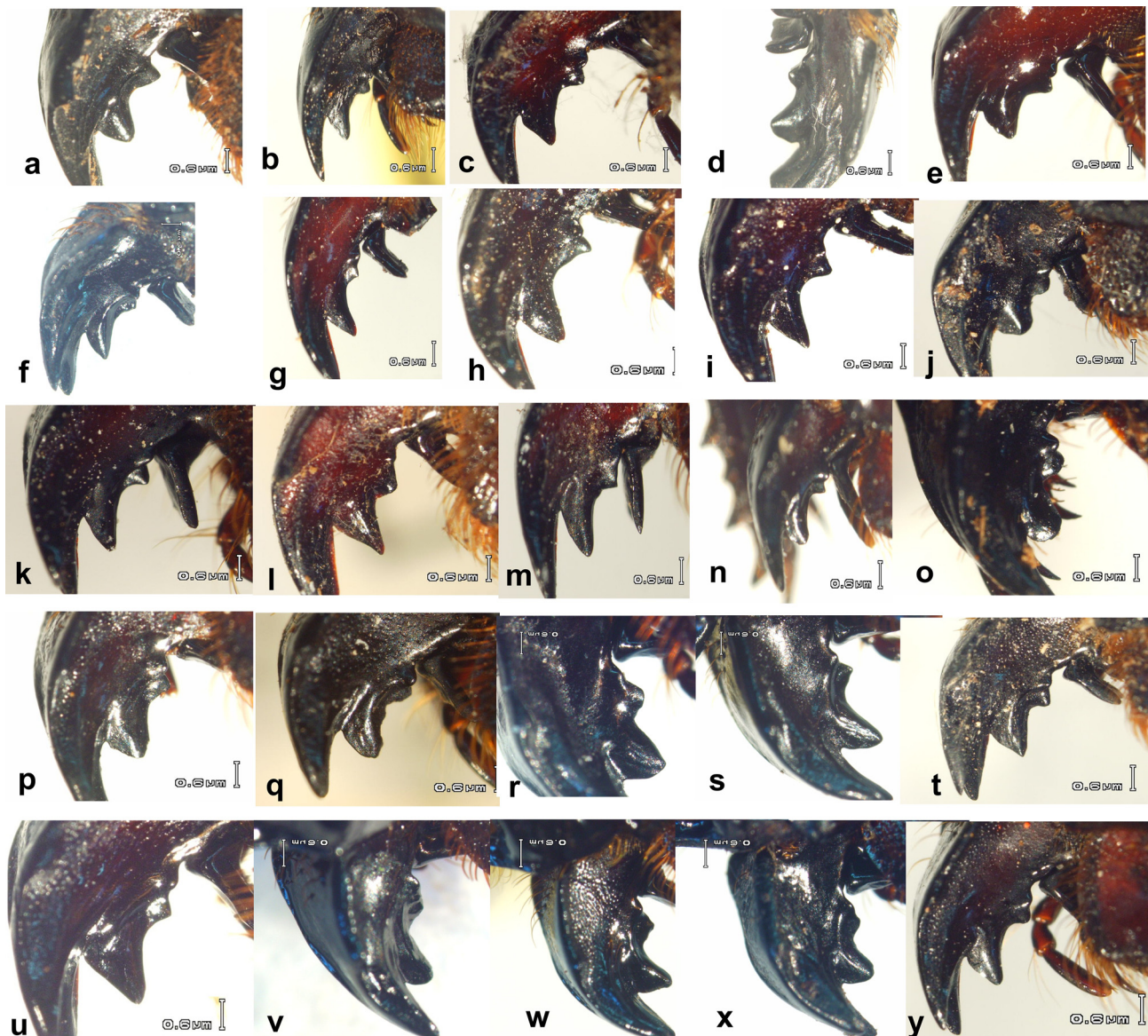
**Description.** Holotype male, black adult with blue iridescence. Total length 32.45, elytral length 17.26, pronotal length 9.05, pronotal width 11.58, humeral width 11.36. Head: anterior border of labrum slightly concave. Clypeus inclined; anterior border straight, with very small central invagination, without suture separating it from the mediofrontal area. Mediofrontal tubercles conical and well defined. Mediofrontal area smooth, without internal tubercles and posterofrontal ridges. A wide, bare, smooth fossa present in front of the mediopostfrontal structure. Lateropostfrontal areas wide, glabrous and coarsely rugose, anterior border strongly keeled with keel connected to mediopostfrontal structure. Central horn long, narrow, dorsally excavated on both sides to the level of the lateroposterior tubercles, with apex free and slightly directed upward, without median longitudinal groove posteriorly; lateroposterior tubercles somewhat elongate, joined at center to the posterior keel of the central horn. Postfrontal groove deep laterally. Supraorbital ridge with equal anterior tubercles; posterior 1/2 bifurcate with supraorbital fossa deep; external ridge well marked. Ocular canthus with apex straight or slightly swollen, ventrally covering the half of eye. Eyes reduced. Eye width = 0.5 mm. Interocular width = 6.31 mm. Head width = 8.0 mm; ratio both eye widths/head width = 0.12. Postorbital pits located immediately behind the external ridge oval and punctate. Ligula slightly protuberant basally, with small apical central tooth (eroded in old specimens), without

anterior ventral transversal carina and with setaceous punctures medially. Lateral lobes of mentum with abundant setose punctures; basal lateral scars oval, punctate setose and shagreened except on apical border; medial basal mentum bare and shiny, slightly rugose laterally. Hypostomal process elongate, without lateral depression, wide medially and narrow in apical third. Infraocular ridge present, short and smooth, surrounded by striate, setose punctures. Dorsal tooth of mandible occupies 1/2 length; internal dorsal face of mandible smooth. Antepenultimate antennomere of antennal club slightly longer (or subequal) than penultimate, less wide than the penultimate; antennal lamellae slightly concave dorsally (Figs. 19–20), 1.77 mm wide and 1.73 mm long.



**FIGURE 20.** *Ogyges toriyamai*: a. dorsal aspect of head. b. ventral view of aedeagus. c. lateral view of aedeagus. d. dorsal view of aedeagus.





**FIGURE 21.** Details of suprainternal teeth of right mandibles (left in *O. cavei*) of the 25 known species of *Ogyges*: a. *O. adamsi*. b. *O. aluxi*. c. *O. cakchiqueli*. d. *O. cavei*. e. *O. championi*. f. *O. coxchicopi*. g. *O. crassulus*. h. *O. furcillatus*. i. *O. handali*. j. *O. hondurensis*. k. *O. kekchii*. l. *O. laevissimus*. m. *O. laurae*. n. *O. llama*. o. *O. marilucasae*. p. *O. menchuae*. q. *O. monzoni*. r. *O. mutenroshii*. s. *O. nahualli*. t. *O. politus*. u. *O. quichensis*. v. *O. ratcliffei*. w. *O. sandinoi*. x. *O. toriyamai*. y. *O. tzutuhili*.

Thorax: Lateral fossae of pronotum only with some micropunctures of rugose aspect, visible at great magnification. Pronotum with marginal groove narrow and smooth, laterally with abundant micropunctures of rugose aspect (striate), visible at great magnification; anterior angles rounded; disc smooth. Prosternellum brilliant at center, shagreened at anterior 2/5 and posterior 1/5. Mesosternum glabrous; lateral depressions elongate and rugose (shagreened). Mesepisternum with oval, elongate, shagreened area. Metasternum anterior angles glabrous; disc delimited by 38–40 well-marked punctures (some partially fused) on each side; marginal groove glabrous, narrow and slightly striate, posteriorly two times wider than medially.

Elytra: Opaque, with sparse blue iridescence under direct light; striations marked and with defined punctures, markedly deeper and wider between striae 5–10; junctions of striations 1 and 10 with some extra punctures. Interstriae with abundant brown micropunctures visible at great magnification, particularly on interstriae 7–10. Scarcely minute setae on interstriae 2–6 on vertical anterior border of elytra.

Legs: Profemur with anterioventral groove marked; metafemur moderately widened; mesotibia with one or, occasionally, two spines (the second smaller).



Abdomen: Marginal groove of sternite VII incomplete, occupies 3/5 of sternite.

Aedeagus: In ventral view phallus globose; parameres and phallobase partially separated (Fig. 20).

Variation in paratypes ( $n = 3$ ): Total length 28.29–31.06 ( $\bar{x}$ =30.00), elytral length 15.65–17.46 ( $\bar{x} = 16.74$ ), pronotal length 7.67–8.69 ( $\bar{x} = 8.24$ ), pronotal width 9.69–11.21 ( $\bar{x} = 10.68$ ), humeral width 9.26–10.48 ( $\bar{x} = 10.09$ ). Disc of metasternum delimited by 15–40 well-marked punctures (some partially fused and/or striated) on each side.

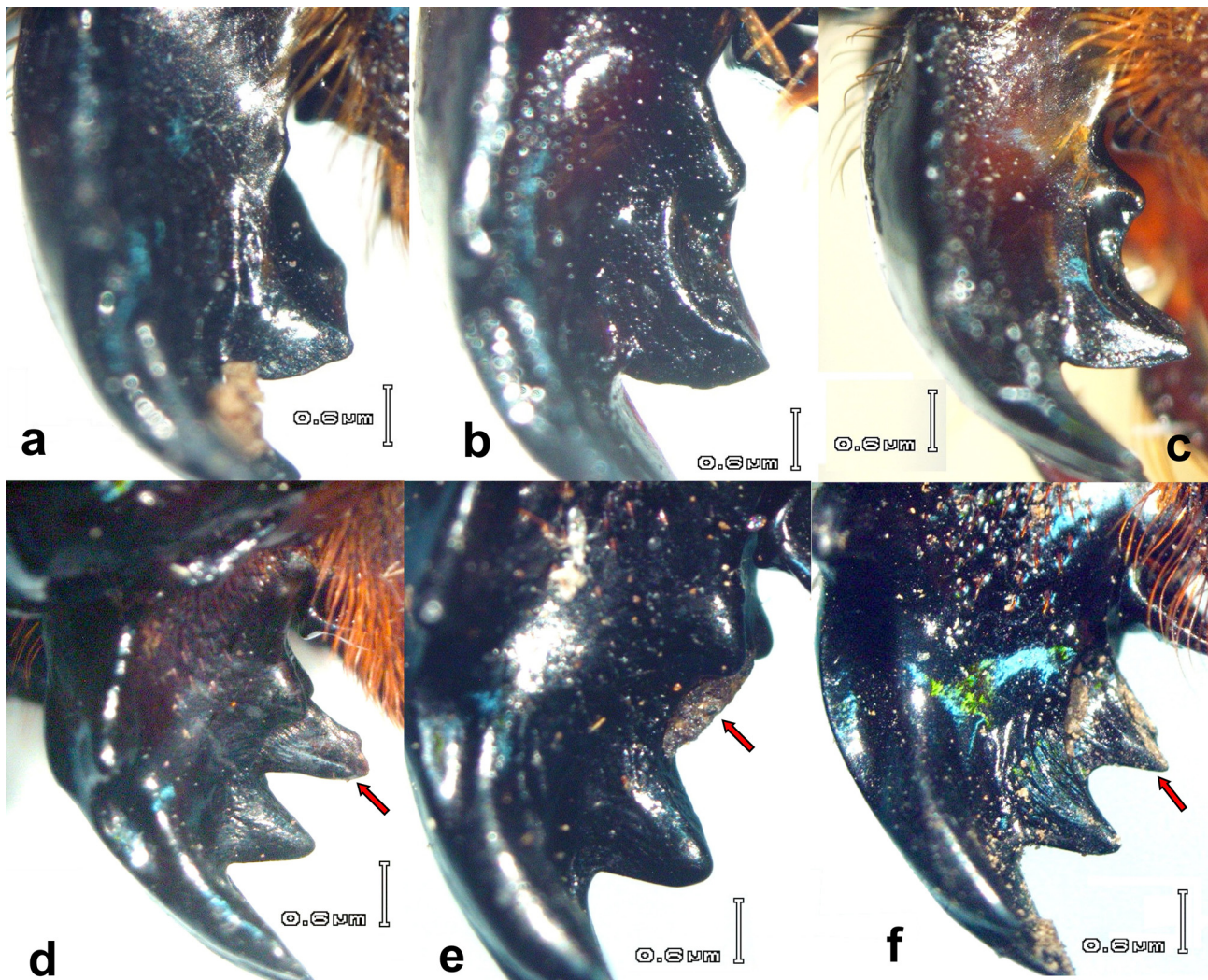
**Material examined.** 4 specimens.

**Type material.** Holotype: HONDURAS: Comayagua, Parque Nacional Cerro Azul Meambar, 14.87140, -87.90036, bosque nuboso, 800–1120 msnm. 20-24 V 2010. L. Sáenz. LSD 471. Paratypes: Same data as holotype (2 females); one specimen of unknown sex with the following data: Depto: Comayagua, Parque Azul Meambar, Agosto 30, 1996. Col. Marco Mendoza.

Holotype and paratypes deposited at UVGC.

**Etymology.** Named after Akira Toriyama, the Japanese artist creator of the manga and anime series “Dragon Ball”.

**Distribution.** This species is known from the middle altitude cloud forest of the Cerro Azul Meambar National Park, in Comayagua Department, Honduras (Fig. 4).



**FIGURE 22.** Details of suprainternal teeth of right mandibles of *Proculejus* and *Proculus*: a. *Proculejus nudicostis*. b. *Proculejus pubicostis*. c. *Proculejus sartorii* Kaup. d. *Proculus mniszewski* Kaup, teneral. e. *Proculus mniszewski*, old specimen. f. *Proculus opacipennis* (Thompson), teneral. Small arrows indicate the position or absence of dehiscent (worn) tubercle in *Proculus*.

## Key to species of adult *Ogyges* Kaup

The following modification to the key of Schuster *et al.* (2005) includes the 25 known species of the genus. For terminology see Fig. 1.

- 1 Internal tubercles noticeably large and united to the mediopostfrontal structure forming a bifid horn. Sierra de las Minas, Guatemala . . . . . ***O. furcillatus* Schuster & Reyes-Castillo**
- Internal tubercles normal or absent, if larger than normal then not united forming a bifid horn . . . . . 2
- 2 Dorsal elytral stria 1, or 1 and 2, deep; the remaining striae barely visible; anterior corners of metasternum with abundant to moderate setae, disc not delimited by punctures . . . . . 3
- All dorsal elytral striae marked, deep, or shallow but of equal depth; anterior corners of metasternum glabrous, with a few or with abundant setae, disc delimited or not by punctures . . . . . 5
- 3 Internal tubercles absent; second elytral stria partially erased in anterior half; body length 33–39 mm. Volcanic chain in southwestern Guatemala . . . . . ***O. laevisimus* (Kaup)**
- Internal tubercles present; second elytral stria not partially erased in anterior half; body length 30–43 mm. Southeastern Guatemala, El Salvador, and southwestern Honduras . . . . . 4
- 4 Clypeus vertical; mesepisternum with distinct rugose (shagreened) area; metasternal marginal groove with abundant setae in anterior half; body length 37–43 mm . . . . . ***O. politus* (Hincks)**
- Clypeus inclined (vertical in the only specimen from Volcán San Salvador); mesepisternum without rugose (shagreened) area; metasternal marginal groove glabrous or with 13 setae in anterior half; body length 30–38 mm . . . . . ***O. hondurensis* Schuster & Reyes-Castillo**
- 5 Internal tubercles present and well marked . . . . . 6
- Internal tubercles absent or obsolete . . . . . 14
- 6 Antennal club notably wider than long, concave in dorsal view; wide of last antennomere at least three times its maximum length . . . . . 7
- Antennal club slightly longer than wide or equal, plane in dorsal view; wide of the last antennomere at most 2.5 times its maximum length . . . . . 10
- 7 Anterior corners of metasternum with scattered long setae; body size 29–32 mm. Northwestern Nicaragua . . . . . ***O. sandinoi* Cano**
- Anterior corners of metasternum bare or at most with a few minute setae; body size > 36 mm . . . . . 8
- 8 Internal tubercles long, tips free for 1 mm; dorsal elytral striae without defined punctures; body length 36–37 mm. Mountains of northern Guatemala . . . . . ***O. tzutuhili* Schuster & Reyes-Castillo**
- Internal tubercles short, free for at most 0.6 mm; dorsal elytral striae with clear punctures, body length 39–48 mm. Chiapas, Mexico and Honduras . . . . . 9
- 9 Central horn very short, not projected; mediofrontal tubercles rounded by granulations; metasternal disc impunctate. Chiapas, Mexico . . . . . ***O. marilucasae* Reyes-Castillo & Castillo**
- Central horn long and projected upward and forward; mediofrontal area smooth, without granulations; metasternal disc surrounded by strong punctures. Olancho and Comayagua, Honduras . . . . . ***O. cavei* Cano**
- 10 Clypeus vertical, with a marked change in the angle between the clypeus and the mediofrontal area; dorsal elytral striae with light punctures, frequently not clearly distinct, body length 24–34 mm . . . . . 11
- Clypeus inclined approximately 45°, without much difference in angle between clypeus and mediofrontal area; dorsal elytral striae with distinct punctures; body length 32–35 mm. Cuchumatanes range and Cuilco Mountain, Guatemala . . . . . ***O. cakchiqueli* Schuster & Reyes-Castillo**
- 11 Pronotum strongly punctate, rugose anteriorly and posteriorly near marginal groove; lateroposterior tubercles directed posteriorly; aedeagus with phallobase and parameres partially separated; body length 28–32 mm. Sierra de las Minas, Guatemala . . . . . ***O. coxchicopi* Schuster, Cano, & Boucher**
- Pronotum with fine and very dispersed micropunctures; lateroposterior tubercles directed to the sides; aedeagus with phallobase and parameres completely separated; body length 22–34 mm . . . . . 12
- 12 Elytral punctures not distinct or distinct only in striae 8–10; body length 26–34 mm. Chiapas, Mexico and Guatemala . . . . . ***O. championi* (Bates)**
- Elytral punctures distinct, or at least distinct in striae 7–10 . . . . . 13
- 13 Internal tubercles small, less than 0.2 mm; internal tubercles nearer to respective mediofrontal tubercles than distance between them, body short (22–28 mm) or medium (to 34 mm), metasternal marginal groove slightly widened at distal portion, Alta Verapaz and Baja Verapaz, Guatemala . . . . . ***O. kekchii* Schuster & Reyes-Castillo**
- Internal tubercles well developed but not surpassing 0.4 mm in length; internal tubercles separated by the same length between an internal tubercle and the respective mediofrontal tubercle; metasternal marginal groove narrow throughout its length. Quiché Department, in Guatemala . . . . . ***O. menchuae* Cano**
- 14 Metasternal disc delimited by strong punctures . . . . . 18
- Metasternal disc not delimited by punctures . . . . . 15
- 15 With moderate long setae on anterior corners of metasternum, central horn with apex short and free. Cerro Montecristo in the junction of the Guatemalan-Honduras-El Salvador border . . . . . ***O. handali* Cano**
- Without setae on anterior corners of metasternum (if present then minute and sparse near the coxal margin, and the central horn not free); central horn with apex free or not free. Chiapas, Mexico, northern Guatemala, and Honduras . . . . . 16



16	Central horn largely free with base wide; lateropostfrontal areas with granulations; antennal lamellae almost as wide as long. Chiapas, Mexico and northern Guatemala . . . . .	<i>O. quichensis</i> Schuster & Reyes-Castillo	
-	Central horn not free or scarcely free; lateropostfrontal areas smooth; antennal lamellae very wide or a little wider than long. Honduras . . . . .		17
17	Central horn scarcely free, directed upward; body with abundant blue reflections; antennal lamellae narrow and flat; metasternal marginal groove shagreened (opaque); body length 33 mm . . . . .	<i>O. ratcliffei</i> Cano	
-	Central horn not free; body without or with sparse blue reflections; antennal lamellae very wide and concave; metasternal marginal groove absent or poorly marked, smooth and shiny; body length 34–43 mm . . . . .	<i>O. adamsi</i> Schuster & Reyes-Castillo	
18	Dorsal elytra with indistinct to distinct but very shallow punctures, separated by at least 3 times their diameter; medial basal mentum impunctate . . . . .		19
-	Dorsal elytra with strong and deep punctures, separated by at most one diameter; medial basal mentum with or without punctures . . . . .		21
19	Elytra smooth and shiny, without blue reflections; prosternellum shiny on posterior half . . . . .	<i>O. mutenroshii</i> Cano	
-	Elytra opaque, with blue reflections; prosternellum opaque (shagreened) . . . . .		20
20	Central horn dorsally wide at base. Eastern Honduras . . . . .	<i>O. nahuali</i> Schuster, Cano, & Boucher	
-	Central horn dorsally with sides constrained at middle. Western Honduras . . . . .	<i>O. toriyamai</i> Cano	
21	Large species, body length 32–37 mm; center mentum impunctate; central horn with apex free . . . . .		
-	Medium to small species, body length 18–30 mm; center mentum with or without punctures, if impunctate, then body length less than 24 mm; central horn with apex free or not free . . . . .	<i>O. aluxi</i> Schuster, Cano, & Boucher	
22	Mesotibia with one spine, posterior portion of central horn evanescent between lateroposterior tubercles, body length 18–23 mm. Eastern Honduras . . . . .	<i>Ogyges laurae</i> Cano	
-	Mesotibia with two spines, posterior portion of central horn tumose, body length 19–30 mm. Western Honduras . . . . .		23
23	Central horn with apex clearly free; aedeagus with parameres and phallobase separated . . . . .	<i>O. monzoni</i> Schuster, Cano, & Boucher	
-	Central horn with apex not free or barely free; aedeagus with parameres and phallobase fused or separated . . . . .		24
24	Posterior half of elytra with interstriae 7–8 measuring more than 2 diameters of one adjacent puncture; body length 24–30 mm; lateroposterior tubercles directed sideways . . . . .	<i>O. crassulus</i> (Casey)	
-	Posterior half of elytra with interstriae 7–8 measuring 1.0–1.5 diameters of one adjacent puncture; lateroposterior tubercles slightly directed forward . . . . .	<i>O. llama</i> Cano	

### A novel diagnostic character that supports the monophyly of *Ogyges*

Kaup (1871: 69–70) described *Ogyges* to accommodate the species *Proculejus laevissimus* Kaup and *P. laevior* Kaup (= *Veturius laevior* (Kaup), according to Schuster *et al.* 2005), separating these from *Proculejus* by the shallow elytral striae and absence of setae on elytral sides [“von *Proculejus* unterscheiden sie sich durch die seichten Flügeldeckenfurchen und Mangel der Haare an den Seiten”]. Later, Kuwert (1896: 221) diagnosed *Ogyges* as a genus with clypeal margin formed by a strong bulge and humeri bare [“Clypeusrandung durch starke Wulstung entstanden. Schulterecken unbehaart”], separating it from *Proculejus* and *Proculejoides* Kuwert. In the rearrangement of New World genera of Passalidae, Reyes-Castillo (1970: 174–177) resurrected *Ogyges* (with *Proculejoides* as its junior synonym) and broadened and redefined the original scope of the genus (elytra bare, poorly marked striae, and convex clypeus) emphasizing in the lack of clypeofrontal groove, the form of the mediofrontal structure of “marginatus” type (central horn carinated, lateroposterior tubercles angular and adjacent to each side of horn) and the bidentate apex of mandible. These were the prevalent criteria to diagnose *Ogyges* that now are inapplicable due to the amount of species discovered in the past four decades (from six nominal species at 1970 to 25 valid species at present work). Moreover, Boucher (2006: 346) considered that the distinction from *Proculejus*, based only on the absence of clypeofrontal groove (the key character), is unconvincing.

Nevertheless, all the known species of *Ogyges*, including the new ones described herein, share an exclusive character state that was never considered in previous works: the symmetrical (same form present in both mandibles) and tridentate suprainternal teeth (Fig. 21). Each suprainternal tooth is widely divided into three tubercles: the superior is wider at base, acute at apex and slightly curved backward, while the inferior is smaller (less than half of superior), of conical to pyramidal shape and clearly divided to form another similar small, dorsal, well marked to obsolete (in old specimens) tubercle (Fig. 21). In ventral view the superior tubercle is slightly directed obliquely upward and the two inferior directed downward. In the sister group *Proculejus* the suprainternal teeth are bidentate (Fig. 22a–c), at least in the examined type specimens of *P. nudicostis* Bates, *P. obesus* Bates, *P. pubicostis* Bates, *P. ganglbaueri* (Kuwert), *P. brevis* (Truqui), *P. hirtus* (Truqui), *P. acapulcae* Kuwert, and *P. truquii* Kaup. On the other hand, in the sister group *Proculus* the suprainternal teeth present a characteristic

dehiscent or worn (in old specimens) (Gravely 1918: 10, Schuster *et al.* 2003: 284, Boucher 2006: 346) long and wide denticle (Fig. 22d–e), absent in all genera of passalids. I consider the form of suprainternal teeth of *Ogyges* an character state exclusive of the genus, found in all known species. Additionally, because this character state is well marked (except in old specimens), it can help to separate *Ogyges* from all other passalid genera in the New World.

*Ogyges* can be separated from most genera of the Proculini tribe except *Proculus* and *Proculejus*, and some species of *Xylopassaloides*, *Veturius* Kaup, and *Vindex* Kaup, by the presence of two apical teeth on mandible (instead of three). It can be separated from most species of *Proculejus* by the narrow metasternal marginal groove, the well marked profemoral ventral groove (except in some specimens of *O. tzutuhili*), the bare or scarcely setose anterior angles of metasternum, the bare epipleura and the absence of punctate setae along the lateral interstriae and pronotal lateral fossae (except from *P. nudicostis* and *P. obesus*, both species with tridentate mandible). From *Proculus*, it can be separated by its smaller size (18–46 mm, compared with *Proculus* 51–80 mm) and glabrous humeri. Some species of *Ogyges* with well-marked elytral striae can be confused with *Xylopassaloides*, but the circular (instead of squared) lateral punctures, smaller than the width of interstriae, distinguish it from *Xylopassaloides*. From the few flightless species of *Vindex*, it can be separated by the internal tubercles (when present) that do not reach the clypeus and the narrow metasternal lateral groove. From *Veturius* with bidentate apex of mandibles, it can be easily separated by the wider antennal club.

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## References cited

- Arrow, G.J. (1906) A contribution to the classification of the coleopterous family Passalidae. *Transactions of the Entomological Society of London*, 4, 441–469.
- Bates, H.W. (1886) Coleoptera Pectinicornia and Lamellicornia. In: Godman, F.D. & Salvin, O. (Eds.), *Biologia Centrali-Americana. Vol. 2. part 2*. Godman & Salvin, London, United Kingdom, pp. 1–24.
- Blackwelder, R.E. (1944) Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part. 2, *Bulletin of the United States National Museum*, 185, 189–341.
- Boucher, S. (2006) Évolution et phylogénie des coléoptères Passalidae (Scarabaeoidea). Les taxons du groupe famille. La tribu néotropical des Proculini et son complexe *Veturius*. *Annales de la Société Entomologique de France*, 41, 239–603. <http://dx.doi.org/10.1080/00379271.2005.10697444>
- Fonseca, C.R.V., Leitão Barbosa, M.L. & Souza Fernandez, M.F. (2011) A hypothetical evolutionary history of passalid beetles narrated by the comparative anatomy of the hindgut (Coleoptera: Passalidae). *Zootaxa*, 2013, 1–20.
- Gravely, F.H. (1918) A contribution towards the revision of the Passalidae of the world. *Memoirs of the Indian Museum*, 7, 1–143.
- Harold, E. (1868) Lucanidae, Passalini, In: Gemminger, M. & Harold, E. (Eds.), *Catalogus Coleopterorum hucusque synonymicus et systematicus. Tom. III*. E.H. Gummi, Munich, Germany, pp. 751–983.
- Hincks, W.D. (1953) The Passalidae (Ins., Col.) of El Salvador. *Senckenbergiana*, 34, 29–35.
- Hincks, W.D. & Dibb, J.R. (1935) *Coleopterorum Catalogus, Pars 142: Passalidae*. W. Junk, The Hague, Netherlands, 118 pp.

- Hincks, W.D. & Dibb, J.R. (1958) *Coleopterorum Catalogus, Supplementa Pars 142: Passalidae*. W. Junk, The Hague, Netherlands, 32 pp.
- International Commission on Zoological Nomenclature. (1999) *International Code of Zoological Nomenclature*. Fourth edition. International Trust for Zoological Nomenclature, London, United Kingdom, xxix + 306 pp.
- Kaup, J.J. (1868) Prodrömus zu einer Monographie der Passaliden. *Coleopterologische Hefte*, 4, 1–31.
- Kaup, J.J. (1871) Monographie der Passaliden. *Berliner Entomologische Zeitschrift*, 15, 1–125.  
<http://dx.doi.org/10.1002/mmnd.18710150306>
- Kuwert, A.F. (1891) Systematische uebersicht der Passaliden - Arten und Gattungen. *Deutsche Entomologische Zeitschrift*, I, 161–192.
- Kuwert, A.F. (1896) Die Passaliden dichotomisch bearbeitet. *Novitates Zoologicae*, 3, 209–235. [plates V–VII]
- Kuwert, A.F. (1897) Die Passaliden dichotomisch bearbeitet, die Arten. *Novitates Zoologicae*, 4, 274–306.
- Neave, S.H. (1940) *Nomenclator Zoologicus. A list of the names of the genera and subgenera in zoology from the tenth edition of Linnaeus 1758 to the end of 1935*. Vol. III, M-P. The Zoological Society of London, London, United Kingdom, 1065 pp.
- Rafinesque, C.S. (1815) *Analyse de la nature ou tableau de l'univers et des corps organisés*. Published by the author, Palerme, Italy, 223 pp.
- Reyes-Castillo, P. (1970) Coleoptera, Passalidae: morfología y división en grandes grupos; géneros americanos. *Folia Entomologica Mexicana*, 20–22, 1–240.
- Reyes-Castillo, P. (2003) Capítulo 7. Familia Passalidae, In: Morón, M.A. (Ed.), *Atlas de los escarabajos de México. Volumen II. Familias Scarabaeidae, Trogidae, Passalidae y Lucanidae*. Argania Editio, Barcelona, Spain, pp. 135–168.
- Reyes-Castillo, P. & Castillo, C. (1986) Nuevas especies de Coleoptera Passalidae de la Zona de Transición Mexicana. *Anales del Instituto de Biología de la Universidad Nacional Autónoma de México*, Serie Zoología, 56, 141–154.
- Reyes-Castillo, P., Fonseca, C.R.V. & Castillo, C. (1987) Descripción de un nuevo género Mesoamericano de Passalidae (Coleoptera: Lamellicornia). *Folia Entomológica Mexicana*, 73, 47–67.
- Schuster, J.C. (1992) Passalidae: state of larval taxonomy with description of New World species. *Florida Entomologist*, 75, 357–369.  
<http://dx.doi.org/10.2307/3495857>
- Schuster, J.C. (2006) Passalidae (Coleoptera) de Mesoamérica: diversidad y biogeografía, In: Cano, E.B. (Ed.), *Biodiversidad de Guatemala, Vol. I*. Universidad del Valle de Guatemala, Guatemala City, Guatemala, pp. 379–392.
- Schuster, J.C. & Reyes-Castillo, P. (1981) New World genera of Passalidae (Coleoptera): a revision of larvae. *Anales de la Escuela Nacional de Ciencias Biológicas, México*, 25, 79–116.
- Schuster, J.C. & Reyes-Castillo, P. (1990) Coleoptera, Passalidae: *Ogyges* Kaup, revisión de un género mesoamericano de montaña. *Acta Zoológica Mexicana (n.s.)*, 40, 1–49.
- Schuster, J.C., Cano, E.B. & Reyes-Castillo, P. (2003) *Proculus*, giant Latin-American passalids: revision, phylogeny and biogeography. *Acta Zoológica Mexicana (n.s.)*, 90, 281–306.
- Schuster, J.C., Cano, E.B. & Boucher, S. (2005) *Ogyges* and *Veturius* (Coleoptera: Passalidae) in Central America: synonymies, range extensions and new species. *Acta Zoológica Mexicana (n.s.)*, 21, 115–132.
- Wheeler, Q.D. & Platnick, N.I. (2000) The phylogenetic species concept. In: Wheeler, Q.D. & Meier, R. (Eds.), *Species concepts and phylogenetic theory: a debate*. Columbia University Press, New York, New York, United States of America, 230 pp.
- Wytzman, P. (1884) *Catalogue systématique des passalides*. Tipografía del R. Istituto Sordo-Muti, Genoa, Italy, 27 pp.
- Zang, R. (1903) Bemerkungen zur älteren Passaliden-Litteratur. *Deutsche Entomologische Zeitschrift*, 2, 417–420.