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A new species of *Plectromerus* Haldeman (Coleoptera: Cerambycidae) from Dominican amber with notes on the fossil *Plectromerus tertiarius* Vitali

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Abstract

A new species, *Plectromerus grimaldii* (Coleoptera: Cerambycidae: Cerambycinae: Curiini), from Dominican amber (Oligo-Miocene) is described. Features distinguishing the new species from its congeners are presented. A discussion of the comparison of this new species to another *Plectromerus* fossil, *P. tertiarius* Vitali, is also presented.

Resumen

Una nueva especie, *Plectromerus grimaldii* (Coleoptera: Cerambycidae: Cerambycinae: Curiini), de ámbar dominicano (Oligo-Miocene) se describe. Se incluyen características para diferenciar esta especie de otros miembros del género. También se presenta una discusión de la comparación de esta nueva especie a otro fósil de *Plectromerus*, *P. tertiarius* Vitali.

Key words: amber, Cerambycidae, Dominican Republic, fossil, Curiini, *Plectromerus*, new species

Introduction

Dominican amber is renowned for its well-preserved and highly diverse insect inclusions. These ancient resins formed from extinct *Hymenaea* trees from the mid-Miocene, approximately 17–20 MYO, and have yielded a rich fauna of over 400 families and 1,500 species of insects (Grimaldi, 1996; Grimaldi & Engel, 2005). However, specimens of the beetle family Cerambycidae are not especially common in Dominican amber. Linsley (1961) observed that although cerambycid fossils were known from various parts of the world, they were generally not well studied. Approximately two dozen species of

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cerambycids were described from compression fossils of the Florissant (Meyer, 2003) and a cerambycid in Dominican amber has been described by Martins & Galileo (1999). Vitali (2004) described the first Curiini fossil, *Plectromerus tertiarius*, from a partial specimen included in Dominican amber (Fig. 1b).

Micheli & Nearns (2005) recently reviewed the genus *Plectromerus* Haldeman (1847), a genus distributed throughout the Caribbean, southeastern USA, and southeastern Mexico (Micheli & Nearns, 2005; Monné, 2005; Monné & Hovore, 2003). *Plectromerus* is one of three genera currently recognized in the tribe Curiini and it is perhaps best characterized by metafemora armed with one or more large "teeth" (*plectrum*, Latin for spur; *meros*, Greek for femur). The paper herein describes a second *Plectromerus* species known from Dominican amber. In addition, a comparison is made between our new fossil species *P. grimaldii* and the fossil described by Vitali, *P. tertiarius*. A key to the species of this genus will be provided at a later time by the senior author in his on-going revision and phylogenetic analysis of the tribe.

Materials and Methods

Specimens from the following collections were examined for a comparison of characters with *P. grimaldii*. The following acronyms are used throughout the paper:

AMNH American Museum of Natural History, New York, NY, USA
BMNH The Natural History Museum, London, United Kingdom
CMNH Carnegie Museum of Natural History, Pittsburgh, PA, USA
EFGC Edmund F. Giesbert Collection, Gainesville (at FSCA), FL, USA
ENPC Eugenio Nearns Private Collection, Gainesville, FL, USA
EMEC Essig Museum of Entomology, University of California, Berkeley, CA, USA
FDZC Fernando de Zayas Collection, La Habana, Cuba
FSCA Florida State Collection of Arthropods, Gainesville, FL, USA
FVPC Francesco Vitali Private Collection, Genova, Italy
FTHC Frank T. Hovore Private Collection, Santa Clarita, CA, USA
IESC Instituto de Ecología y Sistemática, La Habana, Cuba
JAMC Julio and Charyn Micheli Private Collection, Ponce, PR, USA
JEWC James E. Wappes Private Collection, Bulverde, TX, USA
LSAM Louisiana State Arthropod Museum, Baton Rouge, LA, USA
RFMC Roy F. Morris Private Collection, Lakeland, FL, USA
RHTC Robert H. Turnbow, Jr. Private Collection, Ft. Rucker, AL, USA
TAMU Texas A&M University, College Station, TX
USNM National Museum of Natural History, Smithsonian Institution, Washington, DC, USA

More than 600 specimens from 17 described species of *Plectromerus* were compared. Observations of the fossils were made using a Nikon SMZ800 stereomicroscope with 20X eyepieces equipped with a drawing tube. Photographs were taken with the Microptics Digital Lab XLT photography system.

***Plectromerus grimaldii* Nearns & Branham, new species**
Figs. 1a, 2a–d, 3b, 3d

Description. FEMALE. Length 7.1 mm, width 1.8 mm (measured across humeri). Habitus as in Figure 1a. General form small, narrow, subcylindrical. Elytra with two indistinctly defined and very faint, transverse ferruginous fasciae on each elytron, one at basal third and another just behind middle. *Head* with front nearly flat, transverse, with a median, shallow line from between eyes to just beyond vertex, slightly concave between antennal tubercles, which are somewhat raised and widely separated. Much of head surface is obscured by an opaque film, exposed areas with surface opaque, alveolate-punctate. Eyes coarsely faceted, prominent, transverse, subreniform (Fig. 2b). Antennae eleven-segmented, slightly longer than body, impunctate; scape bowed, third antennomere subequal to scape, almost twice as long as fourth, fifth antennomere longest, about 2.6 times longer than fourth, antennomeres 6-11 becoming progressively shorter, sixth through eighth slightly longer than third, eleventh slightly longer than fourth, basal antennomeres subcylindrical, from fifth slightly flattened, apices of antennomeres 6–10 produced externally, antennomeres 7–9 slightly bowed (Fig. 3b, 3d). Antennomeres 2–6 ciliate beneath with coarse, moderately long, suberect, hairs. *Pronotum* subcylindrical, about 1.5 times as long as wide, widest at middle, slightly broader at apex than base, sides broadly inflated, arcuately constricted at basal third, and a slight inflation just before apex; basal margin slightly arcuate; disk convex. Surface opaque, alveolate-punctate. *Scutellum* small, rounded, almost as long as broad, impunctate. *Elytra* about 2.7 times as long as width at humeri, about 2.5 times as long as pronotal length, about 1.3 times broader basally than pronotum at widest (at middle); sides nearly parallel, slightly sinuate around middle, evenly rounded to apex which is subtruncate; epipleural margin moderately sinuate. Elytral disk slightly concave medially, subsuturally, creating a faint costa on each elytron**.** Surface shining; punctation dense, coarse, punctures becoming finer towards apex and sides, almost obsolete on apical third; glabrous. *Underside* with prosternum shining; narrowest area of prosternal process between coxae about 0.25 times as wide as coxal cavity, and about 0.5 times the width of apex of process which is cordate (emarginated at middle of apex). Mesosternum surface shining, sparsely and finely punctate (Fig. 2b). Metasternum surface shining, sparsely and finely punctate, with a few suberect hairs; first visible abdominal ventrite longest, about 2.5 times longer than second, about as long as next three visible abdominal ventrites combined, fifth visible abdominal ventrite evenly, broadly rounded, slightly longer than fourth. *Legs* very finely punctate, with femora clavate, meso- and metafemora arcuate, underside of each femoral club with a

small triangular tooth with posterior edge smooth; metafemora about 1.2 times longer than metatibiae; tibiae slightly flattened, expanded apically, base of tibiae slightly arcuate (Fig. 2c).

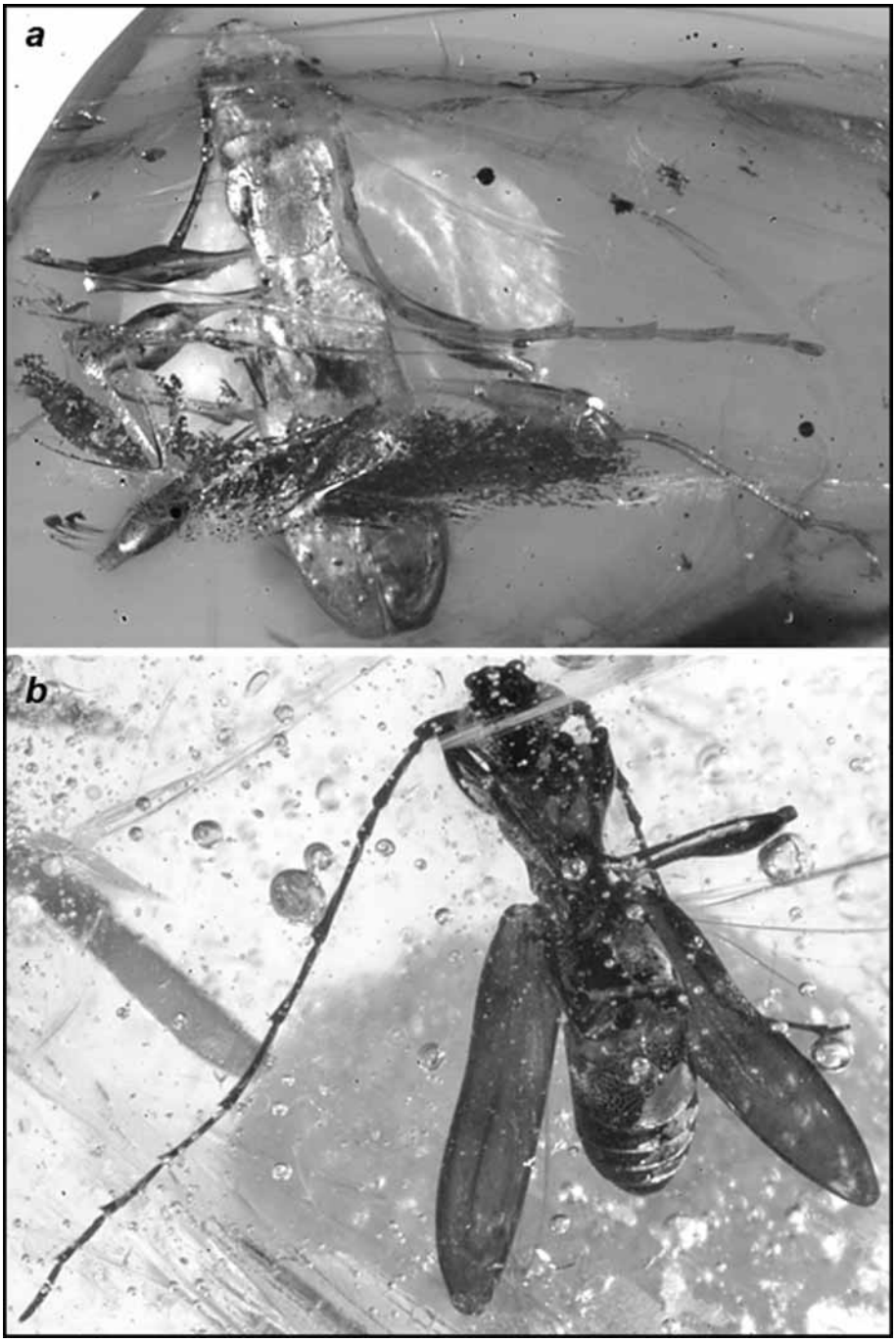

FIGURE 1. a, *Plectromerus grimaldii* Nearns & Branham, n. sp., holotype dorsal habitus; b, *Plectromerus tertiarius* Vitali, holotype ventral habitus.

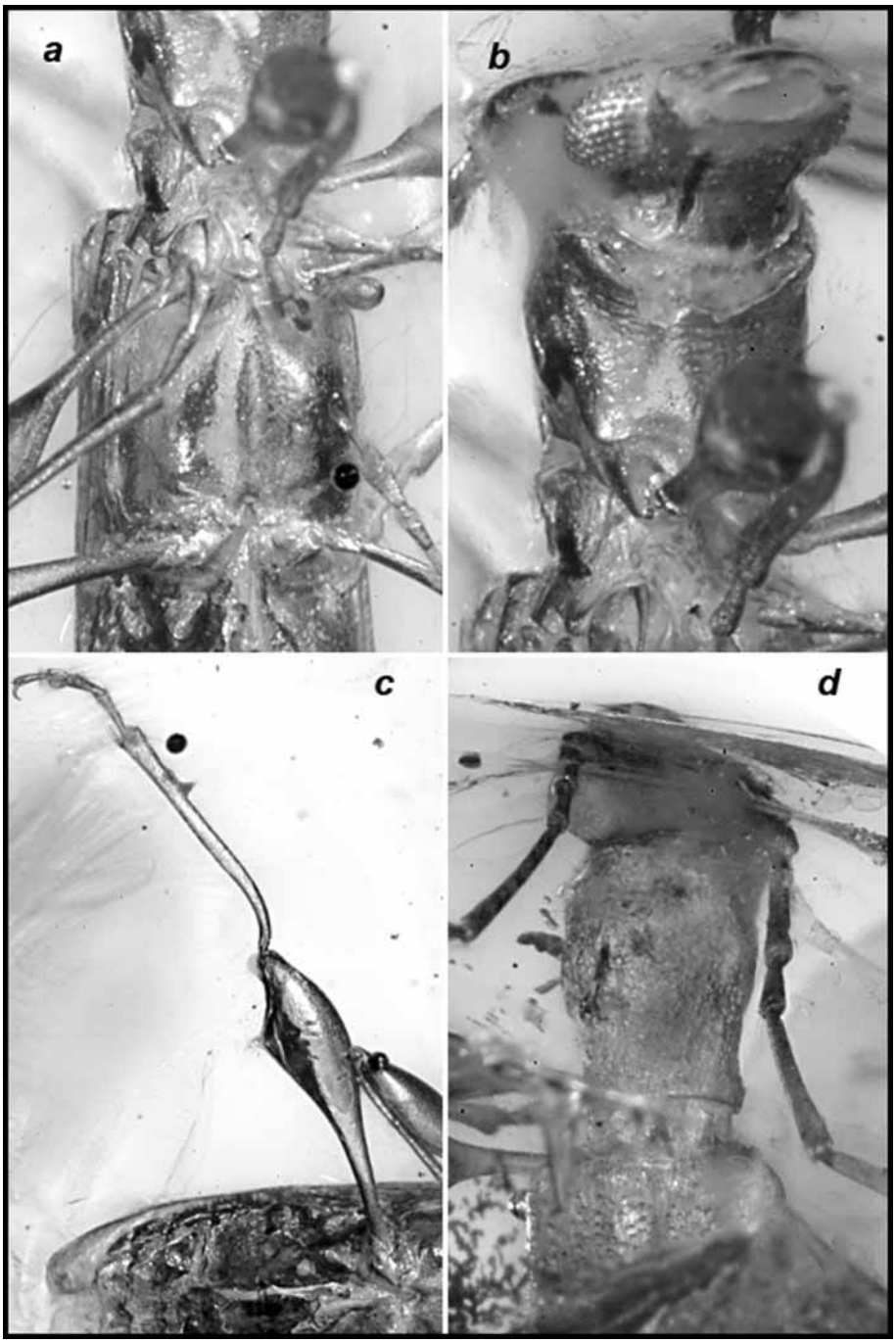

FIGURE 2. a–d, *Plectromerus grimaldii* Nearns & Branham, n. sp., holotype: a, close-up of mesosternum; b, close-up of prosternum; c, close-up of right metafemur and metatibia, ventral view; d, close-up of pronotum and elytral punctation.

Etymology. We are pleased to name this species for Dr. David Grimaldi (AMNH) for his contributions to the study of insects in amber and for making the specimen of this species available for study.

Type. Holotype, female, in the collection of the AMNH, No. DR-16-535. Included in a piece of Dominican amber (Oligo-Miocene) from the Dominican Republic. Amber yellow-brownish, moderately clear; cut and polished to a flat, oval shape, measuring 18.5 X 15 X 8 mm. Specimen is in good condition except damage to left antenna: antennomere 7 is incomplete, antennomeres 8–11 are missing.

Discussion. Although gender cannot be determined conclusively, we believe the holotype of *P. grimaldii* to be female based on the evenly, broadly rounded fifth visible abdominal ventrite and the lack of an irregular patch of coarse punctures in front of each prosternal coxa (a male characteristic seen in many extant species of *Plectromerus*).

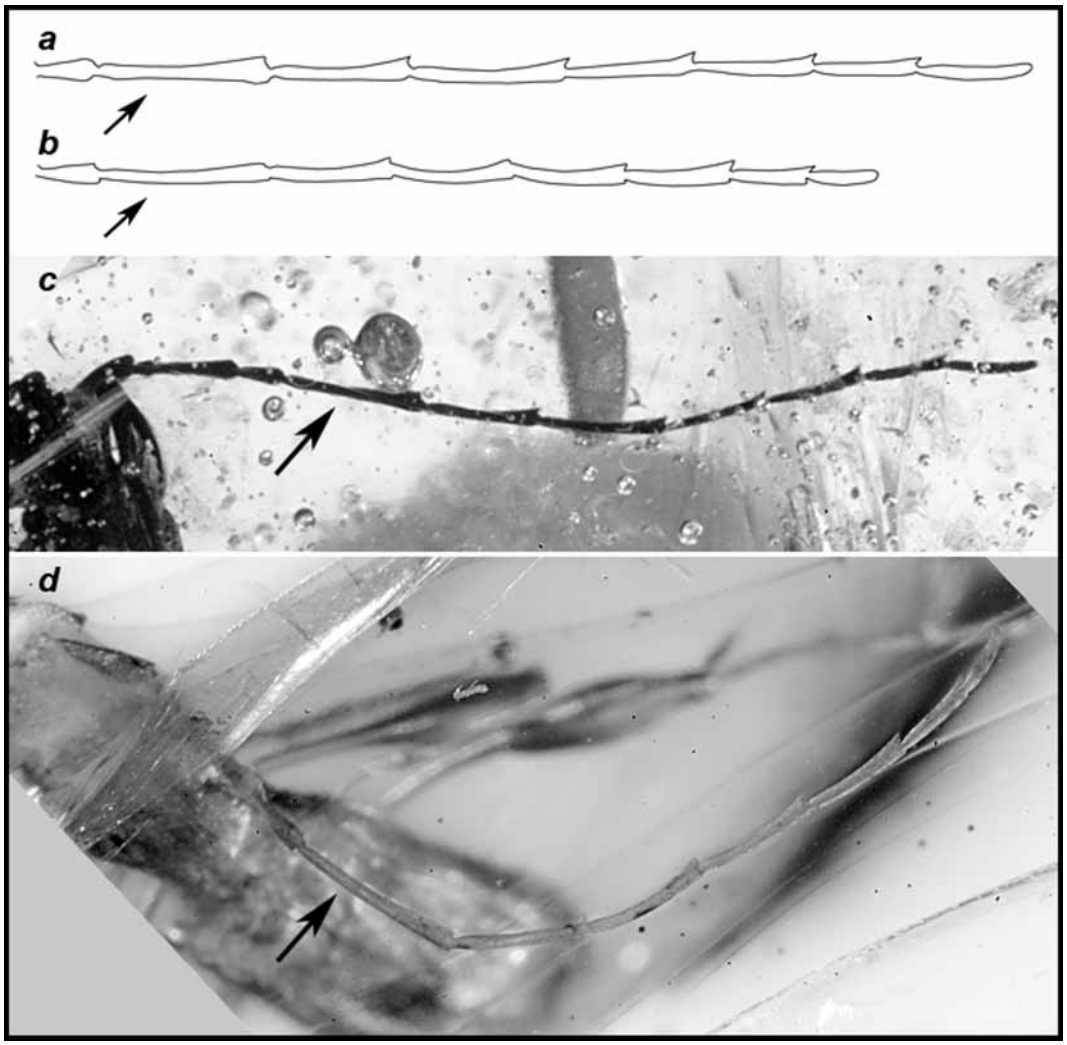

FIGURE 3. a, *Plectromerus tertiarius* Vitali, illustration of antennomeres 4–11, arrow points to fifth antennomere; b, *Plectromerus grimaldii* Nearns & Branham, n. sp., illustration of antennomeres 4–11, arrow points to fifth antennomere; c, *P. tertiarius* Vitali, holotype, right antenna, ventral view, arrow points to fifth antennomere; d, *P. grimaldii* Nearns & Branham, n. sp., holotype, right antenna, dorsal view, arrow points to fifth antennomere.

From other congeners, *P. grimaldii* can be distinguished by the following combination of characters: the shape and punctation of pronotum (widest at middle, alveolate-punctate), the elytral punctation (dense, coarse), the glabrous pronotum and elytra, and the small, non-serrate metafemoral tooth (Fig. 2c). *Plectromerus punctatus* (Fisher) and *P. exis* Zayas also have small metafemoral teeth which are not serrate, however these species can be distinguished by having the third antennomere longest (fifth longest in *P. grimaldii*) and different pronotal dimensions: in *P. punctatus* the pronotum is almost as wide as long, in *P. exis* the pronotum has a distinct tubercle in the center and the length is about 1.8 times the width (1.5 times as long as wide in *P. grimaldii*).

Notes on *Plectromerus tertiarius* Vitali holotype: ventral habitus as in Fig. 1b (dorsal habitus completely obscured), length approximately 7 mm (exact measurement not possible since abdomen is bent up through open elytra), included in a piece of Dominican amber (Lower Miocene) from the Dominican Republic. Amber yellow-brownish, partially obscured by numerous, small bubbles; cut and polished in a near-oval shape, measuring 42 X 22 X 15 mm. Specimen is damaged as follows: metathoracic legs are missing except coxae and trochanters; left antenna is damaged, missing part of antennomere 8, completely missing antennomeres 9–11. One important character in particular, the prosternal process between coxae, is not visible due to position of pro- and mesothoracic legs. Elytral punctation can be inferred from ventral view due to open elytra which are semi-translucent. Vitali (2004) states that the holotype is a male, however, we see nothing to support this. In our opinion, the broadly rounded fifth abdominal segment is more indicative of a female *Plectromerus* (irregular patches of coarse punctures in front of each prosternal coxa are also not visible but the view is partially obscured). Vitali (2004) also states that the first abdominal ventrite is 3 times longer than other visible ventrites, however, our measurements show it to be about 2 times longer.

Plectromerus grimaldii superficially resembles *P. tertiarius* in pronotal shape and elytral punctation. They differ, however, with respect to elytral apices (subtruncate in *P. grimaldii*, evenly rounded in *P. tertiarius*) and visible abdominal ventrite relationships (first ventrite as long as next 3 visible abdominal ventrites combined in *P. grimaldii*, first ventrite slightly longer than next 2 visible abdominal ventrites combined in *P. tertiarius*). In addition, significant differences can be seen in antennomere morphology. These differences exceed the variation in antennal morphology seen in extant species and across gender in *Plectromerus*. In *P. grimaldii*, the fifth antennomere is about 1.9 times longer than the tenth (about 1.6 times longer in *P. tertiarius*), fifth antennomere about 1.5 times longer than seventh (about 1.1 times longer in *P. tertiarius*). In *P. tertiarius*, the seventh antennomere is slightly longer than the sixth (subequal in *P. grimaldii*) and the eleventh antennomere is slightly longer than the tenth (subequal in *P. grimaldii*). In addition, antennomeres 5–10 are distinctly produced externally in *P. tertiarius*, whereas in *P. grimaldii*, antennomeres 6–10 are only moderately produced externally (Fig. 3b–d).

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