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Correction of the misidentifications and confusion surrounding *Ochodaeus grandiceps* Fairmaire, 1897 (Coleoptera: Ochodaeidae), and the description of a new species of ochodaeid from Cuba

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Correction of the misidentifications and confusion surrounding
Ochodaeus grandiceps Fairmaire, 1897 (Coleoptera: Ochodaeidae), and
the description of a new species of ochodaeid from Cuba

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Abstract. Multiple sources of confusion surround the identity of *Ochodaeus grandiceps* Fairmaire, 1897, from Sichuan, China (Coleoptera: Ochodaeidae). Herein the type specimen is illustrated to solve these taxonomic issues. Examination of the holotype indicates that the species must be transferred to the genus *Nothochodaeus* Nikolajev, 2005, resulting in a **new combination**. The genus *Mimochodaeus* Nikolajev, 2009, based on a misidentification of *O. grandiceps* as its purported type species, is discussed. Finally, Cuban specimens had been treated erroneously as belonging to *O. grandiceps*, and so the species had remained undescribed. A **new species**, *Parochodaeus perdidus*, is described to accommodate them.

Keywords. Taxonomy, Coleoptera, Scarabaeoidea, Neotropical, Caribbean.

Introduction

The sand-loving scarab beetles (Coleoptera: Scarabaeoidea: Ochodaeidae) are a small almost cosmopolitan family whose species are readily distinguished by their pectinate mesotibial spurs. The family is most speciose in Africa, Madagascar, and southwestern North America, although an increasing number of species are known from South America (Paulsen and Ocampo 2012). Traditionally almost all species in the nominal subfamily were described in the genus *Ochodaeus* Serville. Advancements in the taxonomy of the group have resulted in the erection of several genera based primarily on differences in the form of the elytral locking mechanism (Nikolajev 1995, 2009; Paulsen 2007). This has resulted in the genus *Ochodaeus* no longer being present in the New World. Because of misidentification and confusion with a Chinese species, the only species reported from the Caribbean had remained assigned to this genus (Blackwelder 1944; Peck 2005). The goal of this paper is to rectify this error and others caused by confusion surrounding the identity of *Ochodaeus grandiceps* Fairmaire.

Methods and Material Examined

Species description follows Paulsen (2007) and Paulsen and Ocampo (2012). Specimens for this study were examined from the following institutions and collections: (CMNC) Canadian Museum of Nature, Ottawa, Canada; (MNHN) Muséum National d'Histoire Naturelle, Paris, France; and (USNM) United States National Museum of Natural History, Washington, D.C.

Taxonomic Treatment

The true *Ochodaeus grandiceps* Fairmaire

Fairmaire (1897) clearly and carefully described *Ochodaeus grandiceps*, with a type locality of Sichuan, China. He stated that the specimen was remarkable for its large head and produced clypeus with two distinct tubercles; he also described the dark spots on the elytra and base of the pronotum (Fairmaire 1897). Because the MNHN type specimen matches the description perfectly there is no doubt

that it is the type (Fig. 1). These characters together with the trapezoidal interlocking mechanism of the propygidium identify it as a representative of the Asian genus *Nothochodaeus* Nikolajev, 2005. The species must be transferred to that genus, resulting in the **new combination** *N. grandiceps* (Fairmaire).

Further complicating matters, Nikolajev (2009) based a new genus, *Mimochodaeus*, on what was purported to be *O. grandiceps* Fairmaire from Sichuan. The species illustrated, however, is not *O. grandiceps*, and it is not immediately clear which species is actually depicted. After receiving images of the holotype of *O. grandiceps* from me, Nikolajev (in litt.) has indicated that he will publish a correction concerning *Mimochodaeus* in the near future.

Misidentified Caribbean ochodaeids and the description of a new species

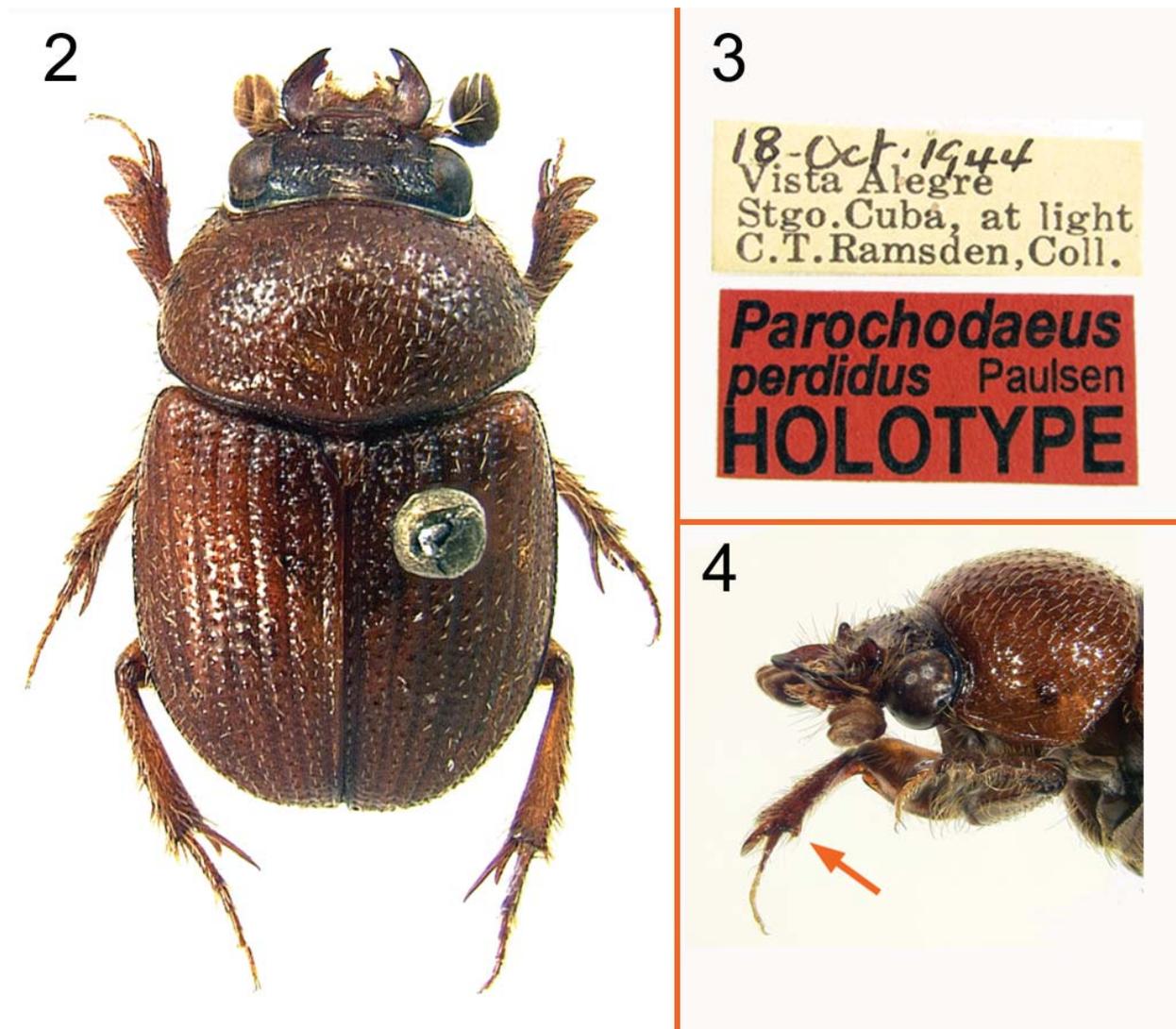
As discussed in the previous section, the type locality of *O. grandiceps* is Sichuan, China. In the *Coleopterorum Catalogus*, Arrow (1912) listed *O. grandiceps* from “Westchina.” Blackwelder (1944), in his Neotropical beetle checklist from around thirty years later, erroneously listed *O. grandiceps* Fairmaire as occurring in the West Indies. I can find no intervening works that provide a reason as to why such a mistake was made by Blackwelder. Presumably following Blackwelder, Peck (2005) listed *O. grandiceps*



Figure 1. Holotype of *Ochodaeus grandiceps* Fairmaire (MNHN), now *Nothochodaeus grandiceps*, with labels.

from Cuba after having seen an ochodaeid specimen from Cienfuegos (now at the CMNC) collected by the eminent scarabaeologist Henry Howden. These erroneous citations are the only unresolved references to a species of the genus *Ochodaeus* occurring in the New World. The seven ochodaeid specimens from Cuba studied are members of the genus *Parochodaeus* Nikolajev and are clearly distinct from any mainland species currently known. Thus, the Cuban specimens constitute a new species that is described below.

The genus *Parochodaeus* Nikolajev, 1995 is distributed in the New World from the Great Plains of the United States to central Argentina (Paulsen 2007, 2011, 2012). Species of *Parochodaeus* are distinguished from other ochodaeines by their elytral locking mechanism consisting of acute elytral apices and a bituberculate propygidium (Paulsen 2007). Currently 24 species are known (Paulsen and Ocampo 2012). The genus is not distributed in Florida or east of the Mississippi River in the United States, nor is it known from the Yucatán peninsula, the two mainland areas closest to Cuba.



Figures 2–4. *Parochodaeus perdidus*, n.sp. **2)** Dorsal habitus of holotype. **3)** Holotype labels. **4)** Oblique lateral view of holotype, showing the ventrally projected pollex of the right protibia in lateral view (arrow), and bituberculate clypeus.

Parochodaeus perdidus Paulsen, new species

Holotype male (USNM), labeled: a) “[18-Oct-1944] / Vista Alegre / Stgo. Cuba, at light / C.T. Ramsden, Coll.”; b) male symbol; c) on red paper, “HOLOTYPE / *Parochodaeus perdidus* / Paulsen, 2014” (Fig. 3).

Description. *Length:* 7.5 mm. *Width:* 4.0 mm. **Head:** Surface shiny, everywhere sparsely, setigerously punctate. Frons with vertex tuberculate. Clypeus trapezoidal, long (length equal to 1/2 width), anterior margin with an erect, horn-like tubercle on each end (Fig. 4), margin between tubercles distinct, thickened. Labrum emarginate. Mandibles rounded externally; left mandible with bicuspid tooth just behind apex and 1 strong basal tooth; right mandible with acute apex and 1 strong subapical tooth. Mentum with distinct longitudinal furrow in anterior half. **Pronotum:** Form evenly convex. Surface with tile-like tubercles; tubercles large, setigerous with short setae; surface between tubercles punctate; punctures moderate, lacking setae. **Elytra:** Striae moderately impressed, punctate with moderate punctures lacking setae. Interstriae tuberculate, intervals 1–2 with tubercles larger than strial punctures, elsewhere tubercles moderate. **Legs:** Protibia tridentate with basal tooth strongly developed, median; internal apical tooth (pollex) large, obtuse, directed ventrally (Fig. 4). All femora unarmed. Metatibia straight, narrow (>4x longer than wide) expanding gradually to apex. Metatarsomere 1 not greatly enlarged. **Abdomen:** Stridulatory peg present. Pygidium tuberculate.

Diagnosis. The protibial pollex (“thumb”) of this species is large and obtuse (Fig. 4), which is unlike any other *Parochodaeus* species. Some members of the genus from South America display pollices, but they are generally much narrower and acute or conical.

Etymology. The species is named ‘*perdidus*’, a Latinized form of the Spanish word ‘*perdido*’, meaning lost. I chose this name primarily to allude to the isolation achieved by the founding individuals, however they arrived in the West Indies. No species of *Parochodaeus* are known from the mainland areas nearest to Cuba. Secondarily, the name denotes the confusion surrounding the identity of the species. It is an adjective in the nominative singular and is masculine in gender.

Distribution. (Fig. 5) **CUBA:** CAMAGÜEY: Galbis (1); CIENFUEGOS: Soledad, nr. Cienfuegos (1); GUANTÁNAMO: San Carlos (1); SANTIAGO de CUBA: Vista Alegre (4).



Figure 5. Distribution of *Parochodaeus* specimens from Cuba (circles) with the type locality of *P. perdidus*, n.sp., indicated in orange. Provincial abbreviations shown: CF = Cienfuegos, CM = Camagüey, GU = Guantánamo, and SC = Santiago de Cuba.

Temporal Distribution. May (2), July (1), October (1), November (3). As with other species of *Parochodaeus* (Ratcliffe and Paulsen 2008; Paulsen and Ocampo 2012), the Cuban species displays a long period of activity.

Remarks. The species is based solely on the largest male from Vista Alegre, although all specimens examined are tentatively and conservatively assigned to this single species. Unfortunately, there are not enough specimens available for study to be confident that the variation present in the remaining material is intraspecific. Although the armature of the internal sac of the male genitalia can be useful for species determination the three males available did not display any obvious differences in this structure. Many species of *Parochodaeus* demonstrate a large range in body size, and this can lead to differences in armature and punctation. The three smaller specimens from the type locality (2 females, 1 male) have much smoother pronota and less well-developed pollices, but these differences may be related to their smaller size (5–6 mm). The large female specimen from Camagüey (7.6 mm) most closely approximates the holotype, but has the mentum more weakly furrowed and the elytra less strongly tuberculate. Because the form of the mentum usually is a reliable character for distinguishing species of *Parochodaeus* and the specimen is from quite far away (Fig. 5), this female specimen may not be conspecific. The partial specimen from Guantánamo lacks a head and thorax but does display a similar stridulatory peg and large elytral tubercles. In the female specimen from Cienfuegos the mentum is weakly notched anteriorly and not distinctly longitudinally furrowed, with no evidence of a pollex; this specimen is the most likely to belong to another species, however no males from this locality are known. More specimens are necessary, and especially males, to discern if there may be additional species of *Parochodaeus* in Cuba. Because it is possible that more than one species is present, specimens of the remaining material are not included in the type series.

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