



The Central American genus *Aporolaus*, new status and taxonomic revision (Coleoptera: Scarabaeoidea: Hybosoridae: Hybosorinae)

El género centroamericano *Aporolaus*, nuevo estatus y revisión taxonómica (Coleoptera: Scarabaeoidea: Hybosoridae: Hybosorinae)

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Abstract. The hybosorine genus *Aporolaus* Bates is taxonomically revised. The genus was previously considered as synonym of *Dicraeodon* Erichson and, based on a detailed morphological study, is reinstated herein. A generic description and diagnosis for *A. fimbriatus* Bates, the only known species in the genus, is provided along with illustrations of diagnostic characters. A lectotype is designated for *A. fimbriatus* Bates.

Key words. Central America, Hybosoridae, taxonomy, *Aporolaus*.

Resumen. Se provee una revisión taxonómica del género de Hybosorinae *Aporolaus* Bates. Este género era considerado sinónimo de *Dicraeodon* Erichson, pero en base a un estudio detallado de su morfología es reestablecido en esta contribución. Se proporciona una descripción y diagnóstico de *A. fimbriatus*, la única especie conocida del género, así como ilustraciones de caracteres diagnósticos. Se designa un lectotipo para *A. fimbriatus* Bates.

Palabras clave. América Central, Hybosoridae, taxonomía, *Aporolaus*.

Introduction

The Central American hybosorine genus *Aporolaus* was described by Bates (1887) for 1 species, *A. fimbriatus* Bates (1887). Later, Arrow (1911) synonymized *Aporolaus* with *Dicraeodon* Erichson (1847), based on the resemblance of the females of *A. fimbriatus* and *D. basalis* (Westwood). Aside of being listed in catalogs (Arrow, 1912; Ratcliffe, 2002; Ocampo and Ballerio, 2006), *A. fimbriatus* has not been treated taxonomically since its original description. After a detailed analysis of the morphology of *Dicraeodon* species, including new undescribed taxa, I propose to reinstate the genus *Aporolaus*.

The objective is to provide a taxonomic revision of the genus *Aporolaus* and the species, *A. fimbriatus*, as well provide illustrations of diagnostic characters and a distribution map.

Materials and methods

Body measurements, puncture density and size, and density of setae are based on the following standards. Body length was measured from the apex of the pronotum (at the middle) to the apex of the elytra. Body width was measured across the elytra at the middle. Puncture density was considered “dense” if punctures were nearly confluent to less than 2 puncture diameters apart, “moderately dense” if punctures were 2 to 6 diameters apart, and “sparse” if punctures were more than 6 diameters apart. Puncture size was defined as “small” if punctures were 0.02 mm or smaller, “moderate” if 0.02-0.07 mm, and “large” if 0.07 mm or larger. Setae were defined as “sparse” if there were few setae, “moderately dense” if the surface was visible but with many setae, and “dense” if the surface was not visible through the setae. Elytral carinae were counted from the elytral suture, with the elytral suture included. Description of hind wing venation was done following Ocampo (2003, 2006). Specimen label data was copied verbatim using “/” between the lines of the labels.

This study was based on specimens from the following institutions (with curators given in brackets): IAZA– Instituto Argentino de Investigaciones de Zonas

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- Áridas, Mendoza, Argentina (F. C. Ocampo).
 INBC – Instituto Nacional de Biodiversidad (InBio), Santo Domingo de Heredia, Costa Rica (A. Solís).
 BMNH– The Natural History Museum, London, England (M. Kerley).
 CASC – California Academy of Sciences, San Francisco, USA (R. Brett).
 UNSM – University of Nebraska State Museum, Lincoln, Nebraska, USA (B. Ratcliffe).
 USNM – United States National Collection, Washington DC, USA (David Furth), currently at the University of Nebraska, Lincoln (B. Ratcliffe, M. L. Jameson).
 UVGC – Universidad del Valle de Guatemala, Guatemala City, Guatemala (J. Schuster).
 ZMHB –Museum für Naturkunde der Humboldt Universität, Berlin, Germany (H. Wendt).

Aporolaus Bates 1887 (Figs. 1-7)

Type species *Aporolaus fimbriatus* Bates 1887: 129 (pl. 2), by monotypy.

Diagnosis. It can be distinguished from *Dicraeodon* and all other Hybosorid genera in the New World by the following combination of characters: labral anterior margin with tooth at middle; with strongly protruding mandibles in males, each mandible bearing a dorsal tooth and 2 apical teeth; antennal club with basal antennomere cup-shaped; posterior angles of pronotum broadly rounded; hind wing with MP3 vein present and lacking MP4 vein; meso- and metatibiae lacking transversal carinae; tarsal claws simple (lacking ventral tooth or indentation); and male genitalia are strongly asymmetrical.

Systematic position. Phylogenetic relationships of *Aporolaus* have been never discussed. A preliminary cladistic analysis based on morphological data indicates that it may constitute a basal lineage in the subfamily Hybosorinae (Ocampo, unpublished).

Distribution. Panama.

Redescription

Aporolaus fimbriatus Bates, 1887 **new status** (Figs. 1-7)

Aporolaus fimbriatus Bates, 1887: 130 (pl. 2).

Dicraeodon fimbriatus; Arrow, 1911 (synonymy), 1912: 39 (cat.); Ratcliffe, 2002: 32 (cat.); Ocampo and Ballerio, 2006: 191 (cat.).

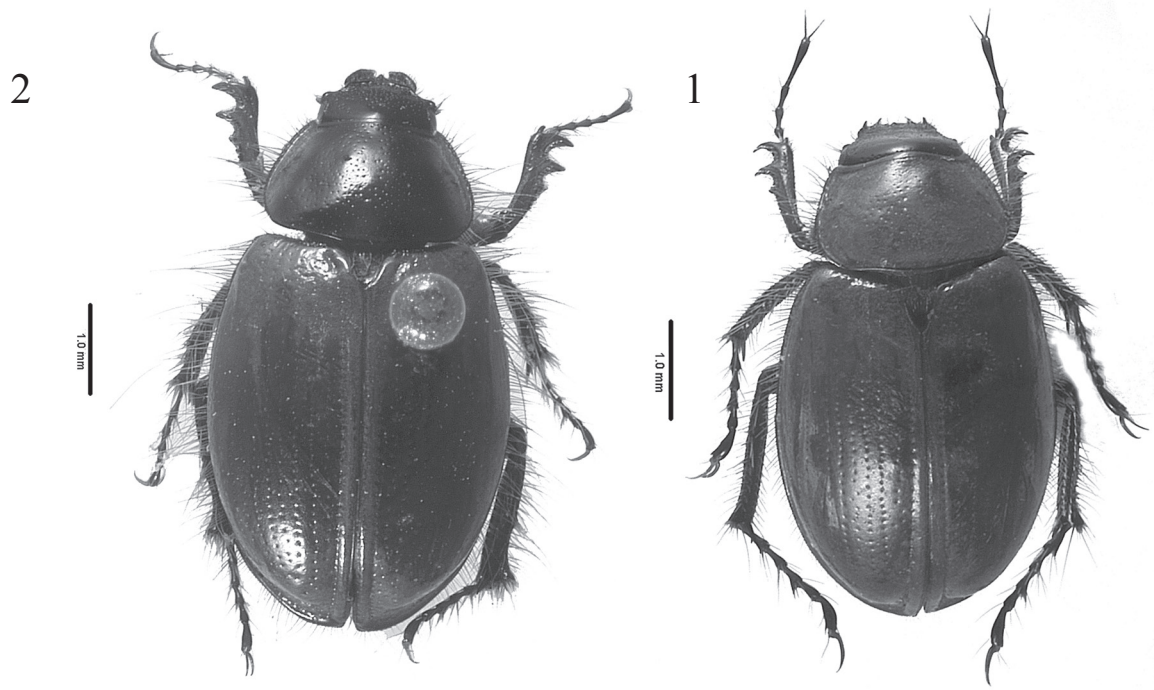
Taxonomic summary

Type material. Lectotype at MNHN labeled: “Bugaba / Panama / Champion.”; “B.C.A. Coleccion, II (2) / *Aporolaus* / *fimbriatus* / *cotypus*”; “Museum Paris / 1936 / Coll. A. Boucomont”; “*Aporolaus*/ *fimbriatus* / Bates / LECTOTYPE / F. C. Ocampo det.” *Lectotype here designated.* One paralectotype at MNHN labeled as Lectotype. Two paralectotypes at CNCI labeled as lectotype except: “COTYPE / CNCN° 8754 / *A. fimbriatus* / Bates.” Two paralectotypes at CNCI labeled: “Bugaba / 800-1,500 ft. / Champion”; “B.C. A. / duplicates”; “COTYPE / CNCN° 8754 / *A. fimbriatus* / Bates.” One paralectotype at CNCI labeled: “Bugaba / 800-1,500 ft. / Champion”; “male symbol”; “B.C.A. Coleccion, II (2) / *Aporolaus* / *fimbriatus* / *cotypus*”. Four paralectotypes at ZMHB labeled: “Bugaba / 800-1,500 ft. / Champion”. Two paralectotypes at CASC labeled: “Bugaba / 800-1,500 ft. / Champion”; “male symbol”; “Collection / Biologia Cent / Americana”; “PARATYPE / *Aporolaus* / *fimbriatus*/ H. W. Bates”. Three paralectotypes at AMNH labeled: “Bugaba / 800-1,500 ft. / Champion”; “Donated by F. du C. Godman / 1907”. All paralectotypes labeled: “*Aporolaus* / *fimbriatus* / Bates / PARALECTOTYPE / F. C. Ocampo det.”.

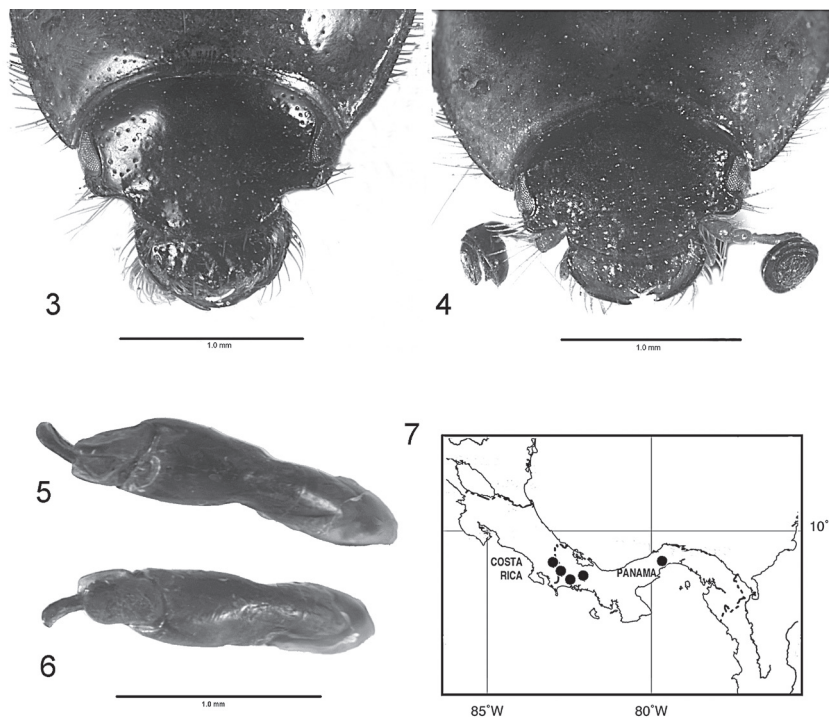
Type Locality. PANAMA: Chiriqui, Bugaba.

Distribution (Fig. 7). COSTA RICA: Sabalito, Coto Brus (1). PANAMA. Chiriqui: Bugaba (15); Santa Clara (2 km N) (3); Santa Clara (4); Río Sereno (15 km E) (1); Río Sereno “Area” (4); vic Hornito (2); Continental divide trail (2). Distribution localities are placed between 1000-1500 m in altitude.

Male (Figs. 1, 3) and female (Figs. 2, 4). Length 5.50-7.15 mm; width 3.04-3.75 mm. **Color:** Head black, pronotum light brown to dark brown, elytra light brown, some specimens bicolored light brown at elytral basal half and dark brown-black on apical half. **Head** (Figs. 3-4): Frons convex; surface smooth in middle, punctate on sides; punctures moderately dense, size moderate. Frontoclypeal suture obsolete. Clypeal shape subtrapezoidal, anterior margin broadly rounded, surface punctate, punctures moderately dense. Clypeal anterior margin weakly reflexed, setose, setae moderately dense. Labrum broadly rounded, with middle tooth at apex; dorsal surface with fringe of setae on anterior margin. Mandibles protruding beyond labral apex, dorsoventrally flat; with 1 dorsal tooth at middle and 2 teeth at apex, dorsal tooth slightly reflexed (males), or with 2 apical teeth (females). Labium with apex of mentum slightly indented, surface sparsely setose, setae long, labial palps with 3 palpomeres. Maxillae with lacinia densely setose at apex (males) or lacking setae at apex (females), maxillary palps with 4 palpomeres.



Figures 1, 2. *Aporolaus fimbriatus*, male (1), female (2).



Figures 3-7. *Aporolaus fimbriatus*, male head (3); female head (4); male genitalia, dorsolateral view (5), lateral view (6); distribution (7).

Eyes small, visible in dorsal view. Antennae with 9 antennomeres; antennomeres 2-7 moniliform; antennal club with 3 antennomeres; basal antennomere of club cup-shaped, capable of receiving penultimate and ultimate antennomeres (Fig. 4). *Pronotum* (Figs. 1, 2): Surface mostly convex, base flat in middle, pronotum 0.6 times as long as wide; surface mostly sparsely to moderately punctate; punctures moderate in size. Anterior margin with weak bead and membrane well developed; lateral margins broadly rounded, beaded, finely denticulate with long setae; posterior margin slightly sinuous in middle. Anterior angles acute; posterior angles broadly rounded. *Scutellum*: Shape triangular, surface moderately setose. *Elytron* (Figs. 1, 2): Globose, apex rounded; surface with 12 fine, punctate striae, lateral striae only visible on apical third; interval surface smooth. Lateral margin setose, setae long slender at base, becoming shorter toward apex. Epipleuron smooth, wider at base, tapered toward apex. *Hind wing*: With MP3 vein developed, MP4 not developed, M-Cu loop well developed. *Venter*: pro-, meso-, and metasternum and abdominal sternites surface smooth, sparsely setose, setae long, slender; prosternal shield with posteromedial process not developed. *Legs* (Figs. 1, 2): Protibia with 3 teeth and small denticles on outer margin; basal tooth small, middle and apical teeth well developed, curved; tibial dorsal surface with 2 setose, longitudinal carinae, outer margin setose setae moderately long; protibial spur shorter than apical tibial tooth, strongly curved, apex acute. Meso- and metatibia lacking transversal carina (few specimens with poorly developed carinae on metatibia); with 2 apical, acuminate spurs. Metatibia outer margin straight (males) or slightly curved (females). Pro-, meso-, and metatarsomeres 1 longer than 2; tarsomeres 2-4 subequal in length; tarsomere 5 longer than 4. Pro-, meso-, and metatarsal claws as long as tarsomeres 5, simple, curved. Meso- and metatibial outer surface with 3 longitudinal rows of setae; setae slender to thick. Male genitalia asymmetrical (Figs. 5, 6).

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