

A jugular-horned beetle in Cretaceous amber from Myanmar (Coleoptera: Prostomidae)

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ABSTRACT

The first formally described fossil of the beetle family Prostomidae (Tenebrionoidea) is presented. *Vetuprostomis consimilis* n.gen. et n.sp., is described and figured from a single individual preserved in mid-Cretaceous amber from Myanmar (Burma). The fossil is remarkably similar to modern prostomids from which it is distinguished. The only other records of fossil jugular-horned beetles are three undescribed Baltic amber inclusions in a private collection.

KEY WORDS: Cretaceous. Burma. Tenebrionoidea. Polyphaga. Prostomidae. taxonomy.

INTRODUCTION

The family Prostomidae Horn (Tenebrionoidea), or jugular-horned beetles, comprises two genera and about 27 species of infrequently encountered cucujiforms whose larvae and adults live in heavily decayed wood, where they reside within a clay-like material among rotting wood fibers (Young 2002). The most widespread of the two genera is *Prostomis* Latreille, which occurs in Africa and the Pacific Rim, *i.e.*, the Pacific islands, eastern Asia, and western North America. The genus *Dryocora* Pascoe occurs in Australia, New Zealand, and Tasmania. Prostomids were historically classified as a tribe or subfamily in the Cucujidae, with whom they have a superficial resemblance owing to their largely flattened form and elongate, parallel-sided bodies. Böving (1921) removed the prostomids from the Cucujidae based on larval characters, a decision subsequently supported by Wilson (1930) based on a study of adults (Lawrence & Newton 1995, Young 2002). Unlike the cucujids (a.k.a. flat bark beetles), jugular-horned beetles are noteworthy for their 4-4-4 tarsal formula, typically large and projecting mandibles, and large, anteriorly-directed genal protuberances, or jugular horns, with pointed apices. These jugular horns are what give the family their common name. Defining features of the family are briefly summarized by Young (2002) and Park & Ahn (2005).

Three forms of *Prostomis* have been recorded but not formally described from middle Eocene (Lutetian) Baltic amber (Schawaller 2003). Aside from these three, there are no other definitive prostomids known from the fossil record although Grimaldi & Engel (2005) figured a specimen in mid-Cretaceous amber from Myanmar. This latter specimen is the oldest record of the family, extending the age of prostomids by 55 million years. Herein this unique fossil is described and figured (Fig. 1).

SYSTEMATIC PALAEONTOLOGY

Family: Prostomidae Thomson 1859

GENUS: *Vetuprostomis* gen. nov.

Type species: *Vetuprostomis consimilis* sp. nov.

Etymology. The genus-group name is a combination of *vetus* (Latin, meaning “old”) and *Prostomis*, type genus of the family. The name is masculine.

Diagnosis. Body elongate, parallel-sided, somewhat flattened (Fig. 1); integument apparently dark brown to black. Head prognathous, with strongly produced mandibles (Figs. 1–2a); lateral margins of mandibles not dilated (Fig. 2b). Frontoclypeal area produced anteriorly slightly more than 1.5 times medial labral length. Gena strongly produced anteriorly into acuminate process (jugular process) (Fig. 2c), process just slightly extending past mandibular base, with broad base and tapering gently to acute apex (more slender, elongate, and extending well past mandibular base in modern prostomids). Antenna with 11 articles, insertions of articles exposed, giving moniliform shape, last three articles slightly enlarged to form distinct but loose club (Fig. 2a). Compound eyes complete, circular, and of moderate size, separated from posterior angle of head by distance approximately equal to compound eye diameter. Lateral margins of head roughly parallel, not tapering posterior to compound eye (Figs. 1–2a), posterior corners of head well defined and nearly orthogonal, with defined collar posterior to these corners (lateral margins typically, but not always, tapering posterior to compound eye and generally without well-pronounced corners or collar in modern



Figure 1. Photomicrograph of holotype of *Vetuprostomis consimilis* Engel & Grimaldi n.gen., n.sp. (AMNH Bu-1422), total length of specimen 4.85 mm (photomicrograph from Grimaldi & Engel 2005, copyright held by authors).

prostomids). Pronotum about as wide as head (slightly narrower than head in modern prostomids) and as wide as elytra; slightly longer than wide; anterior margin truncate and slightly narrower than head owing to slight anterolateral constriction of pronotum (no constriction in modern prostomids) (Fig. 1), otherwise lateral margins parallel and weakly convex; lateral borders not denticulate; without lateral carinae; posterior border weakly convex. Scutellum small and slightly exposed. Coxae small and separated by about their diameter or very slightly more (much more widely spaced in modern prostomids); protibia with pronounced, broad apical process bearing numerous long setae; tarsi with typical 4-4-4 formula, basal three tarsomeres of subequal length, distalmost tarsomere elongate; pretarsal claws simple. Elytra entire, completely covering abdomen, with rounded apices, striate, epipleural fold narrow. Abdomen with five visible ventrites.

Comments. The fossil genus differs from modern prostomids in the shorter jugular processes, which have broad bases and scarcely extend past the mandibular bases, while retaining the acute apex typical of Prostomidae; by the slight anterior constriction to the pronotum; by the pronotum generally being about as wide as the head; by the larger compound eyes; and other features outlined in the diagnosis (*supra*). The smaller development of the jugular processes is likely a plesiomorphic feature relative to modern Prostomidae.

Vetuprostomis consimilis n.sp.

(Figures 1–2)

2005 Prostomidae sp. Grimaldi & Engel, p. 390, fig. 10.58.

Etymology. The specific epithet is the Latin term *consimilis*, meaning “like in all respects”, and is a reference to the remarkable similarity of the fossil with modern prostomids, indicating significant stability and stasis in many morphological features.

Holotype. Bu-1422, Cretaceous, Myanmar: Kachin, Tanai Village (on Ledo Road 105 km NW Myitkyna). Specimen deposited in the Amber Fossil Collection, Division of Invertebrate Zoology, American Museum of Natural History, New York.

Diagnosis. As for the genus (*vide supra*).

Description. Total body length 4.85 mm; head width 0.96 mm; maximum pronotal width 0.96 mm; median pronotal length 1.11 mm; maximum elytral length 2.45 mm; maximum elytral width 0.98 mm; integument dull, largely dark brown or black. Head largely rectangular and slightly transverse (Figs. 1–2a), frontoclypeal area subtrapezoidal, with long and broad frontoclypeal extension (Fig. 2a); posteriorly with prominent posterior corners (Fig. 2a), posterior corners well separated from compound eyes, corners rounded and orthogonal, with distinct collar formed posterior to corners; dorsal surface of head largely flat with weak crescentic ridge demarcating frontoclypeal area and posteriorly depressed immediately anterior to tangent of temples and on collar; integument of head coarsely and nearly contiguously punctured. Mandibles produced, surface imbricate and impunctate, basolateral margin straight; apically curved, bidentate apically with ventral apical tooth shorter than dorsal apical tooth (ventral tooth obscured beneath larger apical tooth in Fig. 2b), with three shorter apicomarginal teeth, first separated from second and third which are joined basally. Labrum exposed, wider than long, apicolateral corners rounded, apical margin with numerous elongate, stiff setae (Fig. 2a), surface punctured as on remainder of head although punctures a bit more shallow and less well defined. Compound eyes of moderate size, separated from temples by approximately their diameter, slightly protruding. Antennae with 11 articles, articles somewhat bead-like with exposed articulations, last three articles enlarged and forming loose club; each article with apical whorl of long setae (Fig. 2a); scape longer than pedicel or flagellar articles; pedicel only slightly larger than

basal flagellar articles; flagellar articles basal to club subequal in size. Pronotum slightly longer than wide, coarsely and contiguously punctate. Elytra without lateral carinae,

with weak longitudinal striae and scattered weak, shallow, coarse punctures. Abdominal ventrites strongly imbricate with scattered shallow punctures.

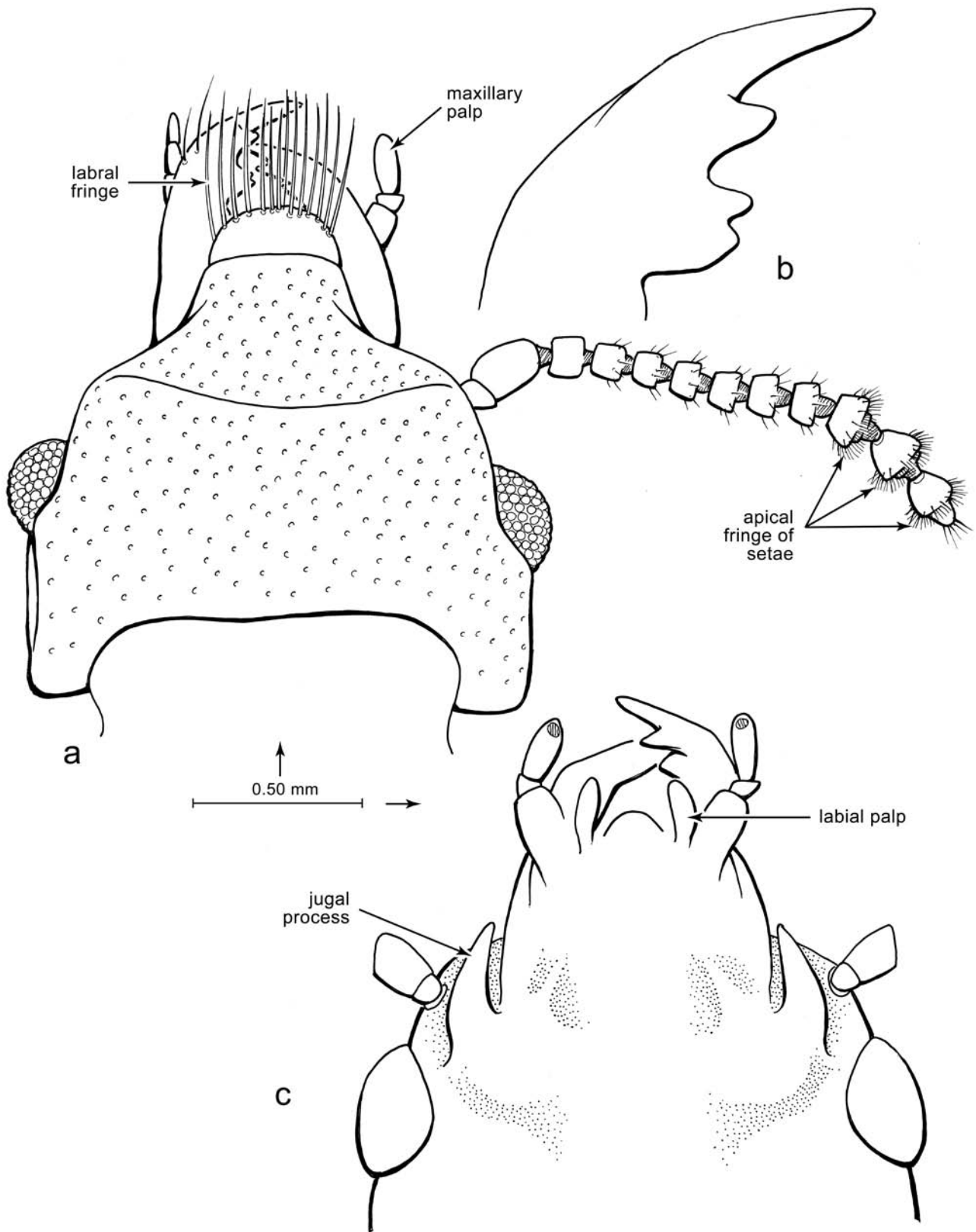


Figure 2. Line drawings of select traits of *Vetuprostomis consimilis* Engel & Grimaldi n.gen., n.sp. (AMNH Bu-1422). A. Dorsal view of head. B. Detail of left mandible (dorsal view). C. Ventral view of head.

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