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A new fossil Hybosoridae (Coleoptera: Scarabaeoidea) from the Yixian Formation of China

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Hybosoridae is a relatively small family of Scarabaeoidea, including five extant and one fossil subfamily (Ocampo & Ballerio 2006, Nikolajev 2007). Until now, 20 fossil species were known from five subfamilies: Anaidinae, Ceratocanthinae, Hybosorinae, Liparochrinae, and Mimaphodiinae (Ocampo & Ballerio 2006, Krell 2007, Nikolajev 2008, Nikolajev *et al.* 2010, Nikolajev 2010a, Nikolajev 2010b, Kirejtshuk *et al.* 2011). In this paper we describe *Pulcherhybosorus tridentatus* Yan, Bai, & Ren **new genus** and **new species**, from a nearly complete and well-preserved fossil. This fossil represents the first record of Hybosoridae from the Early Cretaceous Yixian Formation of Liutiaogou, Inner Mongolia in China. This significant finding tentatively confirms the presence of Hybosoridae during the Mesozoic in what is now China.

The study is based on a part and counterpart (compression and impression) fossil specimen collected near Liutiaogou Village, Ningcheng County, Chifeng City, from Yixian Formation of Inner Mongolia, China and deposited in the Key Lab of Insect Evolution & Environmental Changes, College of Life Sciences, Capital Normal University, Beijing, China. Recent studies have confirmed that the Yixian Formation is the Early Cretaceous in age. The precise age is likely between to 129.7–122.1 million years ago (Barremian to early Aptian) (Yang *et al.* 2007; Chang *et al.* 2009). The strata of Yixian Formation are mainly of lacustrine sediments intercalated with volcanoclastics (Ren *et al.* 1995). This strata has provided abundant insect fossil (Zhang *et al.* 2006, Chang & Ren 2008, Liu *et al.* 2008, Yao *et al.* 2008, Zhang *et al.* 2010, Bai *et al.* 2012). The specimens were examined with a Leica MZ12.5 stereomicroscope and illustrated with the aid of a drawing tube attached to the microscope. Line drawings were made using CorelDRAW X4 Graphics Suite and Adobe Photoshop CS 4 graphic software.

***Pulcherhybosorus* Yan, Bai, & Ren, new genus**

(Figs. 1–4)

Type species: *Pulcherhybosorus tridentatus* new species, here designated.

Diagnosis. Elongate oval. Mandibles and labrum prominent, clearly visible in dorsal view of head, labrum exposed beyond apex of clypeus, mandibles exposed beyond apex of clypeus (fig. 5), anterior margin of clypeus moderately emarginate. Antennae with a 3-antennomere lamellate club, club compact (Fig. 8). Eyes large. Pronotum slightly wider than elytra, nearly trapezoidal, with widest part of pronotum at base. Elytra convex, striae well defined and without tubercles; hind wings well developed, the MP₃ vein present and MP₄ vein absent. Abdomen with five visible sternites. Protibia with three teeth on outer margin, mesotibia and metatibia without a transverse carina, two spurs on the end of mesotibia subequal in length, and two symmetrical claws on the end of mesotarsus.

Remarks. The new genus is tentatively assigned to the family Hybosoridae based on the following characters: (1) antennae with a 3-antennomere lamellate club, club compact; (2) eyes developed; (3) labrum and mandibles produced beyond apex of clypeus; (4) pronotum trapezoidal, convex, base wider than elytral base; (5) elytra convex, striae well defined, Wings well developed, the MP₃ vein present; (6) legs with anterior coxae conical and mesocoxae contiguous; (7) protibia with three teeth; (8) mesotibia and metatibia slightly dilated at the apex, mesotibia with 2 subequal spurs; (9) mesotibia and metatibia without a transverse carina; (10) claws equal in size, simple; (11) abdomen with five visible sternites. *Pulcherhybosorus* is not placed in a subfamily because of the lack of some key visible characters and the unusual combination of characters.