



***Cretonthophilus tuberculatus*, a remarkable new genus and species of hister beetle (Coleoptera: Histeridae) from Cretaceous Burmese amber**

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The early history of the beetle family Histeridae is still very obscure. In part this results from difficulty resolving phylogenetic relationships at deeper levels (Caterino & Vogler, 2002; McKenna *et al.*, 2015a). But it is also partly a result of a sparse and poorly documented fossil record (Chatzimanolis *et al.*, 2006). Here we describe a new genus and species of fossil histerid from Burmese amber (~99 mya), which helps to address both of these problems.

Although histerid fossils have been reported from a variety of fossil localities and strata, relatively few have been adequately described. Until recently, the earliest described species of Histeridae was *Onthophilus intermedius* Handschin (1944) from the Oligocene phosphorites of Quercy, France (23–28 mya). A number of other taxa have been reported from more recent amber (*Trypanaeus hispaniolus* Chatzimanolis *et al.* (2006), early to mid-Miocene—15–20 mya—Dominican amber) or limestone fossils (e.g. numerous *Hister* spp. from mid-Miocene—13 mya—deposits at Öhningen; Heer, 1862). While fossil histerids have been noted from older deposits, such as the Eocene Florissant shales (34 mya; Scudder, 1886) and Baltic amber (37.7 mya; Swedo & Sontag, 2009), little has been adequately described. Chatzimanolis *et al.* (2006) therefore remarked, “*In particular, it should be hoped that definitive Mesozoic histerids will be discovered, particularly in Cretaceous ambers, as such taxa might contribute most greatly to our understanding of early histerid evolution.*” The first such discovery was the recent description of *Pantostictus burmanicus* Poinar and Brown (2009) from Burmese amber (99 mya), which pushed the fossil record for the family significantly earlier.

Here we describe as a second Mesozoic record for the family a new genus and species of Histeridae that is of the same Middle Cretaceous age as *Pantostictus burmanicus*, but is highly distinct morphologically. This new specimen resembles modern Onthophilinae, but exhibits a number of distinctive characteristics. This fossil pushes the origin of the Histeridae considerably earlier, showing that not only had the family arisen by this time, but it had diversified considerably.

Methods

To protect the small amber piece with the tiny fossil beetle inclusion during preparation, the specimen was embedded in a block of two-part polyester resin (GTS, VossChemie, Germany). Then the specimen was ground and polished with a polishing machine (LaboPol-4, Struers, Willich, Germany) using wet silicon carbide abrasive papers (grain sizes grit 220 to 4000). The microphotographs have been made with an Olympus DP71 digital camera on an Olympus SZX16 microscope and with a Leica DFC490 digital macro camera on a Leica Z16-Apo microscope with Leica Application Suite V3.8 software for focus stacking. The images have been processed with Photoshop CS5 software.

Systematic Paleontology

Family: Histeridae Gyllenhal, 1808

Subfamily: Onthophilinae MacLeay, 1819

***Cretonthophilus* n. gen.**

Type species. *Cretonthophilus tuberculatus* n. sp.

Diagnosis. This genus shares many superficial sculpturing characters with various extant genera of Onthophilinae, including the carinae of the frons, pronotum, and elytra. However, it differs substantially from any genus in the form and