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The oldest fossil record of Cetoniinae (Coleoptera: Scarabaeidae) from the Lower Cretaceous Crato Formation of Brazil

Самая древняя находка подсемейства Cetoniinae (Coleoptera: Scarabaeidae) из нижнемеловой формации Крато в Бразилии

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Ключевые слова: таксономия, первая находка, мел, Coleoptera, Scarabaeidae, Cetoniinae, Бразилия.

Abstract. The first fossil cetoniine beetle (Coleoptera: Scarabaeidae) from the Lower Cretaceous Crato Formation of Brazil is reported and illustrated.

Резюме. В статье приводится первая находка представителя подсемейства Cetoniinae (Coleoptera: Scarabaeidae) из нижнемеловой формации Крато в Бразилии.

Introduction

The Crato Formation is a geologic formation of Lower Cretaceous (Aptian) age in northeastern Brazil's Araripe Basin. It is an important Lagerstätte (undisturbed fossil accumulation) formation for palaeontologists. The strata were laid down mostly during the early Aptian age, about 113 million years ago, in a shallow inland sea. At that time, the South Atlantic was opening up in a long narrow shallow sea.

The Crato Formation has often historically been considered the lowest member of the Santana Formation (or, alternatively, the Araripina Formation) of the Araripe Group [Scherer et al., 2013], later redefined as the Romualdo Formation of the Santana Group. The Crato Formation is the product of a single phase, where a complicated sequence of sediment strata reflects changeable conditions in the opening of the sea. The age and distribution of this strata has been controversial, though most workers have agreed that it lies on or near the Aptian-Albian boundary, and is about 113 million years old.

The extent of the Crato Formation and its relationship to the Romualdo Formation had long been ill-defined. It was not until a 2007 volume on the unit by Martill that the Crato Formation was given a formal type locality, and was formally made a distinct formation separate from the Santana, which is about 10 million years younger. The Crato Formation is considered equivalent in time with the Paracuru Formation [Martill, 2007].

The insect fauna from Crato Formation was recently studied [e.g. Grimaldi, 1990; Nel, Waller, 2006; Wolf-Schwenninger, 2011; Barling et al., 2015]. Using characters important for Scarabaeidae [Ahrens et al., 2014] a undescribed species of scarabaeoid beetle is described below.

The fossil species of Cetoniinae summarised by Krell [2000, 2006, 2007], include five described species: one from Upper Jurassic (Solnhofen, Germany); three species from Miocene (Shanwang, China); and one described species from Dominican amber [Poinar, 2011]. Additionally, one undescribed taxon from Middle Eocene (Eckfelder Maar, Germany) was mentioned by Wappler [2003], one species from Kenyan Miocene was mentioned by Paulian [1976] and one undescribed taxon from Baltic amber was mentioned by Alekseev [2019].

Material and methods

The habitus photograph was made by a digital camera Olympus DP 72 on a stereo binocular microscope (Olympus SZX 16) using the programme Quick Photo Camera 2.3 and Deep Focus 3.0 for the modification of the pictures.

The mentioned specimen is deposited in (JHAC) — Jiří Háva, Private Entomological Laboratory & Collection, Ùnětice u Prahy, Prague-West, Czech Republic.

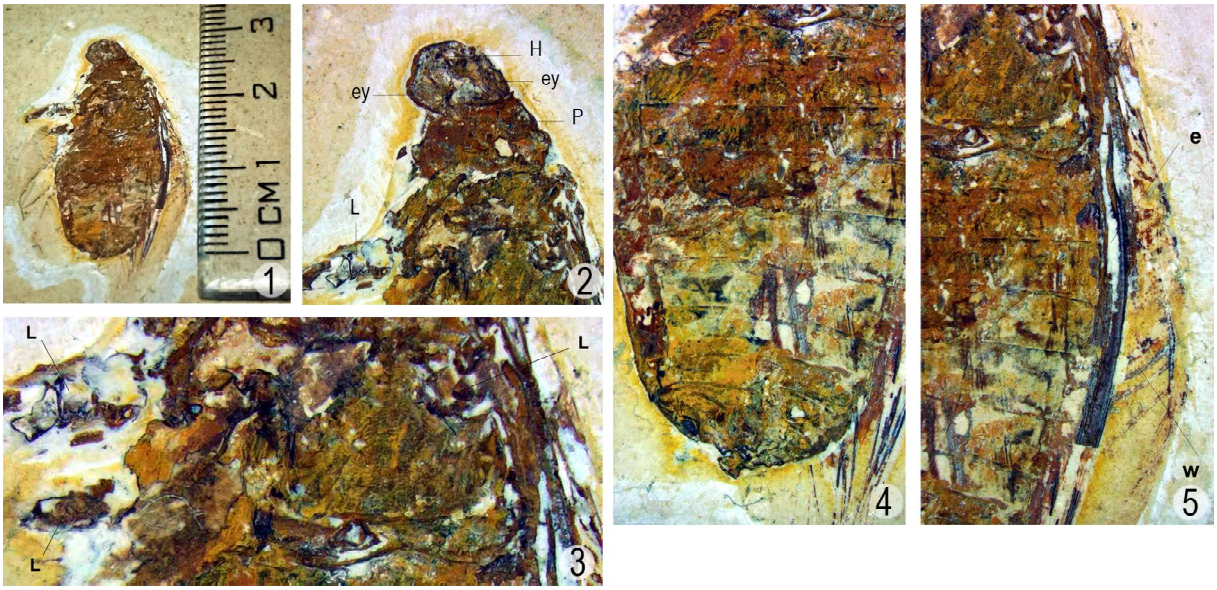
Results

Coleoptera Linnaeus, 1758
Scarabaeoidea Latreille, 1802
Scarabaeidae Latreille, 1802
Cetoniinae Leach, 1815
Cetoniinae Gen. sp. indet.
Figs 1–5.

Material. Brazil, Ceara, Nova Olinda Member, Crato Formation, 1 spec. unsexed, (JHAC). Matrix 11.5x10.5 cm.

Type strata. Lower Cretaceous, Crato Formation.

Description. Beetle visible from ventral aspect (Fig. 1). Medium- to large- sized beetle, body length in matrix 30 mm. Head (H) wider than longer, in matrix width across eyes (ey) 4.8 mm, length 3.8 mm. Clypeus broad. Antennae completely missing. Pronotom (P) wider than longer in matrix width 5 mm. Scutellum not visible. Elytra not visible, only epipleuron (e) (Fig. 4). Wings (w) are visible only in parts (Figs 1, 4). Mesosternum poorly visible. Abdomen with six ventrites visible and slightly deformed, broad (Fig. 5). Legs (L): parts of three legs, poorly visible, (Fig. 3). Fore coxa protruding conical downward, distance to prothoracic side large. Genitalia not visible.



Figs 1–5. Cetoniinae gen. sp. indet: 1 — habitus, ventral; 2 — head (H, ey — eye) and thorax (P); 3 — legs (L); 4 — elytral epipleuron (e) and wing (w); 5 — abdomen.

Рис. 1–5. Cetoniinae gen. sp. indet: 1 — общий вид, вентрально; 2 — голова (H, ey — глаз) и грудь (P); 3 — ноги (L); 4 — эпиплевры надкрылий (e) и крыло (w); 5 — брюшко.

Remarks. Beetles from the Crato Formation in Brazil have been recently studied by several authors. This is the first scarabaeoid beetle belonging to the subfamily Cetoniinae mentioned from the formation. The probably new genus and species of this beetle are not described, because the beetle is not in perfect condition (missing antennae and several legs) and it is not visible from the dorsal aspect.

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