

A new fossil of *Mantimalthinus* (Coleoptera: Cantharidae) sheds light on its tribal attribution

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Taxonomy, new species, new combination, Eocene, Baltic amber, Coleoptera, Cantharidae, *Mantimalthinus*

Abstract. In the present paper, the new fossil species of soldier beetle, *Mantimalthinus arturi* sp. nov. from the Eocene Baltic amber is described. In the new specimen a mandible is clearly visible which allows the attribution of the genus *Mantimalthinus* to the tribe Malchinini comb. nov. Previously, the genus was tentatively inserted into the tribe Malthinini due to the habitus with long elytra, the little modified urites, and the pronotal shape. Furthermore, *Malthodes sucinopenninus* Kuška & Kania, 2010 comb. rest. subsequently transferred to the genus *Macrocerus*, has been here reinserted in *Malthodes*.

INTRODUCTION

Mantimalthinus Fanti & Castiglione, 2017 is a small fossil genus of soldier beetles (family Cantharidae), recently established, and known until today for only two species: *Mantimalthinus balticus* Fanti & Castiglione, 2017 and *Mantimalthinus bartholini* Fanti & Damgaard, 2019 both from the Eocene Baltic amber, respectively from Poland - estuary of Wisła River, and Russia - Kaliningrad Region, Yantarny (Fanti & Castiglione 2017, Fanti & Damgaard 2019). Nothing is known about their ecology and biology, but Fanti & Damgaard (2019) hypothesize that the genus preyed on small arthropods like other representatives of the subfamily Malthininae Kiesenwetter, 1852 (Goidanich 1954, Fanti 2019). In the previous two known specimens, the mandibles were not adequately visible (Fanti & Castiglione 2017), and therefore were provisionally assigned to the tribe Malthinini Kiesenwetter, 1852 based on the general morphology and aspect. In the new species, instead, the left mandible is clearly visible and allows to ascribe the specimen to the tribe Malchinini Brancucci, 1980. Currently, *Mantimalthinus* is the first known fossil representative of the tribe Malchinini.

MATERIAL AND METHODS

Baltic amber is referred to the Eocene: 35.6-45.0 mya (Bukejs *et al.* 2019), and the specimen described here come from Gdańsk district (Wisła River), Poland, and particularly in the area which includes the villages of Mikoszewo, Jantar, Stegna and Sztutowo. The photographs were taken by Artur Robert Michalski (Wrocław, Poland) with a Canon EOS 600D digital camera mounted on a Bresser microscope, with the addition of focus stacking software. Figures were reprocessed using the PhotoImpact Viewer SE program. Measurements were taken with a micrometer and with the help of the pixels of photographs. The specimen is deposited in the Fabrizio Fanti amber collection housed at Piazze (Tuscany, Siena, Italy).

RESULTS

Order Coleoptera Linnaeus, 1758
Superfamily Elateroidea Leach, 1815
Family Cantharidae Imhoff, 1856
Subfamily Malthininae Kiesenwetter, 1852
Tribe Malchinini Brancucci, 1980
Genus *Mantimalthinus* Fanti & Castiglione, 2017

***Mantimalthinus arturi* sp. nov.**

(Figs. 1 - 2)

Type horizon. Middle Eocene: Bartonian-Priabonian.

Type locality. Poland, Baltic Sea coast, Gdańsk city area, Wisła River estuary.

Type material. Holotype male: Baltic amber, deposited in the Fabrizio Fanti amber collection, accession No. BaA07PL.

Description. Adult, slender, winged. Male for the last ventrite elongated and narrowed, and long antennae. Entirely dark-brown. Body length: 3.9-4.0 mm.

Head wide, transverse, completely exposed, slightly wider than the pronotum, with numerous rough points scattered and shallow. Eyes dark brown, large, rounded, inserted in the upper and lateral part of the head. Mandibles completely smooth, very long, falciform, wide at base with pointed apex. Maxillary palps 4-segmented with palpomeres of different lengths, first palpomere very large, second palpomere large and slightly shorter than first, third palpomere short, last palpomere globular and strongly pointed. Labial palps 3-segmented with the last globular and pointed. Antennae filiform, 11-segmented, very long, almost reaching the apex of elytra, equipped with few short setae; scape robust, enlarged; antennomere II very short, globular, about 2.7 times shorter than the scape; antennomeres III-X filiform, approximatively subequal in length, very slightly shorter than scape; antennomere XI elongated, with rounded apex, slightly longer than scape.

Pronotum transverse, narrower than the elytra, flat, covered with sparse and short pubescence, with the anterior margin slightly bordered and slightly curved in the middle, with the posterior margin almost straight and strongly bordered, sides parallel and bordered and slightly narrowed near the anterior margin so that the hind part of the pronotum is wider than the anterior one. Scutellum robust, triangular-shaped, very wide at base with pointed and rounded apex. Elytra long, almost completely covering the abdomen (only the last urite remains uncovered), with parallel sides and rounded apex, the whole surface roughly wrinkled and with shallow punctuation. Metathoracic wings completely covered by elytra. Metasternum elongate, robust, posteriorly rounded, with small pubescence and shallow punctuation. Sternites transverse, narrow, equipped with short setae and shallow punctuation; last tergite wide, with rounded apex; last sternite small, almost rounded, considerably narrower than last tergite.



Fig. 1. *Mantimalthinus arturi* sp. nov.: Holotype, No. BaA07PL. A- dorsal view, scale bar = 1.0 mm; B- ventral view, scale bar = 1.0 mm.



Fig. 2. *Mantimalthinus arturi* sp. nov.: Holotype, No. BaA07PL. Macro shot of the head in ventral view, scale bar = 0.2 mm.

Legs short, rather robust, with numerous and very short setae; coxae robust; trochanters elongated with pointed and rounded apex; femora short, slightly enlarged, almost straight; tibiae cylindrical, without spurs at apex, approximately as long as femora. Tarsal formula 5-5-5; first tarsomere elongated, about 1.3 times longer than second; third tarsomere about 1.2 times shorter than second; fourth tarsomere strongly bilobed with the lobes rounded apically; fifth tarsomere elongated, curved, rather cylindrical; claws simple without tooth.

Differential diagnosis. The new species is easily recognizable by its pronotal shape, with the sides parallel from the base to the middle and slightly restricted at the apex, and with the anterior margin rounded. In the other species the posterior corners of the pronotum are expanded (Fanti & Castiglione 2017, Fanti & Damgaard 2019). Furthermore, the new species has the last smaller ventrite.

Etymology. Named in honour of my dear friend: Artur Robert Michalski (Wrocław, Poland), expert on amber inclusions.

Syninclusions. Detritus and botanical remains, few air bubbles.

Remarks. The yellow amber piece measures approximately 30x20 mm. The inclusion is complete. The amber matrix has many small superficial cracks.

DISCUSSION

The last maxillary palpomere globular and pointed, allow to ascribe *Mantimalthinus arturi* sp. nov. to the subfamily Malthininae. The long elytra and the mandibles completely smooth make the genus *Mantimalthinus* belonging to the tribe Malchinini Brancucci, 1980. The new species is the first fossil representative of this tribe. *Malthodes sucinopenninus* Kuška & Kania, 2010 (Malthininae, Malthodini) originally included in the genus *Malthodes* (Kuška & Kania 2010), has been subsequently transferred to the genus *Macrocerus* Motschulsky, 1845 (Malthininae, Malchinini) based on long antennae and elytra, broad narrowly margined pronotum, and little modified terminal abdominal segments (Kazantsev 2013). The long elytra supposed by Kazantsev (2013) is an illusory character, in fact in the original drawing is evident that last abdominal segments are uncovered by elytra. Particularly, the last tergite (tg10) elongated and apically emarginate, and the forked last sternite (st9, but indicated as “st10” in Kuška & Kania 2010), must be considered as modified urites, a typical feature of the genus *Malthodes* (Porta 1929, Liberti 2011, 2015), and never present in the representatives of the genus *Macrocerus* (Brancucci 1980, Švihla 1997). In addition, the bordered pronotum is present, also if very rarely, also in the genus *Malthodes*. Therefore, *Malthodes sucinopenninus* Kuška & Kania, 2010 **comb. rest.**, has been here again accommodated in the genus *Malthodes*.

ACKNOWLEDGEMENTS. I am very grateful to Artur Robert Michalski (Poland) for the excellent photographs and for his extreme generosity in giving me this new important specimen for science.

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Received: 17.4.2022

Accepted: 20.5.2022

Printed: 5.10.2022