

# A New Species of the Genus *Eldermymex* Shattuck, 2011 (Hymenoptera, Formicidae) from Bitterfeld Amber (Late Eocene) with Species Key of the Genus

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**Abstract**—*Eldermymex oblongiceps* (Wheeler, 1915) is redescribed and a second species of the genus, *E. exsecutus* sp. nov., is described from the Late Eocene Bitterfeld amber. Differential diagnosis and key to the species are given.

**Keywords:** Late Eocene, Bitterfeld amber, Baltic amber, fossil ants, *Eldermymex*

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## INTRODUCTION

The genus *Eldermymex* Shattuck, 2011 was offered for the placement of a single species, *Iridomyrmex oblongiceps* Wheeler, 1915 (Heterick and Shattuck, 2011), described from a single specimen collected from Baltic amber. In the description of this species W.M. Wheeler (1915) noted: “This ant does not seem to be a typical *Iridomyrmex*, but I know of no other genus to which it can be assigned, and it does not seem advisable to erect a new one for its accommodation, since none of the characters in which it departs from the other species of *Iridomyrmex* is very prominent.” Indeed, this species combines the characters that do not allow it to be placed in any of the known genera of ants (both recent and fossil). Primarily, it is a combination of the structure of propodeum and petiole. However, before separating it into an independent genus, this species was included into the genera *Eotapinoma* Dlussky, 1988 (Dlussky, 1988) and, later, *Ctenobethylus* Brues, 1939 (Dlussky and Rasnitsyn, 2009). After studying the holotype, we agreed on the need to include this species into a separate genus (Dubovikoff, 2012). In this paper, we give redescription of *Eldermymex oblongiceps* and describe the second species of the genus from Bitterfeld amber. Differential diagnosis and a key to determine the two species of the genus *Eldermymex* are given.

† Deceased.

## MATERIAL AND METHODS

The morphological analysis was carried out using Olympus SZX10 and Leica M205C stereozoom microscopes. The digital photos were produced using the digital SLR cameras on the same microscopes with subsequent use of Helicon Focus Pro 7 software. The line drawings were prepared with Inkscape 0.92 software. The following abbreviations are used for measurements and indices: (HL) length of the head measured in full face view in a straight line from the middle of the anterior clypeal margin to the middle of the occipital margin; (HW) maximum width of the head in full face view, behind the eyes; (EL) maximum eye length with eye in full face view; (SL) maximum straight-line length of the scape excluding the basal neck and the condylar bulb; VL (vertex length) is the distance taken along a straight line from the mid-point of transverse line connected upper edges of eyes to occipital margin of head or to the mid-point of the transverse line that relates to the level of the posterior margins of the occipital lobes if the posterior cephalic margin is concave; (WL) Weber’s length, length of mesosoma in profile, from the margin of neck shield to the posterior margin of propodeal lobes; (PEL) maximum length of the petiole in side view; (F3) length of hind femur; (GL) length of the gaster in lateral view from the anterior most point of 1st gastral segment to the posterior most point; TL (total length) =

HL + WL + PEL + GL; CI (cephalic index) =  $HL/HW \times 100$ ; EI (eye index) =  $EL/HW \times 100$ ; SI (scape index) =  $SL/HL \times 100$ . All measurements are given in mm and provided with accuracy to 0.01 mm.

The holotypes of the studied species are stored in the following institutions: Geologisch-Paläontologisches Institut und Museum, Göttingen, Germany (GU); Museum für Naturkunde Berlin, Germany (MNKB).

## SYSTEMATIC PALEONTOLOGY

Family Formicidae Latreille, 1809

Subfamily Dolichoderinae Forel, 1878

Genus *Eldermyrmex* Shattuck, 2011

Type species. *Iridomyrmex oblongiceps* Wheeler, 1915.

Diagnosis. Worker. Propodeum flattened laterally; its sides are restricted by the ridges (pronounced to different degrees). Propodeum with not deep longitudinal concavity which formed episternal angles. Petiole cylindrical, with conical node (vertical or tilted forward). The last sternites of abdomen with keel.

*Eldermyrmex oblongiceps* (Wheeler, 1915)

Plate 1, figs. 1, 2.

*Iridomyrmex oblongiceps* Wheeler, 1915, p. 93–95, text-fig. 45 (worker); Burnham, 1978, p. 113; Shattuck, 1992, p. 16; Shattuck, 1994, p. 108; Bolton, 1995, p. 218; Dlussky, 1997, p. 622.

*Eotapinoma oblongiceps*: Dlussky, 1988, p. 55.

*Ctenobethylus oblongiceps*: Dlussky and Rasnitsyn, 2009, p. 1029.

*Eldermyrmex oblongiceps*: Heterick and Shattuck, 2011, p. 170.

Redescription. Worker. Body length about 5 mm. Head is rectangular, with pronounced occipital angles and an almost straight occipital margin; its length is noticeably longer than width (CI 158). Eyes rounded, markedly shifted forward. Maximum diameter of eye is 5 times less than length of head. Length of cheek is approximately equal to the maximum diameter of eye. Ocelli are absent. Antennae robust, 12-segmented. Scapus reaches the occipital margin of head but is not issued for it. The first segment of flagellum is 1.5 times longer than next. Length of segments 3–10 slightly greater than thickness. Anterior margin of clypeus straight; lateral angles above the mandibles slightly raised. Mandibles are triangular, teeth are not visible. Last segments of maxillary palps are absent, but it can be assumed that they reached the middle of the distance from the mouth to the occipital foramen and were 6 segmented. Labial palpi short, 4-segmented. Mesosome is slender, narrower than head. Pronotum convex, without humeral tubercles and keels. Dorsal surface of the mesonotum is flattened. Seam between mesonotum and mesopleuron missing. Propodeum elongated, angular in profile. Its

dorsal surface is slightly concave, its length longer than length of declivous surface. Declivous surface of propodeum with longitudinal impression. Lateral surfaces of the propodeum are separated from the dorsal and posterior by a rather sharp bend. Propodeal spiracles are located on bend between posterior (declivous) and lateral surfaces of the propodeum. Petiole with low tilted forward conical node. Length of petiole is greater than height. Legs relatively short, with markedly thickened hips. Last sternite with a longitudinal keel. Entire body weakly shining, with shagreen sculpture. Standing hairs are visible on the mandibles, clypeus and the last tergites and sternites of abdomen.

Measurements, in mm: HL 1.06, HW 0.67, EL 0.2, SL 0.71, VL 0.53, WL 1.47, PEL 0.27, F3 1.02, GL 1.84, TL 4.63, CI 158, EI 30, SI 67.

Material. Holotype. GU, no. B 5385 (BST 05036), worker, Baltic amber, Late Eocene.

*Eldermyrmex exsectus* Dubovikoff et Dlussky sp. nov.

Plate 1, figs. 3–6.

Etymology. From the Latin *exsectus* (carved).

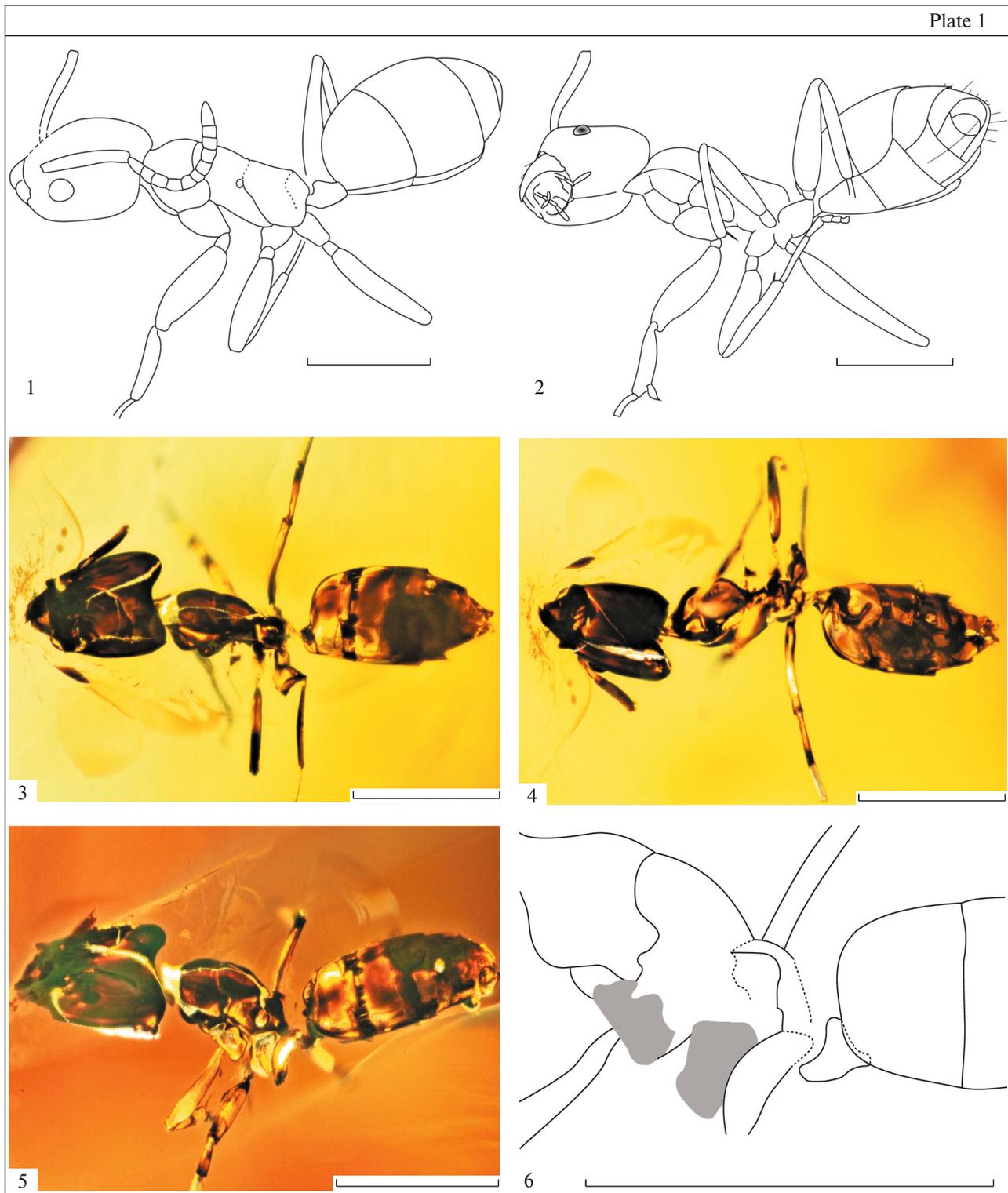
Holotype. MNKB, no. 11/206, worker, Bitterfeld (Saxonian) amber, Late Eocene

Description. Worker (Pl. 1, figs. 3–6). Body length about 3 mm. Head moderately short (CI 120) and wide, its length 1.2 times more than width, with convex sides and deeply concave occipital margin. Ocelli are absent (Pl. 1, fig. 3). Eyes are small and shifted forward (Pl. 1, fig. 4). Anterior margin of clypeus concave (slightly notched). Anterolateral angles of clypeus distinct. Mandibles triangular, massive, with short teeth (hard to see). Scapus short, does not reach occipital margin; its length is 1.25 times less than width of head. Flagella is not preserved. Mesosome narrow, noticeably narrower than head. Mesosomal seams well expressed, distinct. Mesonotum in profile, slightly raised above pronotum. Basal surface of propodeum distinctly shorter than declivous. Propodeum is compressed from the sides, its sides are almost vertical, with distinct lateral edges. Basal and declivous surfaces with shallow medial impression. Petiole with high vertical conical node. Body smooth and shiny, without standing hairs.

Measurements, in mm: HL 0.79, HW 0.66, EL 0.12, SL 0.52, VL 0.39, WL 0.84, PEL 0.17, F3 0.55, GL 1.19, TL 3, CI 120, EI 18, SI 66.

Remarks. Based on the above description, we placed this species in the genus *Eldermyrmex*. This specimen is clearly visible but partially deformed. It seems may have been heated. Head and mesosoma with longitudinal cracks in the cuticle, the legs are slightly stretched and damaged. Petiole and abdomen are separated from mesosome.

Differential diagnosis. *E. exsectus* sp. nov. it differs from the type species of the genus by more short head and scapus, the structure of the propodeum



## Explanation of Plate 1

- Fig. 1.** *Eldermyrmex oblongiceps* (Wheeler, 1915), holotype GU, no. B 5385 (BST 05036), worker, left side view of specimen.  
**Fig. 2.** *Eldermyrmex oblongiceps* (Wheeler, 1915), holotype GU, no. B 5385 (BST 05036), worker, right side view of specimen.  
**Fig. 3.** *Eldermyrmex exsectus* sp. nov., holotype MNKB, no. 11/206, worker, top view.  
**Fig. 4.** *Eldermyrmex exsectus* sp. nov., holotype MNKB, no. 11/206, worker, bottom view.  
**Fig. 5.** *Eldermyrmex exsectus* sp. nov., holotype MNKB, no. 11/206, worker, side view.  
**Fig. 6.** *Eldermyrmex exsectus* sp. nov., holotype MNKB, no. 11/206, worker, structure of mesosome and petiole.  
 Scale bar 1 mm.

(the basal surface is much shorter than the declivous) and petiole (vertical high node) (also see key).

**M a t e r i a l.** Holotype.

*Key to the species of the genus Eldermyrmex*

1. Head long (CI 158), with subparallel sides and straight occipital margin. Basal surface of propodeum is more long than declivous (Pl. 1, figs. 1, 2). Petiole with small conical node inclined forward....  
.....*E. oblongiceps*
2. Head shorter (CI 120), with convex sides and deeply concave occipital margin. Basal surface of propodeum distinctly shorter than declivous. Petiole with high vertical conical node (Pl. 1, figs. 5, 6).....  
.....*E. exsectus* sp. nov.

Given *E. exsectus*, already 4 of the 15 described species of Bitterfeldian dolichoderine (27%) unknown North of Subparathetys (from Baltic amber), while at least three more of those species awaiting description (Dlussky and Rasnitsyn, 2009; Perkovsky, 2016).

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