World catalog of fossil Cantharidae

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World catalog of fossil Cantharidae

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WORLD CATALOG OF FOSSIL CANTHARIDAE

Fabrizio FANTI

Cover:
Cantharidae. Amber.
Photo courtesy of Artur R. Michalski

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WORLD CATALOG OF FOSSIL CANTHARIDAE

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Abstract

A catalogue and bibliography of the world fossil Cantharidae are given. *Rhagonycha germari* (Heer, 1847) **n. comb.**, *Rhagonycha tertiaria* (Heer, 1847**) n. comb.** and *Rhagonycha hesperus* (Wickham, 1914) **n. comb.** are transferred from *Telephorus* Schaeffer, 1766 = *Cantharis* Linnaeus, 1758 to *Rhagonycha* Eschscholtz, 1830. *Atalantycha humata* (Wickham, 1913) **n. comb.** is transferred from *Telephorus* Schaeffer, 1766 = *Cantharis* Linnaeus, 1758 to *Atalantycha* Kazantsev, 2005. *Lycocerus guttula* (J. Zhang, 1989) **n. comb.** is transferred from *Cantharis* Linnaeus, 1758 to *Lycocerus* Gorham, 1889. *Curticantharis* J. Zhang, 1989 = *Themus* Motschulsky, 1858 **n. syn.** *Themus capacis* (J. Zhang, 1989) **n. comb.**, *Themus thermophilus* (J. Zhang, 1989) **n. comb.**, *Themus trapezialis* (J. Zhang, Sun & X. Zhang, 1994) **n. comb.** and *Themus sp.* (J. Zhang, 1989) **n. comb.** are transferred from *Curticantharis* J. Zhang, 1989 to *Themus* Motschulsky, 1858. *Telephorus tertiarius oeningensis* Heer, 1847 **n. syn.** and *Telephorus tertiarius radobojanus* Heer, 1847 **n. syn.** are synonymized with *Rhagonycha tertiaria* (Heer, 1847). Lectotype and paralectotype of *Rhagonycha tertiaria* (Heer, 1847) are designated. *Malthacus deceptus* (W. J. Brown, 1940) **n. comb.** is the correct combination of *Podabrus deceptus* Brown = *Dichelotarsus deceptus*. A preliminary list of subfossil Cantharidae is also provided. Furthermore the Coleoptera Lampyridae *Lamprohiza fossilis* (Beier, 1952) **n. comb**. is transferred from *Phausis* LeConte, 1851 to *Lamprohiza* Motschulsky, 1853.

Key words: Catalog, worldwide, Coleoptera Cantharidae, paleontology

1.Introduction

The family Cantharidae is quite frequently found in fossil record, but currently there are only old or incomplete catalogs (Handlirsch 1906-1908; Spahr 1981a [bibliography], 1981b; Carpenter 1992), and only recently, on some lists and websites, are cited more species (Handlirsch 1906-1908; Spahr 1981a [bibliography], 1981b; Carpenter 1992), or we find various data for all fossil species (The Paleobiology Database). Also the world catalog (Delkeskamp 1939, 1977) does not mention these species, therefore with this article updated on 31 December 2016, I am finding and listing all the fossil species, including all citations that I know (some may be missing), and provide a preliminary list of the subfossil (Holocenic) species (Table 2.); furthermore furnished an appendix (Appendix 1.) with the etymology and type species for the genera.

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I am grateful to: Susana Adamonis and Cecilia Soledad Cataldo (Buenos Aires University), Vitalii I. Alekseev, Clive A. Auton, Gabriel Biffi (Brazil), Albertas Bitinas (Klaipėda University - Lithuania), Guido Bonamie (Merendree - Belgium), Jan Bosselaers, Christopher J. Duffin (Natural History Museum, London), Scott A. Elias, Michael S. Engel, Yun Hsiao (Taiwan); Jin Zhenyu (Sun Yat-Sen University, Guangzhou - China), Sergey V. Kazantsev; Wieslaw Krzemiński (Museum PAN, Krakow), Ulrich Kotthoff (CeNak - Hamburg University), Jan-Michael Lange (Senckenberg Research Institute), Carlo Maria Legittimo, Cosmin-Ovidiu Manci (Romania), Yûichi Okushima (Kurashiki Museum of Natural History), Weston Opitz, Maurizio Pavesi, Evgeny E. Perkovsky, George O. Poinar Jr., Ren Dong and Wang Yongjie (College of Life Sciences, Capital Normal University - Beijing, China), Mónica Morayma Solórzano Kraemer, Francesco Vitali (Luxembourg), the Biodiversity Heritage Library (archive.org), the George Peabody Library (Paul Espinosa), the Naturalis Biodiversity Center - Netherlands Entomological Society, the Sutro Library - California State Library, and the Biblioteca Civica Gianfranco Contini of Domodossola for help in finding some papers.

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I wish to dedicate this article to the memory of Milton Sanderson (entomologist at Illinois Natural History Survey) and express my hearty thanks to his son Steven Sanderson for the English revision.

2.Methods

All named fossil taxa of the family Cantharidae are listed according to their current classification, and this is based on the articles of Ramsdale (2002), Kazantsev & Brancucci (2007) and Fanti (2014). The classification for the species is in the systematic-alphabetical order, and for the undescribed specimens also for the date of citation. For each species are indicated: 1- valid name and author(s) and date of description; 2- the original name combination and page(s) of description (excluded names in index); 3- eventually incorrect spelling or unjustified emendations; 4- all bibliographic references (although it is only mentioned the author or at least is evident the reference to one or more species) with number of pages, but for these are excluded species

names in index; 5- type horizon; 6- type locality; 7- preservation and lithology; 8- collection where is deposited the holotype and, eventually, the paratypes or other specimens, with number accession; 9- comments and notes, particularly focused on sex, body length, coloration, relationship with extant or fossil species, syninclusions and others deemed interesting news.

3.Systematic

Family Cantharidae Imhoff, 1856 (1815)

Subfamily Cantharinae Imhoff, 1856 (1815)

Tribe Cantharini Imhoff, 1856 (1815)

Genus *Atalantycha* Kazantsev, 2005

†*Atalantycha humata* (Wickham, 1913) **[*n. comb.*]**
Telephorus humatus Wickham, 1913b: 360, 362, 366 (explanation of plates), Plate XXXVIII. Fig. 2. (but indicated as Plate I. Fig. 2. in the text and explanation) [under family Lampyridae]
Lucas 1915: 135; International Catalogue of Scientific Literature 1916a: 95; Meunier 1920b: 159; Wickham 1920: 353 [as *Cantharis humatus*]; Handlirsch 1920-1921: 232; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331 [as *Cantharis*]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis humata*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database [as *Cantharis humatus*].
TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.
TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant.
PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale, volcaniclastic.
COLLECTIONS. Museum of Princeton University, No. 5984.
COMMENTS AND NOTES. Body length: 7.50 mm. Very similar in form and size to the recent *Telephorus bilineatus* (= *Atalantycha bilineata* (Say) (Wickham 1913b: 362), and for this, and for the original drawning with pronotum rounded at sides and angles, second antennomer short and particularly the habitus short but stocky, I tentatively transferred this species to genus *Atalantycha* Kazantsev. Also for Carpenter (1992: 331), the assignment to genus *Cantharis* was doubt. The picture of the holotype is visible in Florissant Fossil Beds National Monument website at http://planning.nps.gov/flfo/photos.

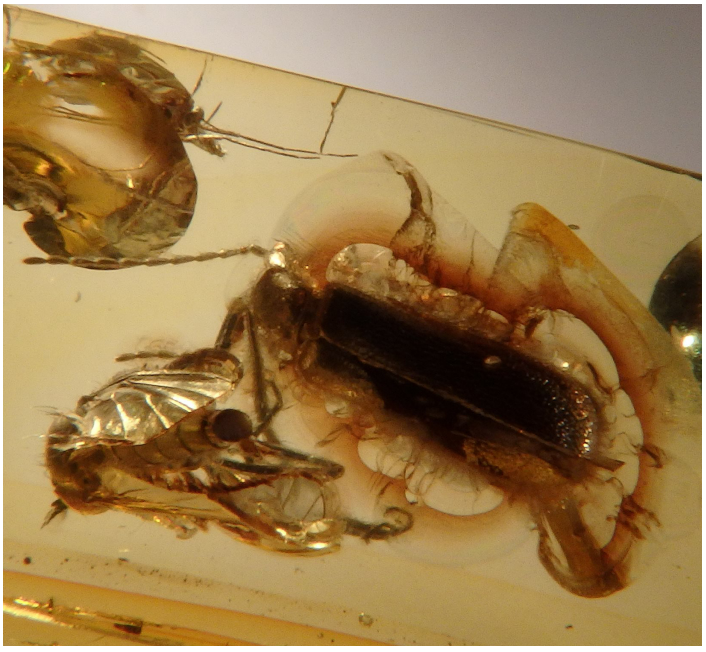

Fig. 1 - Cantharidae. Baltic amber. Photo of Artur R.

Genus *Cantharis* Linnaeus, 1758

Subgenus *(Cantharis)* Linnaeus, 1758

†*Cantharis (Cantharis) attavina* (Heer, 1847)*[1]
Telephorus attavinus Heer, 1847: 149-150, 225, Taf. IV. Fig. 15., Fig. 15. b.
Telephorus atavinus Pictet, 1854: 334 (incorrect spelling)
Telephorus atavinus Scudder, 1891: 587 (unjustified emendation)
Telephorus atavinus Piton & Théobald, 1936: 207
Telephorus atavinus Mitchell 2013 - EDNA The Fossil Insect Database
Cantharis atavina Kirejtshuk & Ponomarenko, 2009-2015
Giebel 1852: 650; Pictet 1854: 334; Giebel 1856a: 102, 400 (in the "Tabellarische"); Giebel, 1856b: 186; Scudder 1876: 81; Goss 1878: 50 (reprint 1878: 328); Scudder 1885: 796; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 587 [under family Lampyridae]; Scudder 1900: 101 [under family Lampyridae]; Handlirsch 1906-1908: 740 [as *Cantharis atavina*]; Handlirsch 1920-1921: 232; Piton & Théobald 1936: 207; Carpenter 1992: 331 [as *Cantharis*]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis atavina*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Early Miocene: Burdigalian (16-20 Ma).
TYPE LOCALITY. Croatia: Radoboj.
PRESERVATION/LITHOLOGY. Mold / impression/compression (adpression). Lagoonal/ restricted shallow subtidal limestone.
COLLECTIONS. Unspecified coll.
COMMENTS AND NOTES. Preserved only abdomen and elytra, that are pales and delicates. Length of fragment: 8.15 mm x 2.50 mm. Similar to the extant *Cantharis livida* Linnaeus, 1758, but smaller. The assignment to genus *Cantharis* is doubt for Carpenter (1992: 331).

*[1]The original name *attavinus* is present in Latin, consequently the correct name and declination for this species is *attavina* (not *atavina*).

†***Cantharis (Cantharis) brodiei*** (C.H.G. von Heyden & L.F.J.D. von Heyden, 1866)

Telephorus Brodiei Heyden & Heyden, 1866: 141, Taf. XXII. Fig. 25. (*separatum*: p. 13, Taf. I. Fig. 25.)

Telephorus Brodieri Piton & Théobald, 1936: 207 (incorrect spelling)

Goss 1878: 55 (reprint 1878: 333); Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 587 [under family Lampyridae]; Handlirsch 1906-1908: 740 [as *Cantharis Brodiei*]; Meunier 1915: 220; Handlirsch 1920-1921: 232; Piton & Théobald 1936: 207; Carpenter 1992: 331 [as *Cantharis*]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis brodiei*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.

TYPE HORIZON. Oligocene (28.4-23.0 Ma). Rott Formation, MP 30.

TYPE LOCALITY. Germany: Rott (Siebengebirge).

PRESERVATION/LITHOLOGY. Adpression/ compression. Lacustrine, lithified shale.

COLLECTIONS. Originally in Institut für Paläontologie, Universität Bonn (Krantz coll.).

COMMENTS AND NOTES. Body length: 8.40 mm. Fossilized back, indistinct head. Prothorax narrower than elytra, one conserved antenna to the body side. Elytra more long, wide and dark of the body. Six visible abdominal segments. The assignment to genus *Cantharis* is doubt for Carpenter (1992: 331), but the species is not identificable given the figure of the descriptors, according Meunier (1915: 220). Specimen known and described by Heyden and Heyden, after Brodie studies.

†***Cantharis (Cantharis) caduca*** **(**C.H.G. von Heyden & L.F.J.D. von Heyden, 1866)

Telephorus caducus Heyden & Heyden, 1866: 141, Taf. XXII. Fig. 20. (*separatum*: p. 13, Taf. I. Fig. 20.)

Goss 1878: 55 (reprint 1878: 333); Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 587 [under family Lampyridae]; Handlirsch 1906-1908: 740 [as *Cantharis caduca*]; Meunier 1915: 220; Handlirsch 1920-1921: 232; Piton & Théobald 1936: 207; Carpenter 1992: 331 [as *Cantharis*]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis caduca*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.

TYPE HORIZON. Oligocene (28.4-23.0 Ma). Rott Formation, MP 30.

TYPE LOCALITY. Germany: Rott (Siebengebirge).

PRESERVATION/LITHOLOGY. Adpression/ compression. Lacustrine, lithified shale.

COLLECTIONS. Originally in Institut für Paläontologie, Universität Bonn (Krantz coll.).

COMMENTS AND NOTES. Body length: 9 mm. Head elongated, prothorax narrower than elytra, pale with dark spots: one anterior with two lobes and one small posterior. Short tarsus. Elytra that the leave uncovered

Fig. 2 - Cantharidae. Baltic amber. Photo of Artur R. Michalski

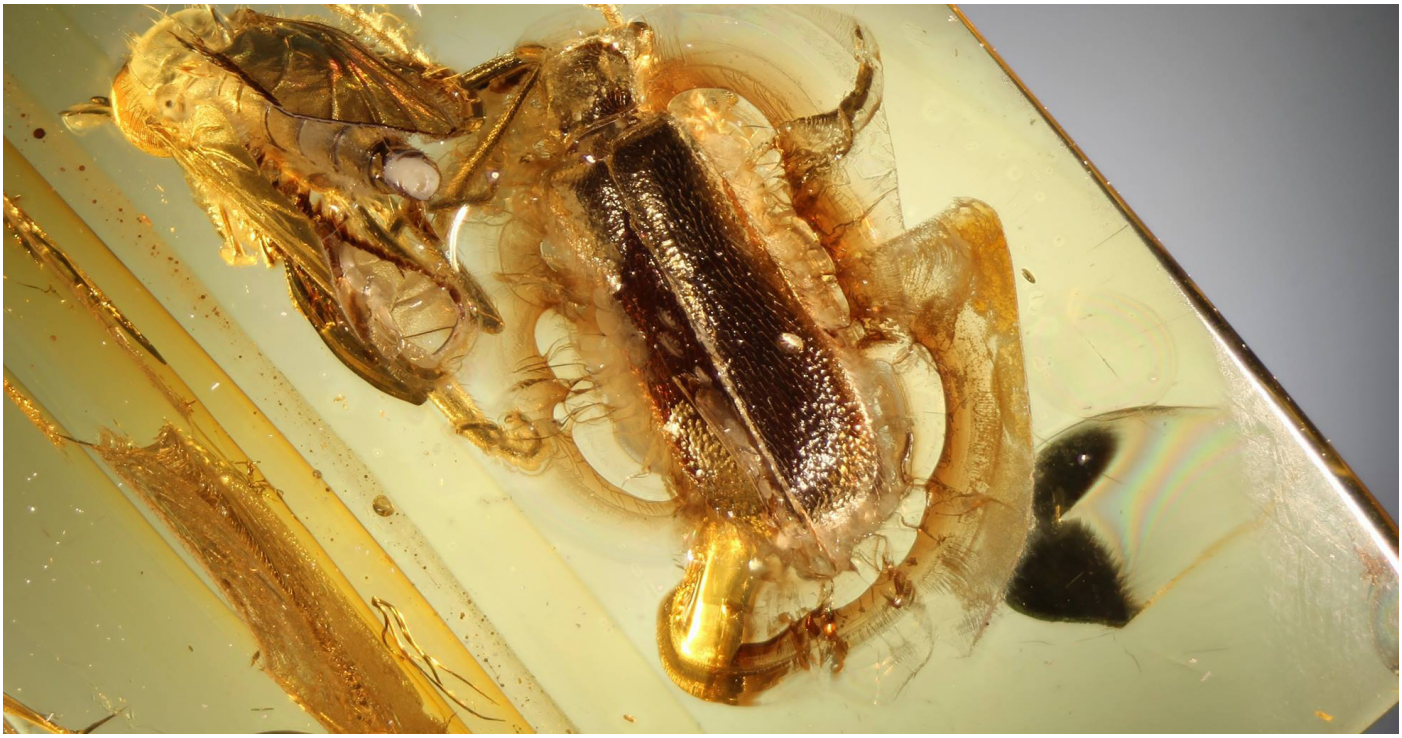

Fig. 3 - Cantharidae. Baltic amber. Photo of Artur R. Michalski

the two last abdominal segments. This species has the shield more smooth of *Cantharis exauctarata*, according to Meunier (1915:220). The assignment to genus *Cantharis* is doubt for Carpenter (1992: 331).

†Cantharis (Cantharis) carbonaria (C.H.G. von Heyden & L.F.J.D. von Heyden, 1866)
Telephorus carbonarius Heyden & Heyden, 1866: 140, Taf. XXIII. Fig. 2. (*separatum*: p. 12, Taf. II. Fig. 2.)
Goss 1878: 55 (reprint 1878: 333); Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 587 [under family Lampyridae]; Handlirsch 1906-1908: 739 [as *Cantharis carbonaria*]; Meunier 1915: 219, 220-221 (figs. 1-2), Tafel XXVI: Fig. 1; Handlirsch 1920-1921: 232; Piton & Théobald 1936: 207; Carpenter 1992: 331 [as *Cantharis*]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis carbonaria*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Oligocene (28.4-23.0 Ma). Rott Formation, MP 30.
TYPE LOCALITY. Germany: Rott (Siebengebirge).
PRESERVATION/LITHOLOGY. Adpression/ compression. Lacustrine, lithified shale.
COLLECTIONS. Originally in Institut für Paläontologie, Universität Bonn (Krantz coll.).
COMMENTS AND NOTES. Body length: 12 mm, but indicated 20 mm by Meunier (1915: 221). Fossilized back, head ovoidal elongate, prothorax incomplete narrowest of elytra, dark belly, legs all preserved, narrow, long and yellowish. Meunier (1915: 221) redescribes the leg, and particularly the antennomeres, while for the plate provided (Meunier 1915: T. XXVI, Fig. 1), I believe, for the abdomen size and short antennae, that is probably a female. The assignment to genus *Cantharis* is doubt for Carpenter (1992: 331), but for the tarsomeres bilobed at sides, the attribution to *Cantharis* is, for me, correct (see Meunier 1915, plate 26 fig. 1).

†Cantharis (Cantharis) exauctarata (C.H.G. von Heyden & L.F.J.D. von Heyden, 1866)
Telephorus exauctaratus Heyden & Heyden, 1866: 140-141, Taf. XXIII. Fig. 3. (*separatum*: pp. 12-13, Taf. II. Fig.3.)
Heyden 1870: 265 "Nachträge" (*separatum*: 29 "Nachträge"); Goss 1878: 55 (reprint 1878: 333); Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 588 [under family Lampyridae]; Handlirsch 1906-1908: 739 [as *Cantharis exauctarata*]; Meunier 1915: 220; Handlirsch 1920-1921: 232; Piton & Théobald 1936: 207; Carpenter 1992: 331 [as *Cantharis*]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis exauctarata*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Oligocene (28.4-23.0 Ma). Rott Formation, MP 30.
TYPE LOCALITY. Germany: Rott (Siebengebirge).
PRESERVATION/LITHOLOGY. Adpression/ compression. Lacustrine, lithified shale.
COLLECTIONS. Originally in Institut für Paläontologie, Universität Bonn (Krantz coll.), but in coll. Heymann not in Krantz collection, by the same Author (Heyden 1870: 265 "Nachträge"; *separatum*: 29 "Nachträge").
COMMENTS AND NOTES. Body length: 11, 25 mm. Head oblong, slightly more narrow of the prothorax, that is slightly rounded at the sides with vertical black

spotted interrupted in the middle. Parallel elytra and narrow. Thin legs with fourth tarsomer bilobed. The specimen, on the whole, appears black and is preserved also the other plate (negative). The assignment to genus *Cantharis* is doubt for Carpenter (1992: 331), but for the prothorax rounded at sides, the attribution to *Cantharis*, is for me correct.

Cantharis figurata Mannerheim, 1843
Cantharis figurata Mann Coope et al., 1961: 390, 410
The Paleobiology Database.
TYPE HORIZON. Late/Upper Pleistocene (about 42.000 years old: 41.500 ± 1200 and 41.900 ± 800). Gottweig (Aurignacian) Interstadial Complex.
TYPE LOCALITY. United Kingdom: Worcestershire, Upton Warren, terrace deposits of the River Salwarpe (Band 3). Latitude 52°18'15''N - Longitude 2°5'40''W (National Grid reference SO/935673).
PRESERVATION/LITHOLOGY. Pronotum. Terrestrial, unlithified peat.
COLLECTIONS. Collected in 1950 (The Paleobiology Database).
COMMENTS AND NOTES. One pronotum. The species *Cantharis figurata* is still alive and is an Euro-Asiatic species.

†Cantharis (Cantharis) fragilis (Heer, 1847)
Telephorus fragilis Heer, 1847: 148-149, 225, Taf. IV. Fig. 14., Fig. 14. bc.
Giebel 1852: 650; Pictet 1854: 334; Giebel 1856a: 102, 400 (in the "Tabellarische"); Giebel 1856b: 185; Scudder 1876: 81; Goss 1878: 48 (reprint 1878: 326); Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 588 [under family Lampyridae]; Scudder 1900: 101 [under family Lampyridae]; Handlirsch 1906-1908: 740 [as *Cantharis fragilis*]; Handlirsch 1920-1921: 232; Piton & Théobald 1936: 207; Carpenter 1992: 331 [as *Cantharis*]; ETH Zürich: [20]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis fragilis*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database
TYPE HORIZON. Upper/Middle Miocene: Upper Tortonian/Lower Sarmatian (10-12.7 Ma), Upper Freshwater-Molasse Formation.
TYPE LOCALITY. Germany: Baden-Württemberg, Oeningen (= Öhningen).
PRESERVATION/LITHOLOGY. Mold impression/compression (adpression). Lacustrine, lithified limestone.
COLLECTIONS. Carlsruhe collection, in the original description. Department of Earth Sciences, Inv. No. Pl. I. 292, ID 2606 and 2989 (see ETH Zürich).
COMMENTS AND NOTES. Eytra black. Body length: 7. 90 mm without the head that is not preserved; elytra around 5 mm (body length: 7.40 mm, and elytra: 4.80 mm in The Paleobiology Database) and similar to the extant *C. flavilabris* Fallén, 1807 (*Telephorus fulvicollis* in the description).
The assignment to genus *Cantharis* is doubt for Carpenter (1992: 331), but, for me, may remain in *Cantharis* because (although in the figure 14. c., does not appear, and seems similar to *Rhagonycha germari* and *Rh. tertiaria*), Heer says in the original description that the third tarsomer is expanded to the outside, so it may be also, for me, bilobed as in the true *Cantharis*.

†Cantharis (Cantharis) macilenta (Heer, 1865)
Telephorus macilentus Heer, 1865: Fig. 256., Fig. 256. bcd. (p. 376), 377
Heer 1872: Fig. 256., Fig. 256. bcd. (p. 461), 462; Heer 1876: Fig. 256., Fig. 256. bcd (p. 32), 33; Goss 1878: 48 (reprint 1878: 326); Heer 1883: Fig. 298., Fig. 298. bcd. (p. 402), 403; Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 588 [under family Lampyridae]; Scudder 1900: 101 [under family Lampyridae]; Handlirsch 1906-1908: 740 [as *Cantharis macilenta*]; Handlirsch 1920-1921: 232; ETH

Fig. 4 - Malthodes sp. Baltic amber. Photo of Artur R. Michalski

Zürich: [20]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis macilenta*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Upper/Middle Miocene: Upper Tortonian/Lower Sarmatian (10-12.7 Ma), Upper Freshwater-Molasse Formation.
TYPE LOCALITY. Germany: Baden-Württemberg, Oeningen (= Öhningen).
PRESERVATION/LITHOLOGY. Mold impression/ compression (adpression). Lacustrine, lithified limestone.
COLLECTIONS. Collection of Zürich University (see The Paleobiology Database). Department of Earth Sciences, Inv. No. Pl. I. 293 and 293b, ID 2607 and 2608 (see ETH Zürich).
COMMENTS AND NOTES. From the original work (and subseguent reprints), we have only the drawning of the species and legs (the posterior legs are swollen), but nothing else details of size, prothorax shape or antennae (only the tibiae are light colored). The bilobed third article of tarsomeres is fairly tipical of the genus *Cantharis*.

†*Cantharis* aff. *nigricans* Burmeister, 1832
Cantharis nigricans Fabr. sehr ähnlich, Burmeister, 1832: 635
Keferstein 1834: 329; Vollmar 1835: 61; Burmeister 1836: 577; Giebel 1856a: 102; Scudder 1891: 483 [compared with the family Meloidae]; Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. ?
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Collection in Berlin.
COMMENTS AND NOTES. One specimen.

Cantharis* cf. *paludosa Fallén, 1807
Cantharis cf. *paludosa* Coope et al., 1961: 390
The Paleobiology Database.
TYPE HORIZON. Late/Upper Pleistocene (about 42.000 years old: 41.500 ± 1200 and 41.900 ± 800). Gottweig (Aurignacian) Interstadial Complex.
TYPE LOCALITY. United Kingdom: Worcestershire, Upton Warren, terrace deposits of the River Salwarpe (Band 3). Latitude 52°18'15''N - Longitude 2°5'40''W (National Grid reference SO/935673).
PRESERVATION/LITHOLOGY. Head. Terrestrial, unlithified peat.
COLLECTIONS. Collected in 1950 (The Paleobiology Database).
COMMENTS AND NOTES. One head. The species *Cantharis paludosa* is still alive and is an European-Siberian species.

Cantharis rufa Linnaeus, 1758
C. rufa L. (*liturata* Fall.) Coope et al., 1961: 390, 402 (Explanation of plate 21), plate 21 figure 62. [pronotum as *Cantharis liturata*]
The Paleobiology Database.
TYPE HORIZON. Late/Upper Pleistocene (about 42.000 years old: 41.500 ± 1200 and 41.900 ± 800). Gottweig (Aurignacian) Interstadial Complex.
TYPE LOCALITY. United Kingdom: Worcestershire, Upton Warren, terrace deposits of the River Salwarpe (Band 3). Latitude 52°18'15''N - Longitude 2°5'40''W (National Grid reference SO/935673).
PRESERVATION/LITHOLOGY. Various head and pronotum. Terrestrial, unlithified peat.
COLLECTIONS. Collected in 1950 (The Paleobiology Database).
COMMENTS AND NOTES. 26 head, 21 pronotum, and? left elytron. The species *Cantharis rufa* is still alive and is an Euro-Asiatic species, introduced also in North America.

†*Cantharis (Cantharis) sucinonigra* Kuśka, 1992
Cantharis sucinonigra Kuśka, 1992: 107-109, (figs. 1-3 p. 108)
Cantharis succinonigra Alekseev, 2013: 8 (incorrect spelling)
Cantharis succinonigra Kirejtshuk & Ponomarenko, 2009-2015 (incorrect spelling)
Kuśka 1994: 6; Kuśka 1996b: 13; Kosmowska-Ceranowicz et al. 2001: 61; Pawłowski & Mazur 2012: 44; Alekseev 2013: 8; Kazantsev 2013: 283, 287, 290; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Museum of the Earth PAS in Warsaw (Museum Ziemi collection), No. 18094.
COMMENTS AND NOTES. Male, with elytra pitchy black and pronotum red. Body length: 6.0 mm, width of pronotum 1.5 mm. Similar to the extant *C. nigra* De Geer.

†*Cantharis* sp. (Hope, 1836)
Necycdalis (sic!) Hope, 1836: 143
Berendt 1845: 56 [as ?*Necydalis*]; Giebel 1852: 656 [as *Necydalis*]; Scudder 1885: 793 [as *Necydalis*]; Scudder 1887: 794 [as *Necydalis*]; Handlirsch 1906-1908: 787 [as

Fig. 5 - Myamalycocerus vitalii Fanti & Ellenberger, 2016 - courtesy of Sieghard Ellenberger

Fig. 6 -Tytthonyx geiseri Photo courtesy of Poinar

Necydalis ?, in the family Cerambycidae]; Spahr 1981b: 15; Poinar 1992: 138; Douglas & Stockey 1996: 1154; Vitali 2009: 236 [as probably a "*Cantharis*"].
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. ? Berendt collection.
COMMENTS AND NOTES. Probably a *Cantharis*, in fact, according to Vitali (2009: 236) no *Necydalis* (Coleoptera, Cerambycidae) is known for the Baltic amber.

†***Cantharis* sp.** (Hope, 1836)
Telephorus Hope, 1836: 143
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Hope authority.

†***Cantharis* sp.** Berendt, 1845
Cantharis Berendt, 1845: 47, 56
Hope 1836: 143 (Berendt authority, as *Cantharis* and *Telephorus*); Pictet 1846: 103 [as *Telephorus*]; Pictet 1854: 334; Giebel 1856a: 102; Giebel, 1856b: 181 [as *Telephorus*]; Fischer 1939: 97 [as *Cantharis?*], (p. 96 as *Cantharis rubiniformis minima*, but it is not Cantharidae); Larsson 1978: 139; Spahr 1981b: 4, 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Berlin Museum (coll. Berendt).
COMMENTS AND NOTES. 9 specimens. Almost one of these was firstly mentioned by Hope (1836: 143).

†***Cantharis* sp.** (Berendt, 1845)
Molorchus Berendt, 1845: 56
Giebel 1852: 656 [as *Molorchus*]; Giebel 1856: 128, 403 (in the "Tabellarische") [as *Molorchus*]; Scudder 1885: 793 [as *Molorchus*]; Scudder 1887: 794 [as *Molorchus*]; Zang 1905: 233 [as *Cantharis*]; Handlirsch 1906-1908: 739 [as ? *Cantharis* sp.]; Handlirsch 1920-1921: 232; Larsson 1978: 139; Spahr 1981b: 15; Poinar 1992: 138; Douglas & Stockey 1996: 1154; Kazantsev 2013: 283; Vitali 2009: 237; Kirejtshuk & Ponomarenko 2009-2015
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Berlin Museum (coll. Berendt).
COMMENTS AND NOTES. Specimen examined by Zang (1905: 233) resulting to be a *Cantharis*-species with damaged elytra (Zang 1905: 233; Vitali 2009: 237).

†***Cantharis* sp.** Giebel, 1852
Cantharis Giebel, 1852: 655
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. One specimen.

†***Cantharis* sp.** (Giebel, 1856)
Telephorus Giebel, 1856a: 400 (in the "Tabellarische")
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. 9 specimens.

†***Cantharis* sp.** Motschulsky, 1857
Cantharis Motschulsky, 1857: 28 [as *Cantharis*], 30 [as *Oripa* (*Cantharis*)]
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. ?
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Coll. Menge.
COMMENTS AND NOTES. One or more specimens, and one of this as *Oripa* and longer than the extant *Oripa dispar* = now *Cantharis livida* Linnaeus (Motschulsky, 1857: 30), but it is uncertain whether in coll. Menge or Berendt.

†***Cantharis* sp.** Helm, 1896
Cantharis Helm, 1896: 228
Handlirsch 1906-1908: 739; Handlirsch 1920-1921: 232; Larsson 1978: 139; Spahr 1981b: 15; Kazantsev 2013: 283; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

†***Cantharis* sp**. Klebs, 1910

Figs. 7-8: Cacomorphocerus sp. Baltic amber - courtesy of Anders L. Damgaard.
Fig. 9: Cantharidae. Baltic amber - courtesy of Anders L. Damgaard.

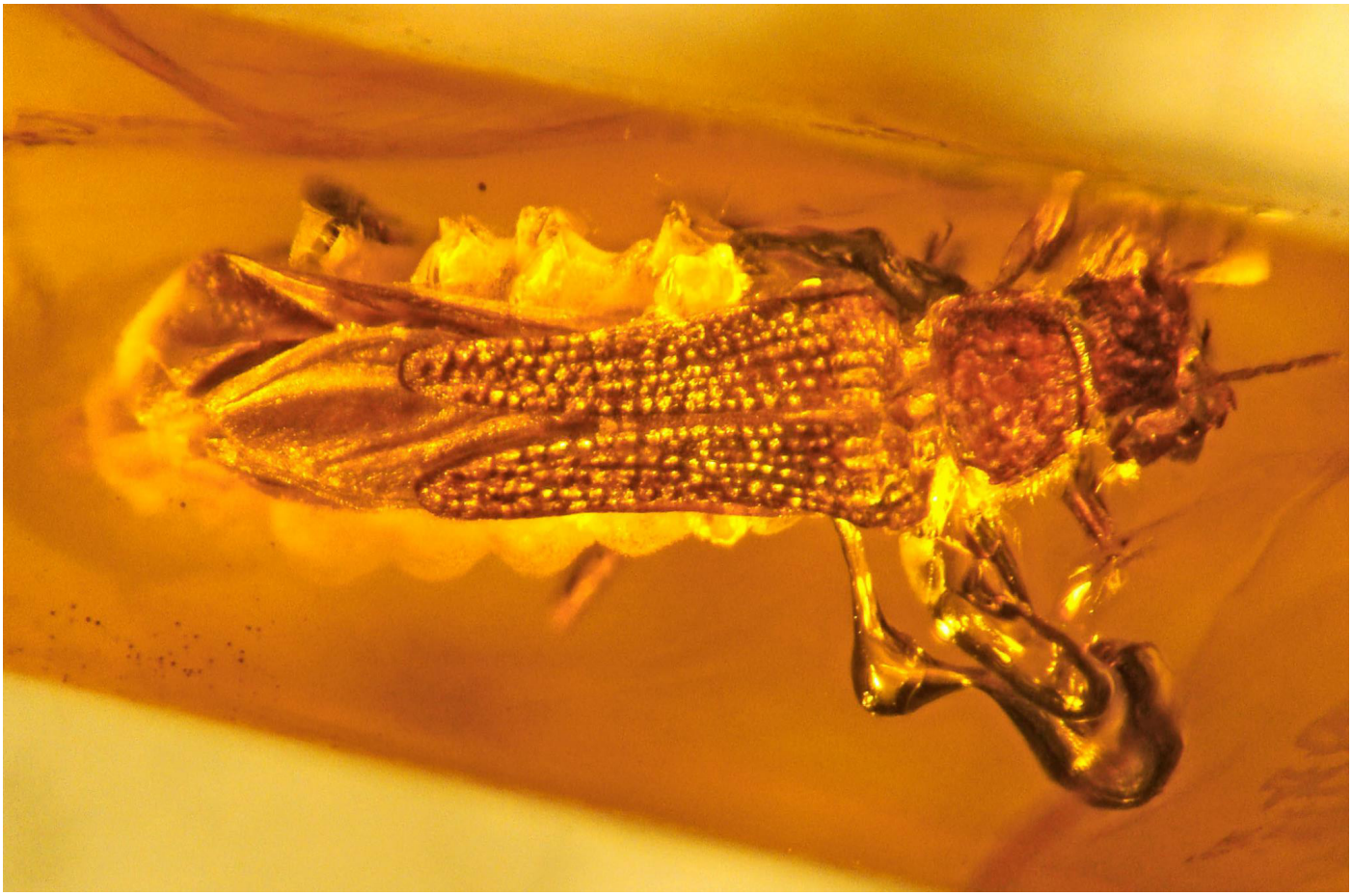

Fig. 10: Ornatomalthinus elvirae Poinar & Fanti, 2016. Photo of G. Poinar
Fig. 11: Rhagonycha sucinobaltica Poinar & Fanti, 2016. Photo of G. Poinar

Cantharis Klebs, 1910: 237
Handlirsch 1920-1921: 232; Crowson et al. 1967: 527; Crowson 1972: 63-64 [only as Cantharidae]; Larsson 1978: 140; Spahr 1981b: 15; Hieke & Pietrzeniuk 1984: 303, 321; Poinar & Fanti 2016: 1.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Probably, Eastern Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. The vast Klebs's amber collection, collected in Königsberg in Pr. Museum, has been largely destroyed or stolen during the World War II, and now preserved in several collections, especially in Göttingen University. Hieke & Pietrzeniuk (1984: 300, 303, 321) have seen 47 samples of Cantharidae stored at Halle/Saale and London.
COMMENTS AND NOTES. Twelve specimens, another one near to *Cantharis*, and one between *Cantharis* and *Rhagonycha*.

†***Cantharis* sp.** (Piton & Théobald, 1936)
Telephorus sp. Piton & Théobald, 1936: 206-207, 211, 212, 213 Fig. 10.
The Paleobiology Database.
TYPE HORIZON. Late/Upper Oligocene (28.4-23.3 Ma) or Early Miocene (about 22.0 Ma).
TYPE LOCALITY. France: near of Clermont-Ferrand, right bank of Allier, North-East of Puy-de-Mur, deposit of Puy-Saint-Jean.
PRESERVATION/LITHOLOGY. Elytra. Crate lake limestone (volcanic tuff with intercalations of the calcareous marl).
COLLECTIONS. M. A. Rudel collection.
COMMENTS AND NOTES. Two specimens. Length: 5 mm. Elytron light yellow, white spot near scutellum, blackish tint to the top. Similar to the extant *Cantharis livida* var. *bicolorata* Ragusa.

†***Cantharis* sp.** Bachofen-Echt, 1949
Cantharis Bachofen-Echt, 1949: 109
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

†***Cantharis* sp.** Hieke & Pietrzeniuk, 1984
Cantharis Hieke & Pietrzeniuk, 1984: 303
Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. ?
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Musuems für Naturkunde, Berlin.
COMMENTS AND NOTES. Hieke & Pietrzeniuk (1984: 303, 321) quote the genera: *Cantharis*, *Rhagonycha*, *Malthinus* and *Malthodes*, studying about 110 specimens of various Museums and collections: Berlin: Künow collection - 25 specimens, Berendt collection - 10 specimens, Kühl collection - 7 specimens, Simon collection - 3 specimens, Isenheim collection - 3 specimens, "Bitterfelder Bernstein" - 1 specimen, Mineralogischen Museum - 1 specimen; Klebs collection - 47 specimens; Copenhagen collection - ? few.

†***Cantharis* sp.** Schawaller, 1986
Cantharis nahe / *Cantharidae* Schawaller, 1986: 3, 5 (Abb. 9 [specimen No. 61205])
The Paleobiology Database.
TYPE HORIZON. Early-Middle Miocene: Burdigalian/Karpatian (16.0-13.7 Ma).
TYPE LOCALITY. Germany: Baden-Württemberg, Randecker Maar.
PRESERVATION/LITHOLOGY. Mold/impression. Crater lake, carbonaceous lime mudstone.
COLLECTIONS. Staatlichen Museum für Naturkunde Stuttgart, Nr. 61201 to 61205.
COMMENTS AND NOTES. Five specimens. One (specimen No. 61205) with pronotum probably red (elytra and legs black?) and about 9 mm.

Subgenus *Cyrtomoptila* Motschulsky, 1860

†***Cantharis (Cyrtomoptila) sucinokotejai*** (Kuśka, 1996)
Absidiella sucinokotejai Kuśka, 1996b: 14-15, 18 (fig. 7)
Absidiella sucinokoteji Pielińska, 2006: 9, english part: 34 (incorrect spelling)
Albsidiella succinokotejai Alekseev, 2013: 8 (incorrect spelling)
Albsidiella ???? succinokotejai Kirejtshuk & Ponomarenko, 2009-2015 (incorrect spelling)
Kuśka 1994: 3, 6 (only as *Absidiella* n. sp., No. 10424, female, Museum of the Earth collection; and a male in poor condition indicated as *Cantharis sp.* (p. 3) or as *Absidiella* (p. 6); Kuśka, 1996a: 19 (species unnamed); Kosmowska-Ceranowicz et al. 2001: 61 [as *Absidiella sucinokotejai*]; Pawłowski & Mazur 2012: 44 [as *Absidiella sucinokotejai*]; Alekseev 2013: 8; Kazantsev 2013: 283, 290; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database [as *Absidiella sucinokotejai*]; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).

TYPE LOCALITY. Poland: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Museum of the Earth PAS in Warsaw (Museum Ziemi collection), No. 10424.
COMMENTS AND NOTES. Female, brown, thorax and femora black-brown, tibiae and tarsi yellow-brown. Body length: 6.0 mm, elytra length 4.25 mm and width 1.5 mm, elytra index 2.8 mm. Related to the extant *Podistra schoenherri* Dejean. Transferred to *Cantharis (Cyrtomoptila)* by Kazantsev (2013: 290). A male of the same genus *Absidiella* No. 10424 is present in Museum of the Earth in Warsaw but is in a poor condition (Kuśka, 1994: 6).

Genus †*Electronycha* Kazantsev, 2013: 284-285, 290

†*Electronycha prussica* Kazantsev, 2013
Electronycha prussica Kazantsev, 2013: figs. 1-3 (p. 284), 285, 290
Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Senckenberg Deutsches Entomologisches Institut (Müncheberg - Germany), No. 1112-3.
COMMENTS AND NOTES. Male, dark brown. Body length: 7.4 mm, width 2.0 mm. Genus characterized to 15-segmented antennae: 1-5 and 10-15 filiforms, and 6-9 distally swollen. Syninclusions: various.

Genus †*Lithocantharis* Lin, 1997: 186, 188, 189, 193, 194, 199 (caption)

†*Lithocantharis lunglokshuiensis* Lin, 1997
Lithocantharis lunglokshuiensis Lin, 1997: 186, 188, 193 (fig. 5), 199 [caption of the plate 3], pl. 3 fig. 1
The Paleobiology Database.
TYPE HORIZON. Paleocene (66-56 Ma). Ping Chau Formation of China.
TYPE LOCALITY. Hong Kong (China), Peng Chau Island, (also known as Tung Ping Chau Island), Lung Lok Shui (LLT).
PRESERVATION/LITHOLOGY. Elytron (compression). Lithified, terrestrial siltstone.
COLLECTIONS. Nanjing Institute of Geology and Palaeontology (NIGP), No. 128290 (LLT-1-4).
COMMENTS AND NOTES. It is preserved only an elytron, length: 5.0 mm x 2.0 mm. Similar to *Cantharis* but with wings darker and narrow. For the presence of various striae on elytra, membership in the Cantharidae family is, for me, uncertain.

Genus *Lycocerus* Gorham, 1889

†*Lycocerus guttula* (J. Zhang, 1989) **[*n. comb.*]**
Cantharis guttula J. Zhang, 1989: 119 (illustration 103)-120, 387, 445 (caption of Table 26), Table 26 Fig. 4.
Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Middle Miocene (16.0-11.6 Ma). Shanwang Formation.
TYPE LOCALITY. China: Shandong, Shanwang, Linqu County, collection 3.
PRESERVATION/LITHOLOGY. Compression/adpression. Lacustrine - large mudstone.
COLLECTIONS. Shandong Provincial Museum (LPM), No. 830063.
COMMENTS AND NOTES. Head and wings brown dark, prothorax stained. Body length: 8.80 mm x 2.90 mm. Zhang says that is similar to *Cantharis oedemeroides* Kiesenwetter = *Lycocerus oedemeroides* (Okushima 2005: 283). For this similarity, for the general appearance, and particularly for slender body and for the prothorax sub-quadrate that is tipical on *Lycocerus oedemeroides* species-group (Okushima 2005: 273; Hsiao & Okushima 2015: 109), I tentatively transferred this species to genus *Lycocerus* Gorham.

Genus †*Myamalycocerus* Fanti & Ellenberger, 2016: 166-167

†*Myamalycocerus vitalii* Fanti & Ellenberger, 2016
Myamalycocerus vitalii Fanti & Ellenberger, 2016: 167-169 (figs. 1-3)
The Paleobiology Database.
TYPE HORIZON. Early Cretaceous: Upper Albian (97-110 Ma).
TYPE LOCALITY. Myanmar: Kachin State, Myitkyina District, Tanai Township, Hukawng Valley, Aung Bar Maw mine.
PRESERVATION/LITHOLOGY. Inclusion in amber. Burmese Amber.
COLLECTIONS. SMNS Naturkunde Museum Stuttgart (Germany), SMNS BU-230.
COMMENTS AND NOTES. Similar to *Ornatomalthinus elvirae* Poinar & Fanti, but differs by the long elytra and relief points which are less raised and more numerous.

Genus †*Ornatomalthinus* Poinar & Fanti, 2016: 2

†***Ornatomalthinus elvirae*** Poinar & Fanti, 2016
Ornatomalthinus elvirae Poinar & Fanti, 2016: 2-3 (figs. 1-3), 5-6
Poinar et al. 2007: 1663-1668 (figs. 1abc, 2abc, 3); Binder 2008: 47 (Abb. 1); Oktar / [Harun Yahya] 2006-2008: 612-613 (figs.); Boucot & Poinar 2010: 196 (Figure 269); Ross et al. 2010: 217; Rasnitsyn et al. 2016: Appendix A, Appendix B p. 7; Hsiao et al. 2016: 120, 122; Fanti & Ellenberger 2016: 166, 168, 169; The Paleobiology Database.
TYPE HORIZON. Early Cretaceous: Upper Albian (97-110 Ma).
TYPE LOCALITY. Myanmar: Kachin State, Southwest of Maingkhwan, Hukawng Valley, mine near Noije Bum, designated as "Noije Bum 2001 Summit Site" (26°20'N, 96°36'E).
PRESERVATION/LITHOLOGY. Inclusion in amber. Burmese Amber.
COLLECTIONS. George Poinar amber collection at Oregon State University, Corvallis (USA), No. B-C-28. Another similar specimen (Poinar et al. 2007) actually is in the Deniz Eren amber collection, Istambul (see down).
COMMENTS AND NOTES. Female with short elytra with evident striation equipped with relief points. Body length: 3.5 mm. Genus characterized for possessing features similar to lycid beetles. Another specimen in Burmese amber from the "Noije Bum 2001 Summit Site" and deposited in the amber collection of Ron Buckley No. ABS66; long about 4.5 mm and with extruded cuticular vesicle glands, is illustrated by Poinar et al. (2007: 1663-1668) and after reillustrated in Binder (2008: Abb. 1), Oktar / [Harun Yahya] (2006-2008: 612-613 [same specimen?]), and Boucot & Poinar (2010: Fig. 269, specimen in the Deniz Eren amber collection, Istambul - Turkey). It has similar characteristics but without further studies it is not possible to say if is related to *Ornatomalthinus elvirae* (Poinar & Fanti, 2016: 5-6).

Genus *Podistra* Motschulsky, 1839

Subgenus *Absidia* Mulsant, 1862

†***Podistra (Absidia)* sp.** (Klebs, 1910)
Absidia Klebs, 1910: 237
Handlirsch 1920-1921: 232 [as *Absidia*]; Crowson 1972: 63-64 [only as Cantharidae]; Larsson 1978: 140; Spahr 1981b: 15; Hieke & Pietrzeniuk 1984: 303, 321; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Probably, Eastern Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. The vast Klebs's amber collection, collected in Königsberg in Pr. Museum, has been largely destroyed or stolen during the World War II, and now preserved in several collections, especially in Göttingen University. Hieke & Pietrzeniuk (1984: 300, 303, 321) have seen 47 samples of Cantharidae stored at Halle/Saale and London.
COMMENTS AND NOTES. Two specimens.

†***Podistra (Absidia)* sp.** (Bachofen-Echt, 1949)
Absidia Bachofen-Echt, 1949: 109
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

Genus *Rhagonycha* Eschscholtz, 1830

Subgenus *(Rhagonycha)* Eschscholtz, 1830

†***Rhagonycha (Rhagonycha) germari*** (Heer, 1847) **[*n. comb.*]**
Telephorus Germari Heer, 1847: 143-145, 225, Taf. IV. Fig. 10., Fig. 10. bcde.
Telephorus Germarii Heer, 1847: 225 ([caption] Fig. 10.); Taf. IV. ([caption] (Fig. 10.) (incorrect original spelling. ICZN 1999 Art. 19.3)
Telephorus Germarii Scudder, 1876: 81 (incorrect subsequent spelling. ICZN 1999 Art. 33.4)
Giebel 1852: 650; Pictet 1854: 334; Giebel 1856a: 101, 400 (in the "Tabellarische"); Giebel, 1856b: 185; Scudder 1876: 81; Goss 1878: 48 (reprint 1878: 326); Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 588 [under family Lampyridae]; Scudder 1900: 101 [under family Lampyridae]; Handlirsch 1906-1908: 740 [as *Cantharis Germari*]; Handlirsch 1920-1921: 232; Piton & Théobald 1936: 207; Carpenter 1992: 331 [as *Cantharis*]; ETH Zürich: [20]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis germari*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Upper/Middle Miocene: Upper Tortonian/Lower Sarmatian (10-12.7 Ma), Upper Freshwater-Molasse Formation.
TYPE LOCALITY. Germany: Baden-Württemberg, Oeningen (= Öhningen).
PRESERVATION/LITHOLOGY. Mold impression/compression (adpression). Lacustrine, lithified limestone.
COLLECTIONS. Two specimens in Carlsruhe collection, in the original description. Department of Earth Sciences, Inv. No. Pl. I. 290, ID 2604 (see ETH Zürich).
COMMENTS AND NOTES. Elytra black. Body

length: 9.0 mm ("4 Lin.") x 2.80 mm, but of the holotype is preserved only elytra and abdomen (Fig. 10.). Length sometimes indicated as 8.50 x 2.60 mm (The Paleobiology Database). Other specimen of the original description is more well preserved (Fig. 10. c.). Similar to the extant *C. rustica* and *C. fusca*, expecially *C. rustica* by Giebel (1856: 101), but the assignment to genus *Cantharis* is doubt for Carpenter (1992: 331), in fact, particularly, for the original picture (Taf. IV. Fig. 10. d.) and the description of the tarsus with third tarsomer non bilobed, I tentatively transferred this species to the genus *Rhagonycha* Eschscholtz, 1830.

†*Rhagonycha (Rhagonycha) hesperus* (Wickham, 1914) **[*n. comb.*]**

Telephorus hesperus Wickham, 1914: 445, Plate 4. Fig. 3. (and explanation) [under family Lampyridae]

International Catalogue of Scientific Literature 1916b: 148; International Catalogue of Scientific Literature 1919: 108; Meunier 1920a: 156; Wickham 1920: 353 [as *Cantharis hesperus*]; Handlirsch 1920-1921: 232; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331 [as *Cantharis*]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis hespera*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database [as *Cantharis hesperus*].

TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.

TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant.

PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale, volcaniclastic.

COLLECTIONS. Holotype: Museum of Comparative Zoology - Harvard University (MCZ), No. 2,496 (No. 9,376 S. H. Scudder coll.). Other specimens MCZ, No. 2,497 to 2,501 (No. 2,243, 5,065, 5,515, 6,048, 12,769 S. H. Scudder coll.).

COMMENTS AND NOTES. Yellowish, with sides and sutural region of the elytra darker. Body length: 4.50 mm to apex of elytra, other specimens little over 5 mm. Described from six specimens. In the original description is indicated as similar to the recent *Telephorus scitulus* (= *Rhagonycha scitula* (Say), and for this and for the little length of the all specimens, I tentatively transferred to genus *Rhagonycha*, although the rounded prothorax leaves doubt. The assignment to genus *Cantharis* was doubt also for Carpenter (1992: 331). The picture of the holotype is visible in Florissant Fossil Beds National Monument website at http://planning.nps.gov/flfo/photos.

†*Rhagonycha (Rhagonycha) kryshtofovichi* (Yablokov-Khnzorian, 1960)

Malchinus kryshtofovichi Yablokov-Khnzorian, 1960: fig. 3abvg (p. 94), 95

Larsson 1978: 140; Spahr 1981b: 15; Poinar 1992: 137; Kuśka 1994: 6; Douglas & Stockey 1996: 1154; Alekseev 2013: 8; Kazantsev 2013: 283, 290; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1, 4, 6; The Paleobiology Database.

TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).

TYPE LOCALITY. Lithuania: Baltic Sea coast.

PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

COLLECTIONS. Paleontological Institute, Russian Academy of Sciences (PIN) in Moscow, No. 364/108.

COMMENTS AND NOTES. Male, reddish brown, pronotum slightly narrowed anteriorly. Body length: 7 mm. Transferred to *Rhagonycha* by Kazantsev (2013: 290).

†*Rhagonycha (Rhagonycha) micans* Piton, 1939

Rhagonycha micans Piton, 1939: 102, Planche I fig. 6 (p. [104]), 105

Poinar & Fanti 2016: 6; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.

TYPE HORIZON. Pliocene: Piacenzian (3.6-2.6 Ma).

TYPE LOCALITY. France: Puy-de-Dôme, Lac Chambon.

PRESERVATION/LITHOLOGY. Elytra and pronotum (impression/compression fossil). Crater lake, diatomite and volcaniclastic.

COLLECTIONS. L. Piton collection, No. 1023 (holotype). Probably redeposited at MNHN (Paris). Piton *legit* in 1938.

COMMENTS AND NOTES. Two elytra and fragments of the pronotum. Elytra red very clear with reflections iridescent, and with fine striae punctate. Near the extant *Rhagonycha testacea* (Linnaeus, 1758), but with end of the elytra more narrowed.

†*Rhagonycha (Rhagonycha) sucinobaltica* Poinar & Fanti, 2016

Rhagonycha sucinobaltica Poinar & Fanti, 2016: 3-4 (figs. 4-6), 6

Hsiao et al. 2016: 120; The Paleobiology Database.

TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).

TYPE LOCALITY. Russian Federation: Kaliningrad region, Baltic Sea coast.

PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

COLLECTIONS. George Poinar amber collection at Oregon State University, Corvallis (USA), No. C-202.

COMMENTS AND NOTES. Male, blackish to dark

brown with pronotum slightly darker than elytra. Body length: 3.5 mm. Similar to the extant *Rhagonycha atra* group.

†*Rhagonycha (Rhagonycha) tertiaria* (Heer, 1847) **[*n. comb.*]**

Telephorus tertiarius Heer, 1847: 145-148, 225, Taf. IV. Fig. 11, 11bc., 12, 12bc., 13

= *Telephorus tertiarius oeningensis* Heer, 1847: 145-146, 225, Taf. IV. Fig. 11., Fig. 11. bc. **[*n. syn.*]**

= *Telephorus tertiarius Radobojanus* Heer, 1847: 147-148, 225, Taf. IV. Fig. 12., Fig. 12. bc. **[*n. syn.*]**

Giebel 1852: 650 [as *Telephorus tertiarius*]; Pictet 1854: 334 [as *Telephorus tertiarus* **(sic!)**]; Giebel 1856a: 101-102, 400 (in the "Tabellarische") [as *Telephorus tertiarius*]; Giebel, 1856b: 185, 186 [as *Telephorus tertiarius*]; Scudder 1876: 81; Goss 1878: 48, 50 (reprint 1878: 326, 328); Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 588 [as *Telephorus tertiarius, Telephorus tertiarius oeningensis* and *Telephorus tertiarius radobojanus* (*Telephorus oeningensis* and *Telephorus radobojanus*); under family Lampyridae]; Scudder 1900: 101 [under family Lampyridae]; Handlirsch 1906-1908: 740 [as *Cantharis tertiaria radobojana* and *Cantharis tertiaria oeningensis*]; Handlirsch 1920-1921: 232; Piton & Théobald 1936: 207 [as *Telephorus radobojanus* and *Telephorus tertiarius*]; Carpenter 1992: 331 [as *Cantharis*]; ETH Zürich: [20]; Kirejtshuk & Ponomarenko 2009-2015 [as *Cantharis radobojana*, *Cantharis tertiaria* and *Cantharis tertiaria oeningensis*]; Mitchell 2013 - EDNA The Fossil Insect Database [as *Telephorus tertairius* **(sic!)** *radobojanus* and *Telephorus tertiarius oeningensis*]; The Paleobiology Database [as *Telephorus tertiarius*].

TYPE HORIZON. Upper/Middle Miocene: Upper Tortonian/Lower Sarmatian (10-12.7 Ma), Upper Freshwater-Molasse Formation (for the Oeningen specimen). [Early Miocene: Burdigalian (16-20 Ma) for the Radoboj specimen].

TYPE LOCALITY. Germany: Baden-Württemberg, Oeningen (= Öhningen). [ICZN 1999 Art. 76.2.]. The other specimen comes from Croatia: Radoboj.

PRESERVATION/LITHOLOGY. Mold impression/compression (adpression). Lacustrine, lithified limestone.

COLLECTIONS. Unspecified coll. Department of Earth Sciences, Inv. No. Pl. I. 291, ID 2605 (see ETH Zürich) for Oeningen specimen.

COMMENTS AND NOTES. Elytra testaceous with the black apex, and similar (also for the original description) to the extant *Telephorus melanura* F. = *Rhagonycha fulva* (Scopoli, 1763); with thinner antennae by Giebel (1856: 101). Body length: around 7.25 mm. (7.15 mm x 2.10 mm by The Paleobiology Database).

The assignment to genus *Cantharis* is doubt for Carpenter (1992: 331), in fact, particularly, for the original pictures (Taf. IV. Figs. 11. c., 12. bc.) and the descriptions of the tarsus with third tarsomer non bilobed, and also for the narrowed pronotum, I tentatively transferred this species to the genus *Rhagonycha* Eschscholtz, 1830.

Heer briefly described the species *Telephorus tertiarius*, but having two specimens of two different locations and expecially not kept fully, described these exemplars with two different names at subspecies level (*T. t. oeningensis* and *T. t. radobojanus*), mistakenly leaving out the nominotypical subspecies. But in the original description of the two subspecies, there are not substantial differences, in fact, have the exact same coloration, same shape, same legs (tarsus) and almost the same size. Actually also geographically the different subspecies are not justified, but however, the fossil faunas of the two places are not presently considered coeval, which leaves a minimum doubt about synonymies here presented. Moreover, the subspecies have the same type of *T. tertiarius*, therefore are to be considered objective synonyms (ICZN 1999 Art. 61.3.4).

The species is therefore composed of two syntypes and it is necessary to designate the lectotype. Seen that the Fig. 11. (Taf. IV. Fig. 11. Specimen of Oeningen) is the first to appear in the original description and above the specimen is slightly more complete fossilized (are missing part of the head and prothorax included some legs), is here considered as lectoptype, and Fig. 12. (Taf. IV. Fig. 12. Specimen of Radoboj) as paralectotype (ICZN 1999 Art. 74.1.3., Art. 74.4., Recommendation 74F.).

†*Rhagonycha* sp. Helm, 1896

Rhagonycha Helm, 1896: 228

Handlirsch 1906-1908: 739; Handlirsch 1920-1921: 232; Larsson 1978: 139; Spahr 1981b: 16; Kazantsev 2013: 283.

TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).

PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

†*Rhagonycha* sp. Klebs, 1910

Rhagonycha Klebs, 1910: 237

Handlirsch 1920-1921: 232; Crowson et al. 1967: 527; Crowson 1972: 63-64 [only as Cantharidae]; Larsson 1978: 140; Spahr 1981b: 16; Hieke & Pietrzeniuk 1984: 303, 321; Poinar & Fanti 2016: 1, 6; Kirejtshuk & Ponomarenko 2009-2015.

TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).

TYPE LOCALITY. Probably Eastern Prussia.

PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

COLLECTIONS. The vast Klebs's amber collection,

collected in Königsberg in Pr. Museum, has been largely destroyed or stolen during the World War II, and now preserved in several collections, especially in Göttingen University. Hieke & Pietrzeniuk (1984: 300, 303, 321) have seen 47 samples of Cantharidae stored at Halle/Saale and London.
COMMENTS AND NOTES. Fifteen specimens, and five near to *Rhagonycha*, and one between *Cantharis* and *Rhagonycha*.

†***Rhagonycha*** **sp.** Bachofen-Echt, 1949
Rhagonycha Bachofen-Echt, 1949: 109
Spahr 1981b: 16.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

†***Rhagonycha*** **sp.** Hieke & Pietrzeniuk, 1984
Rhagonycha Hieke & Pietrzeniuk, 1984: 303
Poinar & Fanti 2016: 1, 6; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. ?
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Musuems für Naturkunde, Berlin.
COMMENTS AND NOTES. Hieke & Pietrzeniuk (1984: 303, 321) quote the genera: *Cantharis*, *Rhagonycha*, *Malthinus* and *Malthodes*, studying about 110 specimens of various Museums and collections: Berlin: Künow collection - 25 specimens, Berendt collection - 10 specimens, Kühl collection - 7 specimens, Simon collection - 3 specimens, Isenheim collection - 3 specimens, "Bitterfelder Bernstein" - 1 specimen, Mineralogischen Museum - 1 specimen; Klebs collection - 47 specimens; Copenhagen collection - ? few.

Genus †*Sucinocantharis* Kuśka & Kania, 2010: 52

†***Sucinocantharis baltica*** Kuśka & Kania, 2010
Sucinocantharis baltica Kuśka & Kania, 2010: 52-53 (figs. 7-9)
Pawłowski & Mazur 2012: 44; Alekseev 2013: 8; Kazantsev 2013: 283, 290; Kania 2015: 12; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Deutsches Entomologisches Institut (DEI) in Germany, No. 1441 - 1 (ex coll. C. and H. W. Hoffeins, Hamburg).
COMMENTS AND NOTES. Male. Black. Body length: 8.0 mm. Genus characterized to 16-segmented antennae, with antennomers 3-10 dilated. Syninclusions: Diptera Bibionidae.

Genus †*Sucinorhagonycha* Kuśka, 1996: 13

†***Sucinorhagonycha kulickae*** Kuśka, 1996
Sucinorhagonycha kulickae Kuśka, 1996b: 13-14 (figs. 1-2), 17 (figs. 3-5)-18 (fig. 6)
Kuśka 1994: 3, 6 (only as *Rhagonycha* n. sp., No. 22345, male, Museum of the Earth collection); Kuśka, 1996a: 19 (species unnamed); Kubisz 2000: 226, 227-229 (fig. 1 p. 228); Kosmowska-Ceranowicz et al. 2001: 61; Kuśka & Kania 2010: 49; Pawłowski & Mazur 2012: 44; Alekseev 2013: 8; Kazantsev 2013: 283, 290; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Holotype: Museum of the Earth PAS in Warsaw (Museum Ziemi collection), No. 22345. Female described to Kubisz is preserved in Museum of Natural History of the Institute of Systematics and Evolution of Animals (ISEA) in Kraków, No. 1/31.
COMMENTS AND NOTES. Male, black-brown with pronotum and elytra with a distinct sheen. Body length: 4.5 mm (elytra 3.5 mm). Genus characterized to 12 filiform antennomers. Female (Kubisz 2000: 227-229) with black elytra and body length 5 mm.

Genus *Themus* Motschulsky, 1858
= †*Curticantharis* J. Zhang, 1989: 120, 422 **[*n. syn.*]*²**

*²The genus *Curticantharis* according to Zhang, is characterized for the head short, pronotum sub-quadrate/rectangular with straight edges and slightly rounded corners, short filiform antennae 11-segmented, small scutellum, short legs, large size, and particularly the elytra which do not cover the abdomen. But these characters are in communion with other genera and in detail, in area in question, with *Themus* (expecially

pronotum sub-quadrate/transverse, relative short antennae and large size), which is a genus widespread in China and Asia. The character believed important, of the short elytra, may be due, in the Zhang species, for an abnormal distension during fossilisation, and in more the females of many genera have the wide body and stretched beyond of the wing-covers and/or physiogastric (common in the females of *Themus*). Finally the three species of *Curticantharis* have a different look: broad and squat or slender elongated, compatible with the diversity of habitus of *Themus*. All *Curticantharis* species of Zhang, I tentatively placed to nominotypical subgenus *Themus* for the lateral margins of pronotum straight, parallel-sided (see: Švihla 2008; Yang & Yang 2010).

Subgenus *Haplothemus* Wittmer, 1973

†*Themus (Haplothemus) pristinus* Kazantsev, 2013
Themus pristinus Kazantsev, 2013: 286-288 (figs. 7-9 p. 287), 290
Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Senckenberg Deutsches Entomologisches Institut (Müncheberg - Germany), No. 1593-1.
COMMENTS AND NOTES. Female, dark brown. Body length: 13.2 mm, width 3.2 mm. Species characterized for large size and long cheeks. Syninclusions: one Diptera.

Subgenus *Themus* Motschulsky, 1858

†*Themus (Themus) capacis* (J. Zhang, 1989) **[*n. comb.*]**
Curticantharis capacis J. Zhang, 1989: 120 (and key)-121 (illustration 104 A.B.C.D.), 122, 387, 422, 445 (caption of Table 26), Table 26 Fig. 5., (8 [as Cantharidae])
Zhang et al 1994: 5, 6, 9, 265 [as Cantharidae]; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Middle Miocene (16.0-11.6 Ma). Shanwang Formation.
TYPE LOCALITY. China: Shandong, Shanwang, Linqu County, collection 3.
PRESERVATION/LITHOLOGY. Compression/adpression. Lacustrine - large mudstone.
COLLECTIONS. Shandong Provincial Museum (LPM), No. 820289.
COMMENTS AND NOTES. Body length: 15.4 mm x 5.4 mm. Species smallest, black, with more broad wings than *Themus thermophilus*.

†*Themus (Themus) thermophilus* (J. Zhang, 1989) **[*n. comb.*]*[3]**
Curticantharis thermophila J. Zhang, 1989: 120 in key, 121 (illustration 105)-122, 387, 445 (caption of Table 27), Table 27 Fig. 3., (8 [as Cantharidae])
Zhang et al. 1994: 5, 6, 9, 265 [as Cantharidae], 90-91; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Middle Miocene (16.0-11.6 Ma). Shanwang Formation.
TYPE LOCALITY. China: Shandong, Shanwang, Linqu County, collection 5.
PRESERVATION/LITHOLOGY. Compression/adpression. Lacustrine - large mudstone.
COLLECTIONS. Shandong Provincial Museum (LPM), No. 750097 and 750096.
COMMENTS AND NOTES. Two specimens. Body length: 19.5 mm x 6.8 mm. Body more wide and reddish-brown with narrow wing than *Themus capacis*.
*[3]The female name *thermophila* was granted by me from the masculine genus *Themus* in *thermophilus*.

†*Themus (Themus) trapezialis* (J. Zhang, Sun & X. Zhang, 1994) **[*n. comb.*]**
Curticantharis trapezialis J. Zhang, Sun & X. Zhang, 1994: 90 (illustration 65)-91, 292 (caption of Table XII), Table XII Fig 1., (5, 6, 9, 265 [as Cantharidae])
Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Middle Miocene (16.0-11.6 Ma). Shanwang Formation.
TYPE LOCALITY. China: Shandong, Shanwang, Linqu County, collection K0.
PRESERVATION/LITHOLOGY. Compression/adpression. Lacustrine - large mudstone.
COLLECTIONS. Shandong Geological Museum, No. K0349.
COMMENTS AND NOTES. Body length: 11.9 mm x 4.2 mm. Prothorax more large posteriorly, body more short and slender, and last abdominal segment more rounded than the others *Curticantharis*. For this reasons the generic attribution remains doubtful, can be also a species of *Lycocerus*.

†*Themus* sp. (J. Zhang, 1989) **[*n. comb.*]**
Curticantharis sp. J. Zhang, 1989: 122, 387, 445 (caption of Table 27), Table 27 Fig. 2., (8 [as Cantharidae])
Zhang et al 1994: 5, 6, 9, 265 [as Cantharidae].

TYPE HORIZON. Middle Miocene (16.0-11.6 Ma). Shanwang Formation.
TYPE LOCALITY. China: Shandong, Shanwang, Linqu County.
PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large mudstone.
COLLECTIONS. Shandong Provincial Museum (LPM), No. s82753.
COMMENTS AND NOTES. Head and prothorax not preserved. Wing length: 7.8 mm x 2.2 mm. Wing that mostly cover the abdomen.

Genus †*Wongyekokia* Lin, 1997: 186, 187, 188, 189, 194, 199 (caption)

†*Wongyekokia angustris* Lin, 1997
Wongyekokia angustris Lin, 1997: 194 (fig. 6), 199 [caption of the plate 2], pl. 2 fig. 5
Wongyekokia angustis Lee et al., 1997: 17 (incorrect spelling)
Wongyekokia angustis Lin, 1997: 186, 187, 188 (incorrect original spelling. ICZN 1999 Art. 19.3)
The Paleobiology Database.
TYPE HORIZON. Paleocene (66-56 Ma). Ping Chau Formation of China.
TYPE LOCALITY. Hong Kong (China), Peng Chau Island (also known as Tung Ping Chau Island), Wong Ye Kok (WYK).
PRESERVATION/LITHOLOGY. Exoskeleton (compression). Lithified, terrestrial siltstone.
COLLECTIONS. Nanjing Institute of Geology and Palaeontology (NIGP), No. 128291 (WYK-4-3).
COMMENTS AND NOTES. Body length: 6.0 mm (preserved only the prothorax, right elytron, and very little part of left elytron), elytron: 4.0 mm x 1.5 mm. For the presence of various striae on elytra, membership in the Cantharidae family is, for me, uncertain. The *angustis* name is earlier to *angustris* but the latter is present in true description (also in the plate and figure), is used in The Paleobiology Database, and particularly there is no evidence to prove it is a *lapsus*.

Tribe Podabrini Gistel, 1856

Genus *Malthacus* Kirby, 1837

Malthacus deceptus (W. J. Brown, 1940) **[*n. comb.*]**
Podabrus deceptus W. J. Brown, 1940: 161 (Locus typicus: Churchill, Man., July 13, 1937. Paratypes: June 28 and August 2)
Podabrus deceptus Matthews & Telka, 1997: 921 (Table 1.).
TYPE HORIZON. Early Holocene (9670 ± 130 years old).
TYPE LOCALITY. U.S.A.: northern Alaska, Ikpikpuk River.
PRESERVATION/LITHOLOGY. Fragments or complete body. Ponds, peatland turf.
COLLECTIONS. Geological Survey of Canada, Ottawa.
COMMENTS AND NOTES. Several specimens. *Podabrus deceptus* Brown (1940) was transferred to *Dichelotarsus* by Pelletier & Hébert (2014: 1, 3, 170, 241), but this latter genus *Dichelotarsus* is considered synonymous with *Malthacus* (Takahashi 2007: 241, 243) and therefore the actually correct combination is *Malthacus deceptus* (Brown).

***Malthacus piniphilus* species-group**
Podabrus piniphilus sp. group Matthews & Telka, 1997: 921 (Table 1.)
TYPE HORIZON. Early Holocene (9670 ± 130 years old).
TYPE LOCALITY. U.S.A.: northern Alaska, Ikpikpuk River.
PRESERVATION/LITHOLOGY. Fragments or complete body. Ponds, peatland turf.
COLLECTIONS. Geological Survey of Canada, Ottawa.
COMMENTS AND NOTES. Several specimens.

Genus *Podabrus* Dejean, 1833

Podabrus* cfr. *alpinus (Paykull, 1798)
Podabrus cf. *alpinus* Böcher, 1995: 16, 41-42, 56 (and Table 10.), Table 12. (p. 59), Table 21. [only Cantharidae]
Matthews & Telka 1997: 936 (Table 3.); The Paleobiology Database.
TYPE HORIZON. Pleistocene: Gelasian (about 2 Ma / 1.8-2.2 Ma) - Plio-Pleistocene transition period. Kap København Formation. Late Pliocene (Matthews & Telka 1997: 940 Table 3.)
TYPE LOCALITY. North Greenland (Denmark), eastern Peary Land, Kap København (latitude 82°30'N). Unit B3, locality 77 (Böcher 1995: 9).
PRESERVATION/LITHOLOGY. Insect fragment. Shoreface, poorly lithified siliciclastic sediments.
COLLECTIONS. Zoological Museum, University of Copenhagen (ZMUC).
COMMENTS AND NOTES. One head. The species *Podabrus alpinus* is still alive and lives in a vast territory in Central and Northern Europe from France, Great Britain to Siberia and Mongolia.

†*Podabrus cupesoides* Wickham, 1917
Podabrus cupesoides Wickham, 1917: 463, 467, 472 (explanation of plates), Plate 37 Fig. 4. [under family Lampyridae]
Podabrus cupesoides Wickham, 1913b: 360 (*nomen nudum*) [under family Lampyridae]

Podabrus cupetoides Cossmann, 1918: 13 (incorrect spelling)
Cossmann 1918: 13-14; Wickham 1920: 353; Handlirsch 1920-1921: 232; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331 [as *Podabrus*]; Kirejtshuk & Ponomarenko 2009-2015; The Paleobiology Database.
TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.
TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant.
PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale.
COLLECTIONS. United States National Museum (U.S.N.M.), No. 63446.
COMMENTS AND NOTES. Body length: 8 mm, elytra 5.35 x 2.30 mm. Described from one specimen, but the descriptor associated with this species other specimens, especially those of the Museum of Comparative Zoology and the University of Colorado, that may also be other species. Separated from other Florissant fossil *Podabrus*, for the small size and long antennae reaching nearly to the elytral apex. The assignment to genus *Podabrus* is doubt for Carpenter (1992: 331). The picture of the holotype is visible in Florissant Fossil Beds National Monument website at http://planning.nps.gov/flfo/photos.

†***Podabrus florissantensis*** Wickham, 1914
Podabrus florissantensis Wickham, 1914: 444-445, Plate 4. Fig. 2. (and explanation) [under family Lampyridae]
International Catalogue of Scientific Literature 1916b: 147; International Catalogue of Scientific Literature 1919: 108; Meunier 1920a: 156; Wickham 1920: 353; Handlirsch 1920-1921: 232; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331 [as *Podabrus*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.
TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant.
PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale.
COLLECTIONS. Museum of Comparative Zoology - Harvard University (MCZ), No. 2,495 (No. 8,947 S. H. Scudder coll.).
COMMENTS AND NOTES. Body length: 10.10 mm, elytra 7.35 mm. Described from one specimen. Similar to the fossil *Podabrus fragmentatus* Wickham (see under this species). The assignment to genus *Podabrus* is doubt for Carpenter (1992: 331), and even the descriptor had doubts with the genus *Epicauta* (Coleoptera Meloidae) but distinguishable for the form of the eyes. The picture of the holotype is visible in Florissant Fossil Beds National Monument website at http://planning.nps.gov/flfo/photos.

†***Podabrus fragmentatus*** Wickham, 1914
Podabrus fragmentatus Wickham, 1914: 444, Plate 4. Fig. 1. (and explanation) [under family Lampyridae]
International Catalogue of Scientific Literature 1916b: 147; International Catalogue of Scientific Literature 1919: 108; Meunier 1920a: 156; Wickham 1920: 353; Handlirsch 1920-1921: 232; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331 [as *Podabrus*]; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.
TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant.
PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale.
COLLECTIONS. Holotype: Museum of Comparative Zoology - Harvard University (MCZ), No. 2,487-2,488 (No. 4,218-4,638 S. H. Scudder coll.). Two other specimens MCZ, No. 2,489-2,490 (No. 69-2,546 S. H. Scudder coll.).
COMMENTS AND NOTES. Body length: 12.75 mm, elytra 6.85 mm. Described from one specimen with counterpart. Similar to the fossil *Podabrus florissantensis* Wickham, but this latter has a larger head, longer elytra and shorter antennal joints (Wickham 1914: 444). The assignment to genus *Podabrus* is doubt for Carpenter (1992: 331). The picture of the holotype is visible in Florissant Fossil Beds National Monument website at http://planning.nps.gov/flfo/photos.

†***Podabrus santaritensis*** Cockerell, 1936
Podabrus (?) *santaritensis* Cockerell, 1936: 2, 5 (and Fig. 5.)
Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Paleocene (65.5-56.0 Ma). Maíz Gordo Formation (Sunchal).
TYPE LOCALITY. Argentina: Province of Jujuy, Quebrada “El Griton” (locality oo/cd 27).
PRESERVATION/LITHOLOGY. Elytron (impression). Lacustrine - small mudstone.
COLLECTIONS. American Museum of Natural History, No. 24520, collected by D. C. Harrell.
COMMENTS AND NOTES. One elytron. Length: 4 mm but apex not visible. Very pale brownish, doubtless yellow in life. For the presence of three parallel, widely spaced, strong raised lines and two faint longitudinal rugulose lines between these, is probably a representative of the genus *Podabrus*, but could be also a different but related genus

(Cockerell 1936: 5).

†***Podabrus wheeleri*** Wickham, 1909
Podabrus wheeleri Wickham, 1909: 128-129.
Wheeler 1906: figure at the p. 202 (unnamed; "undescribed species of fossil beetle (*Meloid*); Wickham 1913a: 284, 293 [under family Lampyridae]; Wickham 1913b: 360 [under family Lampyridae]; Wickham 1914: 444 [under family Lampyridae]; Lucas 1915: 132; Wickham 1920: 353; Handlirsch 1920-1921: 232; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331; White 1995: 37; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.
TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant Lake Beds, Station 13.
PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale.
COLLECTIONS. Holotype in Peabody Museum of Yale University, Cat. No. 7 (Wickham 1909: 129), collection number 165 and received from Prof. Cockerell (Wickham 1909: 128). Two specimens in rather poor condition in United States National Museum (U.S.N.M.), Cat. No. 59653 (Wickham 1913a: 293). Hypotype YPM 7 at Peabody Museum of Natural History Yale University (White 1995: 37 [Wheeler 1906 (p. 202) and Wickham 1909 (p. 128)]). Three specimens according Wickham (1914: 444) preserved at MCZ, No. 2,491, 2,492, 2,493 (No. 5,946, ?, ?, S. H. Scudder coll.) and probably attributable to this species also the specimen No. 2,494 (No. 11,165 S. H. Scudder coll.).
COMMENTS AND NOTES. Body length: 17.25 mm, probably abnormal distended during the fossilization, elytra 11.0, and antenna 7.50 mm. Preserved both the obverse and the reverse. First illustration in Wheeler (1906: fig. at the page 202). The assignment to genus *Podabrus* is doubt for Carpenter (1992: 331). The pictures of the holotype are visibles in Florissant Fossil Beds National Monument website at http://planning.nps.gov/flfo/photos.

Podabrus **spp.** Cong, Ashworth, Schwert & Totten, 1996
Podabrus spp. Cong et al., 1996: 220 (Table 1)
The Paleobiology Database.
TYPE HORIZON. Pleistocene: Illinoian to late Wisconsinan / Tarantian (36.300-43.500 years old). Titusville Till Formation.
TYPE LOCALITY. U.S.A.: Pennsylvania, Titusville Site (41°36'58''N - 79°38'22''W).
PRESERVATION/LITHOLOGY. Pronotum. Mire or swamp, unlithified peat.
COLLECTIONS. Quaternary Entomology Laboratory at North Dakota State University.
COMMENTS AND NOTES. 5 pronotum. One from sample 3 (Zone III: 0-60 cm) and 4 from sample 4 (Zone II: 120-140 cm).

Podabrus **sp.** Matthews & Telka, 1997
Podabrus sp. Matthews & Telka, 1997: 927 (Table 2.)
TYPE HORIZON. Late Pleistocene: Late Wisconsinan (25460 ± 200 years old).
TYPE LOCALITY. Canada: Yukon, Bell Basin, Rock River exposure.
PRESERVATION/LITHOLOGY. Fragments or complete body. Various sediments.
COLLECTIONS. Uncertain.
COMMENTS AND NOTES. Various specimens. Is also very probable that these specimens are representatives of the genus *Malthacus*.

Podabrus **sp.** Matthews & Telka, 1997
Podabrus sp. Matthews & Telka, 1997: 936 (Table 3.)
TYPE HORIZON. Pliocene (3-5 Ma).
TYPE LOCALITY. Canada: Ellesmere Island, Strathcona Fiord, Beaver Pond deposit (Beaver peat).
PRESERVATION/LITHOLOGY. Fragments or complete body. Pond.
COLLECTIONS. Uncertain.
COMMENTS AND NOTES. Various specimens.

Subfamily Chauliognathinae LeConte, 1861

Tribe Chauliognathini LeConte, 1861

Genus *Chauliognathus* Hentz, 1830

†***Chauliognathus pristinus*** Scudder, 1876
Chauliognathus pristinus Scudder, 1876: 81
Chauliogonathus Handlirsch, 1920-1921: 232 (incorrect spelling)
Goss 1878: 63 (reprint 1878: 341); Scudder 1882: 292; Scudder 1885: 796 (Fig. 1032.) [under family Lampyridae]; Scudder 1886: 76 [under family Lampyridae]; Scudder 1887: 796 (Fig. 1050.) [under family Lampyridae]; Scudder 1891: 489 [under family Lampyridae]; Scudder 1900: 101-102, Plate XI Fig. 3. [under family Lampyridae]; Handlirsch 1906-1908: 739; Grabau & Shimer 1910: 447, 708 (Appendix B.) [as fire-fly]; Wickham 1913a: 284, 292-293 [under family Lampyridae]; Lucas 1915: 134 [under family Lampyridae]; Wickham 1920: 353; Handlirsch 1920-1921: 232; Miskimen 1961: 149-152; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331; Douglas & Stockey 1996: 1154; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.
TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant, Castello's ranch.

PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale.
COLLECTIONS. United States National Museum (U.S.N.M.), Cat. No. 59652, for the specimen in Lacoe collection (Wickham 1913a: 293).
COMMENTS AND NOTES. Redescribed by Scudder (1900: 101-102). Body length: 13.0 mm (elytron 6.0 mm), antennae 6.0 mm. Specimen in Lacoe collection: body length 10.60 mm and elytra 6.0 mm (Wickham 1913a: 293). The assignment to genus *Chauliognathus* is doubt for Carpenter (1992: 331), and would have confirmed by the fact that in the original description, Scudder (1876: 81) and the same author (Scudder 1900: 101) says apparently having 12 antennomeres. Drawning in Scudder (1885: fig. 1032; 1887: fig. 1050; 1900: plate XI, fig.3 [drawning by Paul Roetter]), T. L. Mead *legit*). The picture of the holotype is visible in Florissant Fossil Beds National Monument website at http://planning.nps.gov/flfo/photos.

Tribe Ichthyurini Champion, 1915

Genus *Trypherus* LeConte, 1851

†*Trypherus aboriginalis* Wickham, 1913

Trypherus aboriginalis Wickham, 1913b: 360, 362-363, 366 (explanation of plates), Plate XXXVIII. Fig. 3. (but indicated as Plate I. Fig. 3. in the text and explanation) [under family Lampyridae]
Wickham 1914: 446 [under family Lampyridae]; Lucas 1915: 132; International Catalogue of Scientific Literature 1916a: 95; Meunier 1920b: 159; Wickham 1920: 353; Handlirsch 1920-1921: 232; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331 [as *Trypherus*]; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database [under family Lampyridae]; The Paleobiology Database.
TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.
TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant.
PRESERVATION/LITHOLOGY. Compression/ adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale, volcaniclastic.
COLLECTIONS. Holotype: Museum of Princeton University, No. 6527. And two specimens, one with counterpart, preserved at MCZ, No. 2,503-2,505 (No. 8,586, 8,499, 8,651 S. H. Scudder coll.).
COMMENTS AND NOTES. Body length: 8.75 mm. Similar to the recent *Trypherus latipennis* (Germar). The assignment to genus *Trypherus* is doubt for Carpenter (1992: 331). The picture of the holotype is visible in Florissant Fossil Beds National Monument website at http://planning.nps.gov/flfo/photos.

Subfamily Dysmorphocerinae Brancucci, 1980

Genus †*Cacomorphocerus* Schaufuss, 1892: 57-58

= *Hoffeinsensia* Kuśka & Kania, 2010: 50 [synonymized by Kazantsev, 2013: 289, 290]
Hoffeinsensis Pielińska, 2006: 9, english part: 34 (incorrect spelling)

†*Cacomorphocerus cerambyx* Schaufuss, 1892

Cacomorphocerus cerambyx Schaufuss, 1892: 58
Carus (ed.) 1892: 84; Helm 1897: 88-89; Schröder 1900: 355; Handlirsch 1906-1908: 740; Handlirsch 1920-1921: 232; Korschefsky 1939: 11-12, Tafel 1 (figs. 2abc); Weidner 1952: 69 [only Cantharidae], 71 [*Cacomorphocerus* ähnlich *cerambyx*]; Larsson 1978: 140; Spahr 1981b: 15; Winkler 1987: 58; Carpenter 1992: 306; Poinar 1992: 137; Kuśka 1994: 6; Douglas & Stockey 1996: 1154; Lin 1997: 189; Hoffeins 2008: 39, 40; Alekseev 2013: 8; Kazantsev 2013: 283, 289, 290; Kazantsev & Perkovsky 2014: 116; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Westpreußischen Provinzial-Museum Danzig (= Museum für Naturkunde und Vorgeschichte, WPM), Coll. Helm, No. 67.
COMMENTS AND NOTES. Sex undefined. Body length: 6 mm x 1,75-2 mm. Genus similar to the extant *Dysmorphocerus* Solier in Gay, characterized to antennae 12-segmented with articles 3-9 dilated and saucer-shaped. Drawnings of type not printed by Schaufuss (1892) can be found in Korschefsky (1939: table 1. Drawnings of Mühling), table also then taken up by Hoffeins (2008: 40). Korschefsky (1939: 11) cited, and the data was taken by Weidner (1952: 71), another specimen related to *Cacomorphocerus cerambyx* in Scheele (Berlin/Lichterfelde) collection at University of Hamburg from Eocene of Russian: Kaliningrad region (The Paleobiology Database) but with 16 (or 15, because the text is not clear) antennomeres. And for these reasons I believe that you can treat of a genus (surely a new species) not described yet. Moreover for Winkler (1987: 58) the genus *Cacomorphocerus* is not a true Cantharid, but probably has affinities with Phengodidae or Telegeusidae.

†*Cacomorphocerus jantaricus* (Kuśka & Kania,

2010)
Hoffeinsensia jantarica Kuśka & Kania, 2010: 50-52 (figs. 1-2 p. 51 and figs. 3-6 p. 52)
Pawłowski & Mazur 2012: 44; Alekseev 2013: 8; Kazantsev 2013: 283, 289-290; Kazantsev & Perkovsky 2014: 116; Kania 2015: 12; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber (East Baltic Amber).
COLLECTIONS. Deutsches Entomologisches Institut (DEI) in Germany, No. 1221-2 and 1226-1 (ex coll. C. and H. W. Hoffeins, Hamburg). Three specimens not in type series in private collection of Jacek Serafin (Piaseczno- Poland).
COMMENTS AND NOTES. 4 males, and 1 probably it is also a male. Pronotum subrectangular brown with two lateral protuberances in the basal half, and elytra almost black. Body length: holotype 6.5 mm, others: 7.0-9.0 mm. Various syninclusions. Transferred to *Cacomorphocerus* by Kazantsev (2013: 289-290).

†***Cacomorphocerus*** **sp.** Kazantsev & Perkovsky, 2014
Cacomorphocerus sp. Kazantsev & Perkovsky 2014: 116
TYPE HORIZON. Upper Eocene: Priabonian (38.0/37.2-33.9 Ma) or Lower Oligocene.
TYPE LOCALITY. Ukraine: Klesov, Pugach quarry.
PRESERVATION/LITHOLOGY. Inclusion in amber. Rovno Amber.
COLLECTIONS. Schmalhausen Institute of Zoology of Kiev, No. K-541.
COMMENTS AND NOTES. One male. Syninclusions: One Diptera (Chironomidae).

Subfamily Malthininae Kiesenwetter, 1852

Tribe Malchinini Brancucci, 1980

Genus *Macrocerus* Motschulsky, 1845

†***Macrocerus sucinopenninus*** (Kuśka & Kania, 2010)
Malthodes sucinopenninus Kuśka & Kania, 2010: 54-55 (figs. 14-16)
Pawłowski & Mazur 2012: 44; Alekseev 2013: 8; Kazantsev 2013: 283, 290; Kazantsev & Perkovsky 2014: 113; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Deutsches Entomologisches Institut (DEI) in Germany, No. 1221 -1 (ex coll. C. and H. W. Hoffeins, Hamburg).
COMMENTS AND NOTES. Male, brownish-black. Body length: 2.4 mm. Similar to the extant *Malthodes penninus* Baudi di Selve. Syninclusions: *exsuvium* of Orthoptera and two tufts of oak hairs. Transferred to *Macrocerus* by Kazantsev (2013: 290).

†***Macrocerus*** **sp**. (Klebs, 1910)
Malchinus Klebs, 1910: 237
Handlirsch 1920-1921: 232; Crowson et al. 1967: 527; Crowson 1972: 63-64 [only as Cantharidae]; Spahr 1981b: 15; Hieke & Pietrzeniuk 1984: 303, 321; Poinar & Fanti 2016: 1.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Probably, Eastern Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. The vast Klebs's amber collection, collected in Königsberg in Pr. Museum, has been largely destroyed or stolen during the World War II, and now preserved in several collections, especially in Göttingen University. Hieke & Pietrzeniuk (1984: 300, 303, 321) have seen 47 samples of Cantharidae stored at Halle/Saale and London.
COMMENTS AND NOTES. Three specimens.

†***Macrocerus*** **sp. (**Bachofen-Echt, 1949)
Malchinus Bachofen-Echt, 1949: 109
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

†***Macrocerus*** **sp**. (Kubisz, 2000)
Malchinus Kubisz, 2000: 226
Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland ?: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

COLLECTIONS. Museum of Natural History of the Institute of Systematics and Evolution of Animals (ISEA) in Kraków.
COMMENTS AND NOTES. One specimen.

Tribe Malthinini Kiesenwetter, 1852

Genus *Malthinus* Latreille, 1806

Subgenus *(Malthinus)* Latreille, 1806

†***Malthinus (Malthinus) danieli*** Kuśka & Kania, 2010
Malthinus danieli Kuśka & Kania, 2010: 53-54 (figs. 10-13)
Pawłowski & Mazur 2012: 44; Alekseev 2013: 8; Kazantsev 2013: 283, 290; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Deutsches Entomologisches Institut (DEI) in Germany, No. 161-1 (ex coll. C. and H. W. Hoffeins, Hamburg).
COMMENTS AND NOTES. Male, greyish-brown with pronotum yellow with black spot on posterior half, tibiae yellow-brown and femora dark. Body length: 3.2 mm, antennae 3.5 mm long. Similar to the extant *Malthinus seriepunctatus* Kiesenwetter.

†***Malthinus* sp.** Hope, 1836
Malthinus Hope, 1836: 143 (Berendt authority).
Berendt 1845: 56; Pictet 1854: 334; Giebel 1856a: 100-101 [under family Lampyridae], 400 (in the "Tabellarische"); Giebel, 1856b: 181; Oustalet 1874: 22 [citation of Pictet]; Scudder 1891: 550 [under family Lampyridae]; Handlirsch 1906-1908: 740 [as *Malthinus* - Berendt]; Larsson 1978: 139; Spahr 1981b: 4, 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber. (Prussian Amber).
COLLECTIONS. Berlin Museum (coll. Berendt).
COMMENTS AND NOTES. One specimen.

†***Malthinus* sp.** Giebel, 1852
Malthinus Giebel, 1852: 655
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. One specimen.

†***Malthinus* sp.** Motschulsky, 1857
Malthinus Motschulsky, 1857: 28
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. ?
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Coll. Menge.
COMMENTS AND NOTES. One or more specimens.

†***Malthinus* sp.** Scudder, 1885
Malthinus Scudder, 1885: 796 [under family Lampyridae]
Scudder 1886: 76 [under family Lampyridae]; Scudder 1887: 796 [under family Lampyridae]; Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. One specimen, and probably the same as some previous author (probably Berendt, 1845).

†***Malthinus* sp.** Helm, 1896
Malthinus Helm, 1896: 228
Handlirsch 1906-1908: 741; Handlirsch 1920-1921: 232; Larsson 1978: 139; Spahr 1981b: 15; Kazantsev 2013: 283.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

†***Malthinus* sp.** Klebs, 1910
Malthinus Klebs, 1910: 237
Handlirsch 1920-1921: 232; Crowson et al. 1967: 527; Crowson 1972: 63-64 [only as Cantharidae]; Larsson 1978: 140; Spahr 1981b: 15, 16; Hieke & Pietrzeniuk 1984: 303, 321; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Probably, Eastern Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

COLLECTIONS. The vast Klebs's amber collection, collected in Königsberg in Pr. Museum, has been largely destroyed or stolen during the World War II, and now preserved in several collections, especially in Göttingen University. Hieke & Pietrzeniuk (1984: 300, 303, 321) have seen 47 samples of Cantharidae stored at Halle/Saale and London.
COMMENTS AND NOTES. Four specimens, and one near to *Malthinus*.

†***Malthinus* sp.** Bachofen-Echt, 1949
Malthinus Bachofen-Echt, 1949: 109
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

†***Malthinus* sp.** Hieke & Pietrzeniuk, 1984
Malthinus Hieke & Pietrzeniuk, 1984: 303
Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. ?
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Musuems für Naturkunde, Berlin.
COMMENTS AND NOTES. Hieke & Pietrzeniuk (1984: 303, 321) quote the genera: *Cantharis*, *Rhagonycha*, *Malthinus* and *Malthodes*, studying about 110 specimens of various Museums and collections: Berlin: Künow collection - 25 specimens, Berendt collection - 10 specimens, Kühl collection - 7 specimens, Simon collection - 3 specimens, Isenheim collection - 3 specimens, "Bitterfelder Bernstein" - 1 specimen, Mineralogischen Museum - 1 specimen; Klebs collection - 47 specimens; Copenhagen collection - ? few.

Tribe Malthodini Böving & Craighead, 1931

Genus *Archaeomalthodes* Hsiao, Ślipiński & Pang, 2016: 121

†***Archaeomalthodes rosetta*** Hsiao, Ślipiński & Pang, 2016
Hsiao et al., 2016: 121-122 (figs. 2-4), 123
Fanti & Ellenberger 2016: 166, 169; The Paleobiology Database.
TYPE HORIZON. Early Cretaceous: Upper Albian (97-110 Ma).
TYPE LOCALITY. Myanmar: Kachin State, Hukawng Valley, approximately 100 km southwest of the Village of Tanai.
PRESERVATION/LITHOLOGY. Inclusion in amber. Burmese Amber.
COLLECTIONS. Key Laboratory of Insect Evolution & Environmental Changes, Capital Normal University, Beijing (China), CNU-COL-MA20160200.
COMMENTS AND NOTES. Male. Brown, with black eyes, and covered with fine yellowish pubescence. Body length: 2.50 mm (form the anterior margin of the clypeus to the apices of elytra). Elytra somewhat abbreviated with caudal abdominal segments exposed (Hsiao et al. 2016: 121).

Genus *Malthodes* Kiesenwetter, 1852

Subgenus *(Malthodes)* Kiesenwetter, 1852

†***Malthodes (Malthodes) ceranowiczae*** Kuśka & Kupryjanowicz, 2005
Malthodes ceranowiczae Kuśka & Kupryjanowicz, 2005: 310-311 (figs. 1-4), 314 (figs. 9-10)
Malthodes ceranoviczae Kazantsev, 2013: 290 (incorrect spelling)
Malthodes ceranoviczae Kazantsev & Perkovsky, 2014: 114 (incorrect spelling)
Kuśka & Kania 2010: 55; Alekseev 2013: 8; Kazantsev 2013: 283, 290; Kazantsev & Perkovsky 2014: 113, 114; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Museum of the Earth PAS in Warsaw (Museum Ziemi collection), No. 24198.
COMMENTS AND NOTES. Two males in one piece of amber. Brown with head and pronotum slightly darker (brown-black). Body length: 2.7 mm, elytra 1.28 mm, width of elytra 0.48 mm, width of pronotum at the base 0.4 mm, antennae 2.0 mm. Related to the extant species group *M. maurus* and particularly to *M. caudatus* Weise. Similar specimen of *M. ceranowiczae* is present in private collection to Andrzej Górski at Bielsko-Biala (Kuśka & Kupryjanowicz 2005: 311).

†***Malthodes (Malthodes) kotejai*** Kuśka & Kupryjanowicz, 2005

Malthodes kotejai Kuśka & Kupryjanowicz, 2005: 311-312 (figs. 5-7), 315 (fig. 11)
Alekseev 2013: 8; Kazantsev 2013: 283, 290; Kazantsev & Perkovsky 2014: 113, 114; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Museum of the Earth PAS in Warsaw (Museum Ziemi collection), No. 24199. (coll. J. Kupryjanowicz).
COMMENTS AND NOTES. Male, brown with pronotum almost yellow and head dark brown. Body length: 3.4 mm, elytra 1.37 mm, width of elytra 0.65 mm, antennae 3.25 mm. Terminalia very simple.

†***Malthodes (Malthodes) obtusus*** Förster, 1891
Malthodes obtusus Förster, 1891: 373-374, Tafel XI: Fig. 18
Scudder 1891: 550 [only as *Malthodes* Foerster in litt. (under family Lampyridae)]; Handlirsch 1906-1908: 741; Handlirsch 1920-1921: 232; Théobald 1937: Tableau X, 273; Carpenter 1992: 331; Kazantsev 2010: 105; Kazantsev & Perkovsky 2014: 113, 115; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Early/Lower Oligocene (33.9-28.4 Ma) sometimes considered Eocene: Priabonian.
TYPE LOCALITY. France: Alsace, Brunstatt (horizon d3).
PRESERVATION/LITHOLOGY. Mold impression/compression (adpression). Lacustrine lithified marl.
COLLECTIONS. Not indicated, and probably lost or destroyed during World War II.
COMMENTS AND NOTES. Sex undefined. Light brown. Body length: around 3.6 mm (because elytra 2.1 mm, head 0.6 mm, and prothorax 0.6/0.9 mm). Terminalia not visibles. The assignment to genus *Malthodes* is doubt for Carpenter (1992: 331).

†***Malthodes (Malthodes) perkovskyi*** Kazantsev, 2010
Malthodes perkovskyi Kazantsev, 2010: 105-107 (figs. 1-3 pp. 106-107)
Kazantsev 2013: 283, 290; Kazantsev & Perkovsky 2014: 113, 114, 115; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Upper Eocene: Priabonian (38.0/37.2-33.9 Ma) or Lower Oligocene.
TYPE LOCALITY. Ukraine: Klesov.
PRESERVATION/LITHOLOGY. Inclusion in amber. Rovno Amber.
COLLECTIONS. Schmalhausen Institute of Zoology of Kiev, No. K-4579.
COMMENTS AND NOTES. Male, dark brown to black, pronotum lighter with black W-sign, elytra with apically yellow spots. Body length: 3.4 mm, width 0.6 mm. Related to the extant Japanese and Southern Kurils: *Malthodes kurosawai* Wittmer and *Malthodes kerzhneri* Wittmer.

†***Malthodes (Malthodes) rovnoensis*** Kazantsev & Perkovsky, 2014
Malthodes rovnoensis Kazantsev & Perkovsky, 2014: 113-114 (figs. 1-2), figs. 3-6 (p. 115)
Perkovsky 2015: 410; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; The Paleobiology Database.
TYPE HORIZON. Upper Eocene: Priabonian (38.0/37.2-33.9 Ma) or Lower Oligocene.
TYPE LOCALITY. Ukraine: Klesov, Pugach quarry.
PRESERVATION/LITHOLOGY. Inclusion in amber. Rovno Amber.
COLLECTIONS. Schmalhausen Institute of Zoology of Kiev, No. K-25818.
COMMENTS AND NOTES. Male, brownish with head black. Body length: ca. 2.5 mm and width ca. 0.6 mm. Similar to the extant *M. minimus* Linnaeus, and fossil *M. perkovskyi* Kazantsev.

†***Malthodes (Malthodes) serafini*** Kuśka & Kupryjanowicz, 2005
Malthodes serafini Kuśka & Kupryjanowicz, 2005: 312-313 (fig. 8), 315 (fig. 12)
Alekseev 2013: 8; Kazantsev 2013: 283, 290; Kazantsev & Perkovsky 2014: 113, 115; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Natural History Museum, ISEA of Krakow, No. MP/1/1513/188/01.
COMMENTS AND NOTES. Male, black. Body length: 1.9 mm, elytra 1.25 and width 0.56 mm, width of antennae 2.0 mm. Similar to the extant *M. hexacanthus* Kiesenwetter. Syninclusions: 4 specimens of Chironomidae and 1 of Acarina.

†***Malthodes (Malthodes) sucini*** Kuśka & Kania, 2010
Malthodes sucini Kuśka & Kania, 2010: 55-56 (figs. 17-18)
Pawłowski & Mazur 2012: 44; Alekseev 2013: 8; Kazantsev 2013: 283, 290; Kazantsev & Perkovsky 2014: 113, 115; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; Mitchell 2013 - EDNA

The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Deutsches Entomologisches Institut (DEI) in Germany, No. 161-2 (ex coll. C. and H. W. Hoffeins, Hamburg).
COMMENTS AND NOTES. Male. Body length: 2.8 mm, elytra 1.4 mm long. Similar to the fossil *Malthodes ceranowiczae* Kuśka & Kupryjanowicz that differs for the last sternite shape.

†*Malthodes* sp. Klebs, 1910
Malthodes Klebs, 1910: 237
Handlirsch 1920-1921: 232; Crowson et al. 1967: 527; Crowson 1972: 63-64 [only as Cantharidae]; Larsson 1978: 140; Spahr 1981b: 16; Hieke & Pietrzeniuk 1984: 303, 321; Kazantsev 2010: 105; Kazantsev 2013: 283; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Probably, Eastern Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. The vast Klebs's amber collection, collected in Königsberg in Pr. Museum, has been largely destroyed or stolen during the World War II, and now preserved in several collections, especially in Göttingen University. Hieke & Pietrzeniuk (1984: 300, 303, 321) have seen 47 samples of Cantharidae stored at Halle/Saale and London.
COMMENTS AND NOTES. Five specimens.

†*Malthodes* sp. Bachofen-Echt, 1949
Malhodes (sic.!) Bachofen-Echt, 1949: 109
Spahr 1981b: 16.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

†*Malthodes* sp. Hieke & Pietrzeniuk, 1984
Malthodes Hieke & Pietrzeniuk, 1984: 303
Kazantsev 2010: 105; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. ?
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Musuems für Naturkunde, Berlin.
COMMENTS AND NOTES. Hieke & Pietrzeniuk (1984: 303, 321) quote the genera: *Cantharis*, *Rhagonycha*, *Malthinus* and *Malthodes*, studying about 110 specimens of various Museums and collections: Berlin: Künow collection - 25 specimens, Berendt collection - 10 specimens, Kühl collection - 7 specimens, Simon collection - 3 specimens, Isenheim collection - 3 specimens, "Bitterfelder Bernstein" - 1 specimen, Mineralogischen Museum - 1 specimen; Klebs collection - 47 specimens; Copenhagen collection - ? few.

†*Malthodes* sp. Heynderycx, 2004
Malthodes sp. Heynderycx, 2004: 3
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. ?
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Thadeus Giecewicza collection (Warsaw - Poland).
COMMENTS AND NOTES. One specimen.

†*Malthodes* sp. Penney & Jepson, 2014
Malthodes sp. Penney & Jepson, 2014: Fig. 215 (p. 173)
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Not indicated
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. RCDP: Research collection David Penney, UK.
COMMENTS AND NOTES. One specimen with wing extended.

Tribe †Mimoplatycini Kazantsev, 2013: 288, 290

Genus †*Mimoplatycis* Kazantsev, 2013: 288, 290

†*Mimoplatycis notha* Kazantsev, 2013
Mimoplatycis notha Kazantsev, 2013: 288 (figs. 10-11)-289 (figs. 12-14), 290
Kazantsev & Perkovsky 2014: 116 (figs. 7-9); Hsiao et al. 2016: 119, 120, 122; Poinar & Fanti 2016: 1, 2; The Paleobiology Database.

TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma). Rovno amber: Upper Eocene: Priabonian (38.0/37.2-33.9 Ma) or Lower Oligocene.
TYPE LOCALITY. Denmark: Baltic Sea coast. Paratype of Russian Federation: Kaliningrad region. Known also for Ukraine: Klesov, Pugach quarry (Kazantsev & Perkovsky 2014: 113, 116).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber - Scandinavian Amber (Paratype: East Baltic Amber). Known also for Rovno Amber.
COLLECTIONS. Zoological Museum of Copenhagen University, No. 1-12/1966. Paratype in private collection of V. I. Alekseev (Kaliningrad - Russia), No. AWI-038. Specimens from Rovno amber (2 males) collected at the Schmalhausen Institute of Zoology of Kiev with numbers: K-6089 and UA-2286.
COMMENTS AND NOTES. Two males. Holotype: dark brown with pronotal sides and elytra yellow-brown, and only apex of elytra darkened. Paratype: more darkened, with elytra dark-brown. Body length: 2.9-3.6 mm, width 0.7-0.9 mm. Characterized for six male ventrites and carinate pronotum. Other two males in Rovno amber.

Subfamily Silinae Mulsant, 1862

Tribe Silini Mulsant, 1862

Genus *Autosilis* Kazantsev, 2011

cfr. *Autosilis nitidula* (Fabricius, 1792)
Spilis (sic.!) *spinicolis* (sic!) Serres, 1843: 35
Pictet 1854: 335 [as *Silis spinicollis*].
TYPE HORIZON. Tertiary strata (Eocene). (Eocene-Oligocene?).
TYPE LOCALITY. France: Aix-en-Provence.
PRESERVATION/LITHOLOGY. Argillaceous limestone and marl.
COLLECTIONS. ?
COMMENTS AND NOTES. Probably one fragment. Specimen of this species or one very similar.

Genus †*Curche* Alekseev & Kazantsev, 2014: 167-168

†*Curche pauli* Alekseev & Kazantsev, 2014
Curche pauli Alekseev & Kazantsev, 2014: 167-170 (figs. 1-5 p. 169)
Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Kaliningrad region, Baltic Sea coast, Yantarny settlement (formerly Palmnicken).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Paleontological Institute, Russian Academy of Science (Moscow), No. AWI-100, ex coll. Alekseev (Kaliningrad - Russia).
COMMENTS AND NOTES. Male, black with pronotum, legs and head appendages reddish-brown (in lifetime probably red or orange). Body length: 7.2 mm, width 2.5 mm. Syninclusions: a spider 3.7 mm in length.

Genus †*Electrosilis* Kazantsev, 2013: 285, 290

†*Electrosilis minuta* Kazantsev, 2013
Electrosilis minuta Kazantsev, 2013: 285-286 (figs. 4-6), 290
Alekseev & Kazantsev 2014: 167, 168; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; The Paleobiology Database.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Russian Federation: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Senckenberg Deutsches Entomologisches Institut (Müncheberg - Germany), No. 1441-2.
COMMENTS AND NOTES. Male, light brown. Body length: 2.1 mm, width 0.7 mm. The genus *Electrosilis* is similar to *Silis* Charpentier, and distinguishable by the narrowly explanate pronotal sides.

Genus *Polemius* LeConte, 1851

†*Polemius crassicornis* Wickham, 1914
Polemius crassicornis Wickham, 1914: 445-446, Plate 4. Fig. 4. (and explanation) [under family Lampyridae]
International Catalogue of Scientific Literature 1916b: 147; International Catalogue of Scientific Literature 1919: 108; Meunier 1920a: 156; Wickham 1920: 353; Handlirsch 1920-1921: 232; Wilson 1978: 21 (Table 1.); Carpenter 1992: 331 [as *Polemius*]; Kirejtshuk & Ponomarenko 2009-2015 [as ?*Polemius* ???????]; Mitchell 2013 - EDNA The Fossil Insect Database [under family Lampyridae]; The Paleobiology Database [under family Lampyridae].
TYPE HORIZON. Eocene: Chadronian (37.2-33.9 Ma), Florissant Formation.
TYPE LOCALITY. U.S.A.: Colorado, Teller County, Florissant.
PRESERVATION/LITHOLOGY. Compression/

adpression. Lacustrine - large shale, diatomaceous and tuffaceous shale, volcaniclastic.
COLLECTIONS. Museum of Comparative Zoology - Harvard University (MCZ), No. 2,502 (No. 930 S. H. Scudder coll.).
COMMENTS AND NOTES. Head nearly concealed. Body length: 8.40 mm. Described from one specimen. The assignment to genus *Polemius* is doubt for Carpenter (1992: 331).

Genus *Silis* Charpentier, 1825

†*Silis chiapasensis* Wittmer, 1963
Silis chiapasensis Wittmer, 1963: 53 (fig. 136), Plate 3: lower right (p. 59)
Hurd et al. 1962: 110 [only as Cantharidae, but probably this species]; Spahr 1981b: 15 [Hurd], 16; Perrilliat 1989: 394 (Figura 153. f), 396; Poinar 1992: 137 (Figure 76); Kuśka 1994: 6; Douglas & Stockey 1996: 1154; Engel 2004: 184; Cifuentes-Ruiz et al. 2007: 678; Solórzano Kraemer 2007: 120; Solórzano Kraemer 2010: 56; Kazantsev 2013: 283, 290; Alekseev & Kazantsev 2014: 167; Hsiao et al. 2016: 120; Poinar & Fanti 2016: 1; [authorless]: 39; Kirejtshuk & Ponomarenko 2009-2015; Mitchell 2013 - EDNA The Fossil Insect Database; The Paleobiology Database.
TYPE HORIZON. Early/Lower Miocene (23.0-16.0 Ma) or Middle Miocene (Solórzano Kraemer 2007) sometimes considered also Late Oligocene.
TYPE LOCALITY. Mexico, Chiapas, Simojovel de Allende area (locality B-1402).
PRESERVATION/LITHOLOGY. Inclusion in amber. Mexican (Chiapas) Amber.
COLLECTIONS. University of California Museum of Paleontology (UCMP), No. 12615.
COMMENTS AND NOTES. Male, yellow-brown, elytra dark. Body length: 3.5 mm to apex of elytra but 4.5 mm with protruding abdominal segments included. Pronotum with deeply incision in front of the anterior angles and this with pilose process. Photo of the Holotype is present also in Perrilliat (1989: 394 fig. 153f) and Poinar (1992: 137).

†*Silis* sp. Klebs, 1910
Silis Klebs, 1910: 237
Handlirsch 1920-1921: 232; Crowson et al. 1967: 527; Crowson 1972: 63-64 [only as Cantharidae]; Larsson 1978: 140; Spahr 1981b. 16; Hieke & Pietrzeniuk 1984: 303, 321; Kazantsev 2013: 283; Alekseev & Kazantsev 2014: 167; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Probably, Eastern Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. The vast Klebs's amber collection, collected in Königsberg in Pr. Museum, has been largely destroyed or stolen during the World War II, and now preserved in several collections, especially in Göttingen University. Hieke & Pietrzeniuk (1984: 300, 303, 321) have seen 47 samples of Cantharidae stored at Halle/Saale and London.
COMMENTS AND NOTES. Two specimens.

†*Silis* sp. Bachofen-Echt, 1949
Silis Bachofen-Echt, 1949: 109
Spahr 1981b: 16.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

Tribe Tytthonyxini Arnett, 1962

Genus *Tytthonyx* LeConte, 1851

Subgenus *(Tytthonyx)* LeConte, 1851

†*Tytthonyx (Tytthonyx) geiseri* Poinar & Fanti, 2016
Tytthonyx geiseri Poinar & Fanti, 2016: 5 (figs. 7-8), 6
Hsiao et al. 2016: 120; The Paleobiology Database.
TYPE HORIZON. Uncertain. Upper Eocene to Lower Miocene (45-30 Ma to 20-15 Ma).
TYPE LOCALITY. Dominican Republic: Cordillera Septentrional, mine between Puerto Plata and Santiago.
PRESERVATION/LITHOLOGY. Inclusion in amber. Dominican Amber.
COLLECTIONS. George Poinar amber collection at Oregon State University, Corvallis (USA), No. C-7-70.
COMMENTS AND NOTES. Male. Body length: 2.4 mm but with terminal abdominal segments folded up (estimated body length: 2.8-3.2 mm). First fossil *Tytthonyx* described and characterized by the small size. Syninclusions: One Diptera.

Specimen undescribeds (family and subfamilies level)

Cantharidae Bachofen-Echt, 1949
Cantharidae Bachofen-Echt, 1949: Abb. 85. (p. 100), p. 102, 108 [also as *Cantharinae*]-109
Crowson 1972: 63-64; Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4

Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. One specimen.

Cantharidae Larsson, 1965
Cantharidae Larsson, 1965: 141
Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Zoological Museum, Copenhagen.
COMMENTS AND NOTES. Two specimens.

Cantharidae Gersdorf, 1971
indeterminiert, vielleicht *Cantharidae* Gersdorf, 1971: Tafel 62: Fig. 4. (pp. 668-669)
The Paleobiology Database.
TYPE HORIZON. Pliocene: Piacenzian (3.6-2.6 Ma).
TYPE LOCALITY. Germany, Niedersachsen, 3411 Willershausen clay pit (Kreis Osterode am Harz).
PRESERVATION/LITHOLOGY. Mold impression/ adpression. Pond/little lake, lithified marl and sediments.
COLLECTIONS. GZG collection?. Probably in local Museum.
COMMENTS AND NOTES. Body length: 8 mm. Fairly well preserved. Picture of Riek of Hannover (Gersdorf 1971: T. 62 at pag. 668).

Cantharidae Jell & Duncan, 1986
Cantharid indet. Jell & Duncan, 1986: 114 (Table 1.), 156-157, Fig. 39. A (p. 158), Fig. 40. A (p. 159)
Jell 2004: 72 (and figure and drawning); Nicholson 2012: 271; The Paleobiology Database.
TYPE HORIZON. Lower Cretaceous: Late/Upper Aptian (122.5-112.0 Ma). Strzelecki Group.
TYPE LOCALITY. Australia: Victoria, South Gippsland, Koonwarra Fossil Bed (Site NMVPL425).
PRESERVATION/LITHOLOGY. Adpression. Pond, lithified claystone and lithified siltstone.
COLLECTIONS. Palaeontological Collection, Museum of Victoria, Melbourne (NMVP), No. NMVP103331.
COMMENTS AND NOTES. One adult specimen. Body length: 7 mm. Head narrow with clypeal region produced forward, pronotum much wider than head with lateral margin concave anteriorly, elytra soft not covering apical segments of abdomen, femur expanded and long thin tibia. May be compared with the primitive living *Telephorus* = *Cantharis* and *Heteromastix* (Jell & Duncan 1986: 157). Refigured and re-drawning in Jell (2004: 72).

Cantharidae Henwood, 1992
Cantharidae Henwood, 1992: 904-908, Plate 1: figs. 1-2, 4-8 (p. 907)
TYPE HORIZON. Uncertain. Upper Eocene to Lower Miocene (45-30 Ma to 20-15 Ma).
TYPE LOCALITY. Dominican Republic, probably Palo Alto in the Cordillera Septentrional.
PRESERVATION/LITHOLOGY. Inclusion in amber. Dominican Amber.
COLLECTIONS. Deposited at Sedgwich Museum, Cambridge, No. SM X.23256 and SM X.23257.
COMMENTS AND NOTES. Body length: about 5 mm. Specimen serially sectioned for the soft-part vision.

Cantharidae? Adamonis, 1994
Cantharidae? Adamonis, 1994: 48
Petrulevicius 1999: 96.
TYPE HORIZON. Eocene: Late Paleocene - Middle Eocene, sometimes considered Oligocene. Formación Ventana.
TYPE LOCALITY. Argentina: Neuquén province (border with Rio Negro province), Confluencia Department, confluence of the River Limay with River Traful.

Cantharidae Douglas & Stockey, 1996
Cantharidae Douglas & Stockey, 1996: 1142, Fig. 7. (p. 1144), 1145 (caption of Fig. 7.), 1153, 1154, 1155 (as Cantheridae sic!), 1156
TYPE HORIZON. Middle Eocene (48-50 Ma).
TYPE LOCALITY. Canada: British Columbia, 8 Km north of Princeton, One Mile Creek.
PRESERVATION/LITHOLOGY. Compression/ impression. Freshwater lake, silt, clays and finely graded volcanics.
COLLECTIONS. Paleontology collections of the University of Alberta, Edmonton (UAPAL), No. 4513.
COMMENTS AND NOTES. Well preserved but no totally the head and appendages. Body length: 11.7 mm, width 3.5 mm, antenna filiform 3.3 mm (not complete). Femora light brown and oval, tibiae and tarsi slender. Elytra have squared posterior margins, parallel-sides and is melanic. Pronotum light-brown, square, narrower than the elytra. Head broad and prominent, slightly narrower than the pronotum with probably forward-protruding clypeus (Douglas & Stockey 1996: 1142).

Cantharidae Elias, Short & Waythomas, 1996
Cantharidae Genus et sp. indet. Elias, Short & Waythomas, 1996: 298
TYPE HORIZON. Pleistocene/Holocene: mid-Wisconsin - Boutellier interval (60.000-40.000 years old) with other sediments of 8.075-6.540 years old or more recents. Probably this specimen is more recent (Holocenic).
TYPE LOCALITY. U.S.A.: Alaska, Denali National Park and Preserve, Foraker River, Foraker Slump (Sample D).
PRESERVATION/LITHOLOGY. Silt - organic silt and peat.
COMMENTS AND NOTES. One specimen.

Thanks to the courteous information of Vinicius S. Ferreira two photos of two different specimens of Cantharidae from Dominican amber are also present in: Wu R.J.C., 1997. Secrets of a Lost World: Dominican Amber and its Inclusions. Privately published, Santo Domingo, Dominican Republic.

Cantharidae Weitschat & Wichard, 1998
Cantharidae Weitschat & Wichard, 1998: 162, 164 (caption of the Tafel 62), 165 (Tafel 62 fig. f), 166
Weitschat & Wichard 2002: 160, 162 (caption of the Plate 62), 163 (Plate 62 fig. f), 164; Klausnitzer 2003: 54; Binder 2008: 47.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. One specimen.

Cantharidae Janzen, 2002
Cantharidae Janzen, 2002: 111 (Fig. 227), 56
Klausnitzer 2003: 55.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Coll. Glink.
COMMENTS AND NOTES. Body length: 3.5 mm.

Cantharidae Wichard & Weitschat, 2004
Cantharidae Wichard & Weitschat, 2004: 79 [figure and drawning]
Arillo 2007: 160; Weitschat 2009: Fig. 21 (p. 248); Wichard & Greven 2009: Abb. 5ab (p. 286).
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. Cantharidae in mating.

Cantharidae Poinar, Marshall & Buckley, 2007 see under ***Ornatomalthinus elvirae***
Cantharidae Poinar e al., 2007: 1663-1668
Binder 2008: 47 (Abb. 1); Boucot & Poinar 2010: 196 (Figure 269); Penney & Jepson 2014: 170; Hsiao et al. 2016: 122; Poinar & Fanti 2016: 1.

Cantharidae Wilson, 2008-2009
Cantharidae Wilson, 2008-2009: 29 (Appendix 2), 44 (Appendix 5) [as Cantharidae? Archibald (personal communication, June 2007)]
Bruce Archibald et al. 2010: Online Supplementary Material p. 15 (Online Table 4: Specimen / species compositions of samples) [as *cf.* Cantharidae].
TYPE HORIZON. Early Eocene (52.90 ± 0.83 Ma). Kamloops Group.
TYPE LOCALITY. Canada: British Columbia, 15 Km east of Cache Creak, McAbee Fossil Beds.
COLLECTIONS. Unknown. Number 2400 (Bruce Archibald et al. 2010: Online Suppl. Mat. p. 15).
PRESERVATION/LITHOLOGY. Fragment?. Lacustrine shale.
COMMENTS AND NOTES. Probably only one specimen.

Cantharidae Wichard, 2009
Cantharidae Wichard, 2009: Abb. 2a-c (p. 260), 261
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. Specimen with syninclusions: Diptera Psychodidae (*Trichomyia*) and Nevrorthidae (*Rophalis relicta*).

Cantharidae Wichard & Greven, 2009
Cantharidae Wichard & Greven, 2009: Abb. 5abcd [figures 5ab are the same of Wichard & Weitschat 2004: 79], 286
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. Three specimens (three species) wich one with two exemplars in mating (the same of Wichard & Weitschat 2004: 79).

Cantharidae Wedmann, Poschmann & Hörnschemeyer, 2010
Cantharidae Wedmann et al., 2010: 51 (and Fig. 2e)

TYPE HORIZON. Late Oligocene (about 25 Ma: 24.79-24.56 or 28 Ma).
TYPE LOCALITY. Germany: Enspel Fossil-Lagerstätte.
PRESERVATION/LITHOLOGY. Compression/impression. Crater lake, thick pyroclastics and intercalated sediments (black pelites).
COLLECTIONS. Coll. No. PE2007/5006-LS. Now in Generaldirektion Kulturelles Erbe RLP, Referat Erdgeschichte, Mainz (Germany) and will be deposited in the Naturhistorisches Museum Mainz/Landessammlung für Naturkunde Rheinland-Pfalz (NHMM).
COMMENTS AND NOTES. One specimen with red pronotum and black elytra. Body length: about 17 mm?.

Cantharidae Kirejtshuk & Azar, 2013
Cantharidae Kirejtshuk & Azar, 2013a: 60; Kirejtshuk & Azar, 2013b: 103, 106, 110, 114
Hsiao et al. 2016: 120, 122; Peris et al. 2016a: 699, 700; Poinar & Fanti 2016: 1; Kirejtshuk & Ponomarenko 2009-2015.
TYPE HORIZON. Lower Cretaceous: Barremian - lowermost Aptian (about 125-135 Ma) but could be earlier.
TYPE LOCALITY. Central Lebanon: Hammana - Mdeirij outcrop.
PRESERVATION/LITHOLOGY. Inclusion in amber. Lebanese Amber.
COLLECTIONS. Temporarily deposited in the Muséum National d'Histoire Naturelle, Paris (MNHN), No. "1465", and No. "1012AB"
COMMENTS AND NOTES. One specimen with posterior body portions broken or missing (No. 1465) and one specimen (family *incertae sedis*) of a very small cantharoid larva (No. 1012AB).

Cantharidae Peris, Sánchez-García, Soriano & Delclòs, 2013
Cantharidae Peris et al., 2013: 74
Peris et al. 2016a: 699, Appendix 1; Rasnitsyn et al. 2016: Appendix A, Appendix B p. 7; Peris et al. 2016b: Poster (FIGURE 3. D, Table 1.).
TYPE HORIZON. Lower Cretaceous: Early-Middle Albian (about 110 Ma) or Upper Aptian - Lower Albian.
TYPE LOCALITY. Spain, Cantabria province, El Soplao.
PRESERVATION/LITHOLOGY. Inclusion in amber. Spanish Amber.
COLLECTIONS. El Soplao Cave Laboratory (Celis, Spain) Institutional amber collection No. CES-522.
COMMENTS AND NOTES. One specimen. Illustrated in Peris et al. (2016b: poster: figure 3. D).

Cantharidae Katona, Kutasi, Papp & Tóth, 2014
Cantharidae Katona et al., 2014: 130, 138
TYPE HORIZON. Pliocene (4 Ma).
TYPE LOCALITY. Hungary, Veszprém County, near Pula (Pula alginite mine).
PRESERVATION/LITHOLOGY. Exoskeleton. Volcanic crater with alginite.
COLLECTIONS. Bakony Museum of the Hungarian Natural History Museum.
COMMENTS AND NOTES. The authors (Katona et al. 2014: 130, 138) say that is possible to find representantives of the family Cantharidae.

Cantharinae Bachofen-Echt, 1949
Cantharinae Bachofen-Echt, 1949: 108-109
COMMENTS AND NOTES. See under **Cantharidae** Bachofen-Echt, 1949.

Cantharinae Crowson, 1972
Cantharinae Crowson, 1972: 64
Spahr 1981b: 4; Ramsdale 2002: 205 [only as Cantharidae in Baltic amber].
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. Various specimens quite close to many recent genera.

Cantharinae Kubisz, 2001
Cantharinae Kubisz, 2001: 260
Ponar & Fanti: 1.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland ?: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Museum of Amber Inclusions at the Department of Invertebrate Zoology, University of Gdańsk.
COMMENTS AND NOTES. One specimen.

Malthininae Kubisz, 2001
Malthininae Kubisz, 2001: 260
Ponar & Fanti: 1.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Poland ?: Baltic Sea coast.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.

COLLECTIONS. Museum of Amber Inclusions at the Department of Invertebrate Zoology, University of Gdańsk.
COMMENTS AND NOTES. Two specimens.

Other data

***-Malthinus* sp. and *Malthodes* sp.:** quite common in Baltic amber (Larssson 1978: 139).
***-Telephorus?*:** three species from Oeningen, in whole or in part referable to *Telephorus* in Mr. Lacoe's collection (Scudder 1895: 120; Handlirsch 1906-1908: 740 [as *Cantharis* sp.]; Kirejtshuk & Ponomarenko 2009-2015 [Scudder 1895]).
***-Indeterminated genera*:** four genera in Baltic amber (Klebs 1910: 237; Spahr 1981b: 15), but they could be Cantharidae, Melyridae or other families.
***-Téléphores*:** various fossil species (Pictet 1854: 334).
-Telephoridae: Lias (Goss 1879: 17, 22, 36, reprint 1881: 130, 135, 149).
***-Telephoridae*:** Lias (Goss 1880: 26, reprint 1881: 294).
***-Telephoridae*:** 20 specimens in amber (Helm 1886: 271 [coll. Helm]; Spahr 1981b: 15).
***-Telephoriden/"Telephoridae"*:** various specimens (Helm 1896: 228; Handlirsch 1906-1908: 741; Spahr 1981b: 15).
***-Telephoridae*:** various specimens of Paleogene (62), Neogene (22) and Quaternary (3) (Handlirsch, 1920-1921: 288 (VII. Tabellarische / Tabelle I.); Kelner-Pillault 1970: 11 [Handlirsch]; Spahr 1981b: 15 [Kelner-Pillault]).
***-Cantharides*:** cretaceous land (Oustalet 1874: 8).
***-Cantharidae/Telephoridae*:** in Baltic amber (Klebs 1889: 53; Spahr 1981b: 15).
***-Canthariden/Cantharidae*:** Tertiary: Oligocene and Miocene (Handlirsch 1906-1908: 1175, 1183 in Tabelle VII., 1277, 1288, 1291).
***-Cantharidae/Cantharididae*:** in Baltic amber (Ander 1942: 25, 35, 36; Spahr 1981b: 15).
***-Cantharids*:** few cantharids are known from the Danish collection (Larsson 1978: 140; Spahr 1981b: 4, 15).
***-Cantharidae*:** cited by Brodie and Giebel (Goss 1879: 10, 27, reprint 1881: 123, 140).
***-Cantharidae*:** in the Purbeck (Goss 1880: 26, reprint 1881: 294).
***-Cantharidae*:** Scudder (1886: 69) cited this family in Meloidae but is considered (for me by mistake) as true Cantharidae by Spahr (1981b: 15).
***-Cantharidae*:** Baltic amber (Katinas 1971: 33; Spahr 1981b: 15).
***-Cantharidae*:** Baltic amber (Crowson 1972: 64; Spahr 1981b: 15).
***-Cantharidae*:** one larva (Larsson 1978: 140; Spahr 1981b: 4) but is doubt if is a Cantharidae, a Lampyridae or other families.
***-Cantharidae*:** Baltic amber (Willemstein 1987).
***-Cantharidae*:** Eocene/Oligocene (Ponomarenko 1995: 168; Ramsdale 2002: 205 [Ponomarenko 1995]).
***-Cantharidae*:** in Eocene Baltic amber (Grimaldi & Engel 2005: 386).
***-Cantharidae*:** several species from Florissant (Nudds & Selden 2008: 222-223).
***-Cantharidae*:** Bitterfeld amber (Dunlop 2010: 69).
***-Cantharidae*:** Baltic amber (Weitschat & Wichard 2010: 113).
***-Cantharidae*:** Rovno amber (Perkovsky et al. 2010: 136).
***-Cantharidae*:** Baltic amber (Alekseev & Bukejs 2013: 14).
***-Cantharidae*:** not present in Oise amber but numerous in Baltic amber (Kirejtshuk & Nel 2013: 178).
***-Cantharidae*:** Caenozoic (Rasnitsyn et al. 2016: Appendix A, Appendix B p. 7).
***-Cantharididae*:** 51 specimens in Baltic amber (Brues 1933: 395 Table I, 396 (Klebs collection); Spahr 1981b: 15.
***-Cantharididae*:** six genera from the Tertiary fauna (Rohdendorf & Ponomarenko 1962: 258. English translation of 1991: 366).
***-Cantharoidea*:** many species (Crowson et al. 1967: 527; Spahr 1981b: 4).
***-Malacodermes*:** 65 amber specimens in Berend (sic!) collection at Danzig (Motschulsky 1857: 25; Spahr 1981b: 4).
***-Malacodermen*:** of Oeningen and Baltisch amber (Assmann, 1870: 30-31; Spahr 1981b: 4).
***-Malacodermes*:** era of Purbeck (Oustalet 1874: 25).
***-Malacodermata*:** various specimens from Florissant (U.S.A.), not very well preserved (Scudder 1882: 292; Handlirsch 1906-1908: 741).
***-Malocodermatae* (sic!), *Telephoridae, Cantharidae* /:** Baltic amber (Klebs list) housed at Königsberg Museum (Williamson 1932: 144; Spahr 1981b: 4, 15) / ***soldier beetles*:** Baltic amber (Williamson 1932: 142).
***-Elateridae or Telephoridae*:** (Brodie 1875: 13. *Separatum*: not consulted).
***-Lampyridae*:** three specimens in Lias of Schambelen - Switzerland (Scudder 1885: 796; Scudder 1886: 75 [Heer citation]; Scudder 1887: 796), and with the term Lampyridae, Scudder also was referring to Cantharidae.

***-Lampyridae*:** twenty-one fossil species belonging to nine genera (Scudder 1900: 101), some of these are Cantharidae.

***incertae sedis* (probably not Cantharidae)**

Genus †*Pseudotelephorus* Handlirsch, 1906: 454, Tafel XLI. Fig. 67. (caption)

†*Pseudotelephorus grandis* Cockerell, 1915
Pseudotelephorus grandis Cockerell, 1915: 479, 498 (explanation of plates), Plate 61. Fig. 3.
Champion et al. (eds.) 1916: 63; Handlirsch 1939: 71; Mitchell 2013 - EDNA The Fossil Insect Database [undetermined family]; The Paleobiology Database [undetermined family].
TYPE HORIZON. Triassic/Jurassic: Upper Rhaetian - Lower Hettangian (208-196.5 Ma).
TYPE LOCALITY. United Kingdom.
PRESERVATION/LITHOLOGY.Elytron(impression). Marine shale/limestone.
COLLECTIONS. Collected by Brodie and purchased by British Museum (BMNH) in 1898. Now according Cockerell (1915: 469, 479) is deposited in the United States National Museum coll. Lacoe No. 3497 (Brodie *leg.*) now Cat. No. 61404 U.S.N.M.
COMMENTS AND NOTES. One elytron. Length: visible part about 11 mm (entirely probably about 12 mm.) x 4.0 mm. Base distinctly narrower than the middle. By Cockerell (1915: 478) this species is of the family Erotylidae. Handlirsch (1939: 71) cites this species under its new genus *Anancaeon* Handlirsch, which is a Coleoptera *incertae familiae* (*e.g.* Ponomarenko & Schultz 1988: 15) and that clearly is not a Cantharidae.

†*Pseudotelephorus haueri* (Giebel, 1856)
Telephorus Haueri Giebel, 1856a: 101 [under family Lampyridae], 400 (in the "Tabellarische")
Telephorus Haueri Giebel, 1856b: 177 [*nomen nudum*]
Brodie 1845: 101 (List), 124, Pl. 6. fig. 29 [unnamed]; Pictet 1854: 334 [unnamed]; Brodie 1873: 25 (tabular view) [*separatum*: 16 (tabular view)]; Goss 1879: 31, 32 (reprint 1881: 144, 145); Scudder 1885: 796 (fig. 1031) [under family Lampyridae]; Scudder 1886: 75-76 [under family Lampyridae]; Scudder 1887: 796 (fig. 1049) [under family Lampyridae]; Scudder 1891: 220 [under family Lampyridae]; Handlirsch 1906-1908: 454, Tafel XLI. Fig. 67. (and caption); Cockerell 1915: 478 [as *Pseudotelephorus haeuri*]; Handlirsch 1939: 71 [as *Pseudotelephorus Haeuri*]; Mitchell 2013 - EDNA The Fossil Insect Database [as *Telephorus haueri* and *Pseudotelephorus haueri*]; The Paleobiology Database [as *Pseudotelephorus haueri*].
TYPE HORIZON. Triassic: Rhaetian (208.5-201.3 Ma), sometimes considered Lower Lias.
TYPE LOCALITY. United Kingdom: Gloucestershire, Forthampton, Wainlode, Brown's Wood.
PRESERVATION/LITHOLOGY. Elytron (Mold/impression). Marine horizon (Lilstock Formation).
COLLECTIONS. Collected by Brodie and purchased by British Museum (BMNH) in 1898. Now according Cockerell (1915: 469, 478) is deposited in the United States National Museum, No. 3480 Lacoe coll. (Brodie *leg.*) now Cat. No. 61402 U.S.N.M.
COMMENTS AND NOTES. One elytron with very delicate punctures, redrawning in Handlirsch (1906-1908: Taf. XLI. Fig. 67.) Length: 8.0 mm (Handlirsch 1906-1908: 454) x 2.30 mm (The Paleobiology Database). By Cockerell (1915: 478) this species is not Cantharidae (Telephoridae) but Erotylidae for about 10 very delicate striae but not sharp, minute punctiform brown markings (not true punctures) that they may have been pigmented spots. Also for Handlirsch (1906-1908: 454) was an uncertain family and not *Telephorus*, in fact the same Handlirsch (1939: 71) cites this species under its new genus *Anancaeon* Handlirsch, which is a Coleoptera *incertae familiae* (*e.g.* Ponomarenko & Schultz 1988: 15) and that clearly is not a Cantharidae.

†*Pseudotelephorus punctulatus* Cockerell, 1915
Pseudotelephorus punctulatus Cockerell, 1915: 479, 498 (explanation of plates), Plate 61. Fig. 4.
Champion et al. (eds.) 1916: 63; Handlirsch 1939: 71; Mitchell 2013 - EDNA The Fossil Insect Database [undetermined family]; The Paleobiology Database [undetermined family].
TYPE HORIZON. Triassic/Jurassic: Upper Rhaetian - Lower Hettangian (208-196.5 Ma).
TYPE LOCALITY. United Kingdom.
PRESERVATION/LITHOLOGY. Elytron (impression). Marine shale/limestone.
COLLECTIONS. Collected by Brodie and purchased by British Museum (BMNH) in 1898. Now according Cockerell (1915: 469, 479) is deposited in the United States National Museum coll. Lacoe No. 3496 (Brodie *leg.*) now Cat. No. 61403 U.S.N.M.
COMMENTS AND NOTES. Portion of one elytron. Length: 7.5 mm (entirely probably little over 9 mm.) x 3.0 mm. Elytron with about 10 delicate striae and apex moderately acute, larger and broader than *P. haueri*, with the outer margin more convex (Cockerell 1915: 479). By Cockerell (1915: 478) this species is of the family Erotylidae. Handlirsch (1939: 71) cites this species under its new genus *Anancaeon* Handlirsch, which is a Coleoptera *incertae familiae* (*e.g.* Ponomarenko & Schultz 1988: 15) and that clearly is not a Cantharidae.

Genus †*Telephorium* Westwood, 1854: 395,

Plate XVII. Fig. 4.

†***Telephorium abgarus*** Westwood, 1854
Telephorium Abgarus Westwood, 1854: 395 (explanation of Plate XVII.), Plate XVII. Fig. 4., 385-387 [family Telephoridae]
Giebel 1856a: 102 [under family Lampyridae]; Goss 1879: 27 (reprint 1881: 140); Scudder 1885: 796 [under family Lampyridae]; Scudder 1886: 76 [under family Lampyridae]; Scudder 1887: 796 [under family Lampyridae]; Scudder 1891: 220 [under family Lampyridae]; Handlirsch 1906-1908: 562, Tafel XLV. Fig. 71. (and caption); Coram & Jepson 2012: Figure 86 (p. 62), 64 [undetermined family]; Mitchell 2013 - EDNA The Fossil Insect Database [undetermined family]; The Paleobiology Database [undetermined family].
TYPE HORIZON. Early Cretaceous: Berriasian (145.0-139.8 Ma), Purbeck Group (Purbeck Formation).
TYPE LOCALITY. United Kingdom: Dorset, Purbeck, near Swanage (Durlston Bay).
PRESERVATION/LITHOLOGY. Elytron (compression). Fluvial-lacustrine limestone.
COLLECTIONS. Collected by Charles Willcox (probably in 1853; see The Paleobiology Database) and communicated by Brodie (Westwood 1854: 385, 395). Dorset County Museum (DORCM), Dorchester (UK), reposited in the British Museum of Natural History (BMNH).
COMMENTS AND NOTES. One elytron. Length: 7.00 mm (Handlirsch 1906-1908: 562) x 2.30 mm (The Paleobiology Database). Redrawned from the original illustration by Handlirsch (1906-1908: Tafel XLV. Fig. 71.) and by Coram & Jepson (2012: fig. 86). The elytron is equipped with some striae (10 by Handlirsch) that seems to indicate they do not belong to the family Cantharidae (Handlirsch 1906-1908: 562).

Cantharidae Sendel, 1742
Cantharidibus Sendel, 1742: 122-123, Tab. IV (Fig: 16-17)
Fischer 1939: 95; Weitschat & Wichard 1998: 154, 155 (Tafel 57); Weitschat & Wichard: 2002: 152, 153 (Plate 57); Wichard & Greven 2009: Abb. 4 (285), 275 (replication of Sendel's table IV), 284-285 (also replication of Sendel's pages 122-123), 286
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Royal Museum in Dresden.
COMMENTS AND NOTES. They are the first known depictions of amber Cantharidae (and fossil Cantharidae) but at least one (Sendel 1742: Fig. 16) of these two Sendel's specimens is likely to be refered to family Cupedidae (Weitschat & Wichard 1998: 154, 155 (Tafel 57); 2002: 152, 153 (Plate 57); Wichard & Greven 2009: Abb. 4 (p. 285), 286). Personally, I suspect that the second specimen (Sendel 1742: Fig. 17) can not be a Cantharidae but probably Lampyridae or otherwise.

Cantharidae Berendt, 1845
Callidium Berendt, 1845: 56
Pictet 1854. 334; Giebel 1856a: 128; Zang 1905: 240; Handlirsch 1906-1908: 741; Larsson 1978: 139; Spahr 1981b: 15; Hieke & Pietrzeniuk 1984: 303, 305; Vitali 2009: 237 [see Vitali also for all citations as Cerambycidae].
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
TYPE LOCALITY. Probably Prussia.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COLLECTIONS. Berlin Museum (coll. Berendt).
COMMENTS AND NOTES. As stated in Vitali (2009: 237), one of the specimens of Berendt (1845: 56) called *Callidium* was transferred to families Cantharidae or Lampyridae by Zang (1905: 240), and agree with Vitali (2009: 237), probably, is the same specimen quoted by Hieke & Pietrzeniuk (1984: 305) as *Callidium*.

Cantharidae Menge, 1856
cantharidia Menge, 1856: 21
lampyrides Menge, 1856: 21
Larsson 1978: 139; Spahr 1981b: 15.
TYPE HORIZON. Eocene: Priabonian (38.0/37.2-33.9 Ma) sometimes considered Lutetian (48.6-40.4 Ma), or Early Oligocene (28.4-33.9 Ma).
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. 21 specimens of "cantharidia" and one of "lampyrides", whose assignment to Cantharidae is uncertain.

Cantharidae Bachofen-Echt, 1949
Junge Larve *Cantharidae* Bachofen-Echt, 1949: Abb. 104. (p. 115)
Larsson 1978: 150; Spahr 1981b: 15.
PRESERVATION/LITHOLOGY. Inclusion in amber. Baltic Amber.
COMMENTS AND NOTES. This specimen is was referred to family Cleridae by Larsson (1978: 150).

Cantharoidea Rasnitsyn & Ross, 2000
Superfamily Cantharoidea Rasnitsyn & Ross, 2000: 22
Grimaldi et al. 2002: 11 (Table 2); Hsiao et al. 2016: 122; Poinar & Fanti 2016: 1; Fanti & Ellenberger 2016: 166.
TYPE HORIZON. Early Cretaceous: Upper Albian (97-110 Ma).
TYPE LOCALITY. Myanmar.
PRESERVATION/LITHOLOGY. Inclusion in amber. Burmese Amber.

COLLECTIONS. Department of Palaeontology of The Natural History Museum, London, No. In.19123, and In.20169.
COMMENTS AND NOTES. One larva (In.19123) and one specimen doubt Cantharoidea (In.20169).

Cantharoid larva see under **Cantharidae** Kirejtshuk & Azar (2013b: 114).
Kirejtshuk & Ponomarenko 2009-2015.

Moreover these genera and/or species, although included the term "*cantharis*", are for the habitus clearly belonging to other families, and not Cantharidae:

Cantharis lithophilus Wickham, 1914 = *Lytta lithophila* (Wickham, 1914) - Meloidae.
Melanocantharis Bode, 1953 - *incertae saedis* Suborder Polyphaga.
Melanocantharis bicornuta Bode, 1953
Sphaerocantharis Bode, 1953 - *incertae saedis* Suborder Polyphaga.
= *Sphaeracantharis* Bode, 1953: 368 (incorrect original spelling)
= *Mikrocarpides* Bode, 1953
= *Microcarpides* Bode, 1953: 369 (incorrect original spelling); Ponomarenko, 1992 (incorrect subsequent spelling. ICZN 1999 Art. 33.3)
= *Microcarpoides* Ponomarenko, 1990 (incorrect spelling)
= *Theornithion* Bode, 1953
Sphaerocantharis defossa Bode, 1953 (type species)
Sphaerocantharis striata (Bode, 1953) [*Cantharis* is feminine]
Theornithion striatum Bode, 1953
= *Mikrocarpides lineatus* Bode, 1953
Sphaerocantharis sibirica (Ponomarenko, 1990) [*Cantharis* is feminine]
"Microcarpoides" sibiricus Ponomarenko, 1990
(see: Wickham 1914; Bode 1953; Ponomarenko 1990, 1992; Kirejtshuk et al. 2009-2015; The Paleobiology Database).

Viewing the illustration and the original descriptions, the species: *Miocaenia pectinicornis* Wickham, 1914 (from Chadronian lacustrine - large shale of Florissant, USA) and *Phausis fossilis* Beier, 1952 (from Chattian spring travertine of Halbopal at Luschitze [= Lužice], Czech Republic), belong very probably to the family Lampyridae (not Cantharidae), as in the descriptions. However, the genus *Phausis* LeConte (a long time in synonymy with *Lamprohiza* Motschulsky) is North American, and therefore the correct new combination is the following:

Lamprohiza fossilis (Beier, 1952) **[n. comb.]**
Phausis fossilis Beier, 1952: 131

4.Conclusion

The first representation, with doubts about the membership in the family Cantharidae, is present in Sendel (1742) and after we have only species to generic level or undeterminate (first were Burmeister 1832; Vollmar 1835; Burmeister 1836; Keferstein 1834; and particularly Hope 1836), with the first species surely Cantharidae, excluded *Cantharis* aff. *nigricans* Burmeister (1832) and cfr. *Autosilis nitidula* (Serres 1843), that have been described by Heer (1847). Now all the five subfamilies (Cantharinae, Chauliognathinae, Dysmorphocerinae, Malthininae, Silinae) and all the tribes (Cantharinae Cantharini, Cantharinae Podabrini, Chauliognathinae Chauliognathini; Chauliognathinae; Ichthyurini; Malthininae Malchinini, Malthininae Malthinini, Malthininae Malthodini, Silinae Silini, Silinae Tytthonyxini, + the new tribe Malthininae Mimoplatycini) are known in the fossil record.

With this article I was able to survey 53 fossil species + *Cantharis* aff. *nigricans* and cfr. *Autosilis nitidula* + 6 species still living (*Cantharis figurata*, *Cantharis* cf. *paludosa*, *Cantharis rufa*, *Malthacus deceptus*, *Malthacus piniphilus* species group, *Podabrus* cfr. *alpinus*), + various specimens known to genus or family/subfamily level and particularly *Podistra (Absidia)* that does not currently has fossils at specific level.

I also provided several generic data, and the species included in Cantharidae but that probably are to be excluded of this family, as well as I provided a list of the fossil species in reference to the epoch and locality (Table 1.), and as can see the species of the family are known non-stop for every age from Cretaceous to Holocene. Particularly I furnished a list of subfossil species (Table 2.) that have been found to be 6 species (some cited in more locality) and other specimens at the generic or indeterminate level.

Considering that the first Elateriformia appeared on Permian (Toussaint et al. 2016) or at the end of Triassic / Lower Jurassic (Ponomarenko 1995; Chang et al. 2009b; McKenna et al. 2015) and the first Elateridae in the Early and Middle Jurassic (Chang et al. 2009a, 2009b), but for Toussaint et al. (2016) in Triassic as Elateroidea; is likely that the first arcaic representatives of the family Cantharidae have appeared and evolved in the Early Cretaceous (McKenna et al. 2015) or more probably, for me, in the Middle-Upper Giurassic; as in part demonstrated by the few indeterminate remains of this period of this family for the Lower Cretaceous of: Lebanese Amber (Kirejtshuk & Azar 2013a, 2013b: 135-125 Ma), Australia (Jell & Duncan 1986: 122.5-112 Ma) and Spanish Amber (Peris et al. 2016: about

110 Ma) or by *Ornatomalthinus elvirae* (Poinar & Fanti 2016: 97-110 Ma), *Myamalycocerus vitalii* (Fanti & Ellenberger 2016: 97-110 Ma) and *Archaeomalthodes rosetta* (Hsiao et al. 2016: 97-110 Ma) from Early Cretaceous of Myanmar. After which, very probably, this family has suffered greatly the effects of the big mass extinction of the end of Cretaceous, with the likely extinction of many genera, and only in the first few million years of the Cainozoic were formed living genera, and in fact already in the Eocene (30-40 Ma) many current genera were already present (e.g. *Atalantycha*, *Cantharis*, *Podistra*, *Rhagonycha*, *Themus*, *Podabrus*, *Chauliognathus*, *Trypherus*, *Macrocerus*, *Malthinus*, *Malthodes*, *Polemius*, *Silis*).

Table 1. List of the fossil species in reference to epoch/period and locality

Cretaceous

Burmese Amber:
-*Myamalycocerus vitalii* Fanti & Ellenberger, 2016 [97-110 Ma]
-*Ornatomalthinus elvirae* Poinar & Fanti, 2016 [97-110 Ma]
-*Archaeomalthodes rosetta* Hsiao, Ślipiński & Pang, 2016 [97-110 Ma]

Paleocene

Peng Chau Island, Lung Lok Shui (Hong Kong):
-*Lithocantharis lunglokshuiensis* Lin, 1997 [66-56 Ma]
Peng Chau Island, Wong Ye Kok (Hong Kong):
-*Wongyekokia angustris* Lin, 1997 [66-56 Ma]
Quebrada "El Griton", "Sunchal Formation" (Argentina):
-*Podabrus santaritensis* Cockerell, 1936 [65.5-56.0 Ma]

Eocene

Dominican Amber:
-*Tytthonyx geiseri* Poinar & Fanti, 2016 [45-30 Ma to 20-15 Ma - Eocene or Miocene]
Baltic Amber:
-*Cantharis* aff. *nigricans* Burmeister, 1832 [38/37.2-33.9 Ma]
-*Cantharis (Cantharis) sucinonigra* Kuśka, 1992 [38/37.2-33.9 Ma]
-*Cantharis (Cyrtomoptila) sucinokotejai* (Kuśka, 1996) [38/37.2-33.9 Ma]
-*Electronycha prussica* Kazantsev, 2013 [38/37.2-33.9 Ma]
-*Rhagonycha kryshtofovichi* (Yablokov-Khnzorian, 1960) [38/37.2-33.9 Ma]
-*Rhagonycha sucinobaltica* Poinar & Fanti, 2016 [38/37.2-33.9 Ma]
-*Sucinocantharis baltica* Kuśka & Kania, 2010 [38/37.2-33.9 Ma]
-*Sucinorhagonycha kulickae* Kuśka, 1996 [38/37.2-33.9 Ma]
-*Themus (Haplothemus) pristinus* Kazantsev, 2013 [38/37.2-33.9 Ma]
-*Cacomorphocerus cerambyx* Schaufuss, 1892 [38/37.2-33.9 Ma]
-*Cacomorphocerus jantaricus* (Kuśka & Kania, 2010) [38/37.2-33.9 Ma]
-*Macrocerus sucinopenninus* (Kuśka & Kania, 2010) [38/37.2-33.9 Ma]
-*Malthinus danieli* Kuśka & Kania, 2010 [38/37.2-33.9 Ma]
-*Malthodes ceranowiczae* Kuśka & Kupryjanowicz, 2005 [38/37.2-33.9 Ma]
-*Malthodes kotejai* Kuśka & Kupryjanowicz, 2005 [38/37.2-33.9 Ma]
-*Malthodes serafini* Kuśka & Kupryjanowicz, 2005 [38/37.2-33.9 Ma]
-*Malthodes sucini* Kuśka & Kania, 2010 [38/37.2-33.9 Ma]
-*Mimoplatycis notha* Kazantsev, 2013 [38/37.2-33.9 Ma] - also from Rovno Amber
-*Curche pauli* Alekseev & Kazantsev, 2014 [38/37.2-33.9 Ma]

-*Electrosilis minuta* Kazantsev, 2013 [38/37.2-33.9 Ma]
Rovno Amber:
-*Malthodes perkovskyi* Kazantsev, 2010 [38/37.2-33.9 Ma]
-*Malthodes rovnoensis* Kazantsev & Perkovsky, 2014 [38/37.2-33.9 Ma]
Florissant (USA):
-*Atalantycha humata* (Wickham, 1913) [37.2-33.9 Ma]
-*Rhagonycha hesperus* (Wickham, 1914) [37.2-33.9 Ma]
-*Podabrus cupesoides* Wickham, 1917 [37.2-33.9 Ma]
-*Podabrus florissantensis* Wickham, 1914 [37.2-33.9 Ma]
-*Podabrus fragmentatus* Wickham, 1914 [37.2-33.9 Ma]
-*Podabrus wheeleri* Wickham, 1909 [37.2-33.9 Ma]
-*Chauliognathus pristinus* Scudder, 1876 [37.2-33.9 Ma]
-*Trypherus aboriginalis* Wickham, 1913 [37.2-33.9 Ma]
-*Polemius crassicornis* Wickham, 1914 [37.2-33.9 Ma]
Aix-en-Provence (France):
-cfr. *Autosilis nitidula* (Fabricius) - Serres 1843 [? – Eocene/Oligocene] - extant species?

Oligocene

Brunstatt (France):
-*Malthodes obtusus* Förster, 1891 [33.9-28.4 Ma]
Rott (Germany):
-*Cantharis brodiei* (Heyden & Heyden, 1866) [28.4-23.0 Ma]
-*Cantharis caduca* (Heyden & Heyden, 1866) [28.4-23.0 Ma]
-*Cantharis carbonaria* (Heyden & Heyden, 1866) [28.4-23.0 Ma]
-*Cantharis exauctarata* (Heyden & Heyden, 1866) [28.4-23.0 Ma]

Miocene

Mexican (Chiapas) Amber:
-*Silis chiapasensis* Wittmer, 1963 [23.0-16.0 Ma]
Radoboj (Croatia):
-*Cantharis attavina* (Heer, 1847) [16-20 Ma]
Shandong, Shanwang, Linqu County (China):
-*Lycocerus guttula* (J. Zhang, 1989) [16-11.6 Ma]
-*Themus (Themus) capacis* (J. Zhang, 1989) [16-11.6 Ma]
-*Themus (Themus) thermophilus* (J. Zhang, 1989) [16-11.6 Ma]
-*Themus (Themus) trapezialis* (J. Zhang, Sun & X. Zhang, 1994) [16-11.6 Ma]
Oeningen (Germany):
-*Cantharis fragilis* (Heer, 1847) [10-12.7 Ma]
-*Cantharis macilenta* (Heer, 1865) [10-12.7 Ma]
-*Rhagonycha germari* (Heer, 1847) [10-12.7 Ma]
-*Rhagonycha tertiaria* (Heer, 1847) [10-12.7 Ma] - also from Radoboj

Pliocene

Lac Chambon (France):
-*Rhagonycha micans* Piton, 1939 [3.6-2.6 Ma]

Pleistocene

Kap København, North Greenland (Denmark):
-*Podabrus* cfr. *alpinus* (Paykull, 1798) - Böcher 1995 [1.8-2.2 Ma - Late Pliocene?] - extant species
Upton Warren, River Salwarpe (UK):
-*Cantharis figurata* Mannerheim - Coope et al. 1961 [about 42000 y/o] - extant species
-*Cantharis* cf. *paludosa* Fallén - Coope et al. 1961 [about 42000 y/o] - extant species
-*Cantharis rufa* Linnaeus - Coope et al. 1961 [about 42000 y/o] - extant species

Holocene

Northern Alaska, Ikpikpuk River (USA):
-*Malthacus deceptus* (Brown) - Matthews & Telka 1997 [about 9.670 y/o] - extant species
-*Malthacus piniphilus* species-group - Matthews & Telka 1997 [about 9.670 y/o] - extant species

Other localities that have returned Cantharidae not determined to specific level are:
Bitterfelder amber, Lebanese amber, Spanish amber, confluence of the River Limay with River Traful (Argentina), Puy-Saint-Jean (France), Randecker Maar (Germany), Niedersachsen - 3411 Willershausen clay pit (Germany), Enspel Fossil-Lagerstätte (Germany), Pula (Hungary), Titusville Site (USA), Rocky Mountain National Park - Roaring River (USA), Denali National Park and Preserve - Foraker River - Foraker Slump (USA), Bell Basin - Rock River exposure (Canada), Strathcona Fiord, Beaver Pond deposit (Canada), One Mile Creek (Canada), McAbee Fossil Beds (Canada), Koonwarra Fossil Bed (Australia), and probably also: Purbeck (UK) and Schambelen (Switzerland).

Table 2. Preliminary list of subfossil (Holocenic) species

Genus indet. Hall, 1990: 22 (Table 1), (5, 6)
Late Holocene (2000 ± 80 y/o) – USA: Maine, Starks, Sandy River [Sample 2] – Fragment, terrace sediments – One specimen.

Cantharidae Genus et sp. indet. Elias, Short & Waythomas, 1996: 298
[see in the fossils, precedent pages]

Gen. indet. Hellqvist & Eriksson, 2001: 149 (Table II.)
Holocene (420 ± 55 - 285 ± 55 y/o) – Sweden: Gamla Uppsala, Fyris River by Valsgärde – Insect, sediments/ fluvial deposits – One specimen (Unit V2).

Cantharis obscura L. Mighall et al., 2002: 1179 (Table 5.)
Holocene (2000-1700/1650 y/o) – UK: Wales, Cwmystwyth, Mine of Copa Hill – Insect, sediments – One specimen (Sample 9).

Cantharis sp. Girling, 1979: 89 (Appendix 1.), on-line version: 29 (Appendix 1)
Holocene (5200-5100 y/o) – UK: Sweet Track, Drove site [sample T] – Insect, peat – One specimen.

Cantharis sp. Mighall et al., 2002: 1179 (Table 5.)
Holocene (2000-1700/1650 y/o) – UK: Wales, Cwmystwyth, Mine of Copa Hill – Insect, sediments – One specimen (Sample 13b).

Cantharis sp. Merritt et al., 2003: Appendix 1 Site 20 Table A1.13
Holocene (4120 ± 50-3855 ± 50 y/o. About 4000) – UK: Scotland, River Don valley east of Kintore, Nether Daugh site (NJ 800 160) – fragments, fine-grained sediments – Two heads, one right elytron.

Cantharis sp. Panova et al., 2003: 255 (Таблица 2.) [English translation: 227 (Table 2.)]
Holocene (9.230-4.000 y/o) – Russia: Polar Urals: eastern slope of the Rai-Iz massif (66°51'N - 65°41'E), that conventionally named Lake Pereval'noe, 260 m [Sample number 6] – Fragment, peat samples – One specimen.

Cantharis spp. Smith et al., 2005: 363 (Table 4)
Early Holocene (10.700-9300 y/o) for sample 5 and Middle/Late Holocene (3800-2900 to 2020-1530 y/o) for sample 40 – UK: Leicestershire, River Soar, Croft Quarry – Fragment, free organic peat – One specimen (Sample 5) and one specimen (Sample 40).

Cantharis sp. Kuzmina, 2015: 707 (Table 5.), 712

Holocene (8400 y/o) – Russia: Sakha-Yacutia, Alazeya River – Insects, peat – Two specimens (Section 203, sample 5).

Rhagonycha fuscitibia Rey, 1891
R. femoralis (Brul.) Mighall et al., 2002: 1179 (Table 5.)
Holocene (2000-1700/1650 y/o) – UK: Wales, Cwmystwyth, Mine of Copa Hill – Insects, sediments – One specimen (Sample 9) and one specimen (Sample 19).

R. lignosa (Müll.) Mighall et al., 2002: 1179 (Table 5.), 1183 (Table 7.)
Holocene (2000-1700/1650 y/o) – UK: Wales, Cwmystwyth, Mine of Copa Hill – Insects, sediments – One specimen (Sample 13.1b) and one specimen (Sample 19).

Rhagonycha lignosa (Mull.) Smith et al., 2005: 363 (Table 4), 370
Middle/Late Holocene (3800-2900 to 2020-1530 y/o) – UK: Leicestershire, River Soar, Croft Quarry – Fragment, free organic peat – One specimen (Sample 40).

Rhagonycha lignosa (Müll.) Branch et al., 2012: 1152 (Table 3.), 1150
Holocene (6300-3900 y/o) – UK: Lower Thames Valley, Hornchurch Marshes – Insects, peat – One specimen (Sample Depth (m OD) -3.18 to -3.28).

Rhagonycha testacea (L) Mighall et al., 2002: 1179 (Table 5.)
Holocene (2000-1700/1650 y/o) – UK: Wales, Cwmystwyth, Mine of Copa Hill – Insect, sediments – One specimen (Sample 13.1b).

Rhagonycha testacea (L.) Branch et al., 2012: 1152 (Table 3.), 1150
Holocene (6300-3900 y/o) – UK: Lower Thames Valley, Hornchurch Marshes – Insects, peat – Three specimens (Sample Depth (m OD) -3.18 to -3.28, -2.58 to -2.68, -2.28 to -2.38).

Podabrus alpinus (Payk.) Mighall et al., 2002: 1179 (Table 5.)
Holocene (2000-1700/1650 y/o) – UK: Wales, Cwmystwyth, Mine of Copa Hill – Insects, sediments – Three specimens (Sample13.1b).

Podabrus sp. Elias et al., 1986: 137 (Table 1)
Scott et al. 2001: 201 (Appendix B).
Late Holocene (ca. 2400 y/o) – USA: Colorado, Rocky Mountain National Park, Roaring River – Fragments, Thick organic lens – specimen(s).

? *Podabrus* sp. Hall, 1990: 22 (Table 1), (5, 6)
Late Holocene (2000 ± 80 y/o) – USA: Maine, Starks, Sandy River [Sample 2] – Fragment, terrace sediments – One specimen.

Podabrus sp. Short et al., 1992: 386 (Table 2.)
Holocene (8580 ± 250 y/o) – USA: Alaska, Nushagak Lowland, Flounder Flat [Sample B] – Insect, peat – One specimen.

Silis ruficollis (F.) Girling, 1979: 89 (Appendix 1.), on-line version: 29 (Appendix 1)
Holocene (5200-5100 y/o) – UK: Sweet Track, Drove site [sample 21] – Insect, peat – One specimen.

Appendix 1. Etymology and type species of the fossil genera

Electronycha Kazantsev:
combination of Greek "*electron*" = amber + genus name *Rhagonycha*.
Gender: feminine.
Type species *Electronycha prussica* (Kazantsev 2013: 284), by original designation.
Lithocantharis Lin:
from Greek "*lithos*" = stone + *Cantharis* (lith- + canthar-).
Gender: feminine (not indicated in the description).
Type species *Lithocantharis lunglokshuiensis* (Lin 1997: 193), by original designation.
Myamalycocerus Fanti & Ellenberger:
combination of the specimen's collection locality Myama and the extant genus *Lycocerus* Gorham
Gender: masculine.
Type species *Myamalycocerus vitalii* (Fanti & Ellenberger 2016: 166), by original designation.
Ornatomalthinus Poinar & Fanti:
from Latin "*ornatus*" = adorned (for sculpture elytra) and "*malthinus*" = soft/flabby.
Gender: masculine.
Type species *Ornatomalthinus elvirae* (Poinar & Fanti 2016: 2), by original designation.
Sucinocantharis Kuśka & Kania:
from Latin "*sucinum*" = amber + *Cantharis*.
Gender: feminine.
Type species *Sucinocantharis baltica* (Kuśka & Kania 2010: 52), by original designation.
Sucinorhagonycha Kuśka:
combination from Latin "*sucinus*" sic! = amber + generic name *Rhagonycha*.
Gender: feminine
Type species *Sucinorhagonycha kulickae* (Kuśka 1996: 13), by original designation.
Curticantharis J. Zhang:
from Latin "*curti*" [from *curtus*] = brief/short + *Cantharis.*
Gender: feminine (not indicated in the description).
Type species *Curticantharis capacis* (J. Zhang 1989: 120, 422), by original designation.
Wongyekokia Lin:
from the locality Wong Ye Kok.
Gender: feminine (not indicated in the description).
Type species *Wongyekokia angustris* (Lin 1997: 194), by original designation.
Cacomorphocerus Schaufuss:
from Greek καχὸς = "malus" + μορφή = "forma" + κέρας = "cornu" (Schaufuss 1892).
Gender: masculine (not indicated in the description).
Type species *Cacomorphocerus cerambyx* (Schaufuss 1892), by monotypy.
Hoffeinsensia Kuśka & Kania:
in honor of Christel and Hans Werner Hoffeins from Hamburg, Germany.
Gender: feminine.
Type species *Hoffeinsensia jantarica* (Kuśka & Kania 2010: 50), by original designation.
Archaeomalthodes Hsiao, Ślipiński & Pang:
combination of the prefix *archaeo* = ancient, and the genus *Malthodes.*
Gender: masculine.
Type species *Archaeomalthodes rosetta* (Hsiao et al. 2016: 121), by original designation.
Mimoplatycis Kazantsev:
combination of Greek "*mimos*" = imitator + genus name *Platycis* (in reference to the pronotum).
Gender: feminine.
Type species *Mimoplatycis notha* (Kazantsev 2013: 288), by original designation.
Curche Alekseev & Kazantsev:
derived from Curche (Curcho, Kurche, Kurkas) = name of the god from the Old Prussian mythology. Gender: masculine.
Type species *Curche pauli* (Alekseev & Kazantsev 2014: 167), by original designation.
Electrosilis Kazantsev:
from Greek "*electron*" = amber + genus name *Silis*.

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