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UDC 595.773.4

Review of the genus *Coremacera* (Diptera, Sciomyzidae)

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Abstract. According to Rozkosny (1987), the genus *Coremacera* consists of 10 Palaearctic taxa. *C. obscuripennis* Loew, 1845 and *C. confluens* Rondani, 1868 are synonymysed with *C. marginata* Fabricius, 1775, reasons for this are discussed. Generic affiliation of *C. turkestanica* is changed to *Euthycera turkestanica* Elberg, 1968 comb. nov.; *E. hrabei* Rozkosny, 1969 is synonymysed with *E. turkestanica*. An unclear taxonomic status of *C. halensis* is discussed. Females of two undescribed Far Eastern taxa of *Coremacera* are shortly characterised. For the rest six Palaearctic taxa of *Coremacera* illustrations, distribution and identification key are offered.

Keywords: Diptera, Sciomyzidae, *Coremacera*, *Euthycera*, identification key, synonymy

Обзор рода *Coremacera* (Diptera, Sciomyzidae)

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Аннотация. Согласно Rozkosny (1987), род *Coremacera* состоял из 10 палеарктических таксонов. *C. obscuripennis* Loew, 1845 и *C. confluens* Rondani, 1868 были синонимизированы с *C. marginata* Fabricius, 1775, изложены основания такого решения. Родовая принадлежность *C. turkestanica* была изменена на *Euthycera turkestanica* Elberg, 1968, comb. nov. *Euthycera hrabei* Rozkosny, 1969 была синонимизирована с *E. turkestanica*. Обсуждается неясный таксономический статус *C. halensis*. Кратко охарактеризованы самки двух неописанных дальневосточных таксонов *Coremacera*. Для остальных шести палеарктических таксонов *Coremacera* предлагаются иллюстрации, уточненное распространение и идентификационный ключ.

Ключевые слова: Diptera, Sciomyzidae, *Coremacera*, определительный ключ, синонимы

Introduction

Coremacera Rondani, 1856 (= *Statinia* Meigen, 1830 suppressed by International Commission of Zoological Nomenclature) is a genus of Tetanocerini endemic to the Palaearctic region. Li et al. (2019) reported the presence of *Coremacera* in the Oriental region too, although no details were provided.

Coremacera has anteriorly directed setulae at the apex of the postpedicel, this character is unique in Sciomyzidae. It shares other characters with the genus *Euthycera* Latreille, 1829: wing with intensive dark pattern; two pairs of orbital setae; pedicel rectangular, postpedicel triangular; arista with medium long white hairs; prosternum, anepisternum and anepimeron bare; two postalar setae; subalar setae absent; scutellum with two pairs of setae; hind coxa bare on inner posterior margin. Molecular, morphological and combining phylogenetic analysis also support relationship of *Coremacera*, *Euthycera* and the Nearctic genus *Dictyacium* Steyskal, 1956, see: Tothova et al. (2012); Chapman et al. (2012); Murphy et al. (2018: 135).

The list of Palaearctic *Coremacera* was published by Rozkosny and Elberg (1984). The list has acquired its final form three years later when Rozkosny (1987) synonymised *C. trivittata* Loew, 1860 with *C. amoena* and claimed *Coremacera* (*Tetanocera*) *bivittata* Macquart, 1835 to be a doubtful species, so that 10 taxa left in the genus:

Coremacera amoena Loew, 1853;
Coremacera catenata Loew, 1847;
Coremacera confluens Rondani, 1868;
Coremacera fabricii Rozkosny, 1981;
Coremacera halensis Loew, 1847;
Coremacera marginata marginata Fabricius, 1775;
Coremacera marginata pontica Elberg, 1968;
Coremacera obscuripennis Loew, 1845;
Coremacera turkestanica Elberg, 1968;
Coremacera ussuriensis Elberg, 1968.

The present publication is divided into two chapters. Chapter I consists of three parts: (1) Annotated list of species with material examined, with distributional data and taxonomic remarks for six taxa which I regard valid. (2) Discussions on the structure of male genitalia and synonymy of *Coremacera*. (3) Identification key for Palaearctic *Coremacera*.

Chapter II is devoted to several taxa of *Coremacera* which require clarification.

I dedicate this publication to the memory of Nikolay Nikolaevich Filippov (1895–1972): diplomat, high-ranking counterintelligence officer and entomologist, who used to assume the name Zhenzhurist for foreign trips and entomological publications.

Material and methods

Localities are given as follows: country, region/state/province (in italics), and geographical coordinates in decimal-degree format. The full names of regions of Russian administrative subdivisions are an entangled result of political and historical events of no interest for zoology, so they are listed as name and word "region" (abbreviated in the text as "Reg."). Other abbreviations: L. — lake; R. — river; vill. — village.

Illustrations are original unless otherwise credited. When referring to figures, to avoid

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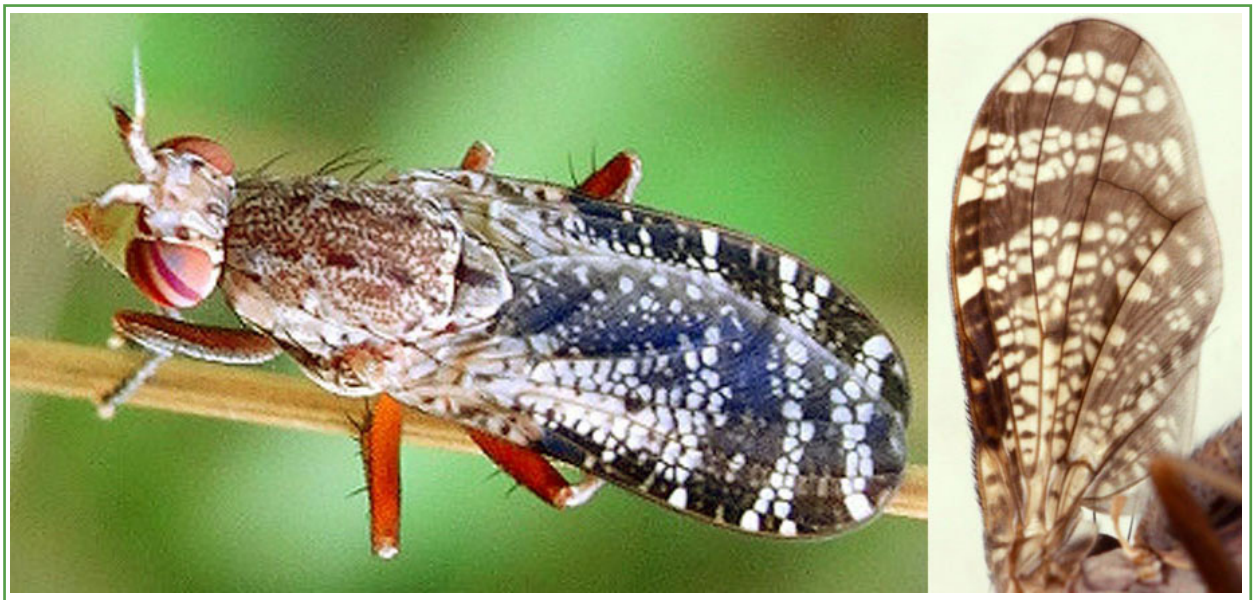

Fig. 1. *C. amoena*, general view (photo: Fikret Karacan) and wing
Рис. 1. *C. amoena*, общий вид (фото: Fikret Karacan) и крыло

confusion we capitalize the first letter (Fig. or Figs.) for those appearing in this paper and use lowercase (fig. or figs.) for those published elsewhere.

The specimens examined are deposited in the following museums:

ZIN — Zoological Institute, Saint Petersburg, Russia;

ZMUM — Zoological Museum of Moscow University, Russia.

Annotated list of species with material examined

Coremacera amoena Loew, 1853
Fig. 1

Coremacera trivittata Loew, 1860
Coremacera manni Schiner, 1864 (as *Limnia*)

Material: Greece, Zakinthos Isl., Agios sostis [37.71°N, 20.85°E], 14.07.2008, G. Pennards, 1♀ (ZMUM); **Iran**, (*Kerman* province), Zarand [30.8°N, 56.6°E], 2.07.1955, D. Shteiberg, 1♀ (ZIN); **Turkey**, *Bolu* province, Kibricik env., 40.42°N, 31.85°E, 1200 m, 1.09.2009, N. Vikhrev, 2♂; *Marmara* Reg., Istanbul, Byukdere env. [41.1°N, 29.0°E], 29.08.1936, Zhenzhurist (= N. N. Filippov), 1♂, 1♀ (ZMUM).

Distribution. S Europe: S Germany, Italy, Balkans, Romania; South-West Asia: Turkey, Iraq, Iran, Israel.

Coremacera catenata Loew, 1847
Figs 2, 8, 17

Material: Armenia, S of Lerik [38.76°N, 48.41°E], 24.06.1969, L. Zimina, 1♀ (ZMUM); **Azerbaijan** [on label as Armenia], Herher [39.71°N, 46.96°E], 13–15.06.1956, L. Zimina, 4♀ (ZMUM); **Georgia**, Khashmi [41.75°N, 43.18°E], 31.07.1958, V. Zaitsev, 2♂, 1♀ (ZIN); **Hungary**, Bacs-Kiskun [county, ≈ 46.6°N, 19.4°E], poplar forest, 25.06.1970, K. Gorodkov, 2♂, 3♀ (ZIN); **Iran**: *East Azerbaijan* province, Tabriz [38.0°N, 46.3°E], 6.07.1914, Andrievsky, 1♀ (ZIN); *Isfahan* province, Ghomrood R., 33.42°N, 50.12°E, 21.05.2017, O. Kosterin, 1♂, 1♀; *Lorestan* province, 16 km SE of Borujerd, 33.8°N, 48.9°E, 25.05.2017, O. Kosterin, 2♂, 1♀; *Markazi* province: Arak env., 34.03°N, 49.75°E, 2000 m, 18–30.05.2017, O. Kosterin, 4♂, 1♀; 7 km NW of Shazand, 33.99°N, 49.36°E, 1850 m, 20.05.2017, O. Kosterin, 4♂, 1♀; 9 km SW of Tafresh, 34.625°N, 49.947°E, 2300 m, 25.05.2017, O. Kosterin, 6♂, 2♀ (all ZMUM); **Moldova**: Kishinev env., 1–6.07.1970, R. Kamenskaya, 2♀; 26.06.1973, L. Zimina, 2♀; Vatichi [47.34°N, 28.61°E], 06–08.1953, 2♀ (all ZMUM); **Russia**: *Chechen* Reg., Paraboch [43.47°N, 46.29°E], 13–15.07.1927, Kirichenko, 2♂, 6♀ (ZIN); *Crimea* Reg.: Alma R. [≈ 44.84°N, 33.63°E], 10–15.08.1899, Bashenov, 6♂, 4♀ (ZIN);

Fig. 2. *C. catenata*, general view of the female, dorsal and lateral; male surstyli lateral and ventral
Рис. 2. *C. catenata*, общий вид, самка сверху и сбоку; сурстили самца снизу и сбоку

Dagestan Reg.: Shura-Ozen River floodplain, 43.10°N, 47.46°E, 5.07.2015, D. Astakhov, 1♂; North slope of Shalbuzdag Mt [≈ 41.4°N, 47.8°E], 22.07.1983, E. Narchuk, 1♂ (all ZIN); *Donetsk* Reg., Volnovakha Distr., 10 km E of Donskoe [47.50°N 37.65°E], 20–31.08.2008, K. Tomkovich, 1♀; *Krasnodar* Reg.: Dakhovskaya env., valley of Belaya R., 44.199°N, 40.170°E, 465 m, 17–23.06.2009, K. Tomkovich, 1♀ (ZMUM); *Lugansk* Reg., Horodyshche [48.32°N, 38.64°E], 20.07.1952, B. Mamaev, 1♀ (ZIN); *Samara* Reg., Zhiguli [53.4°N, 49.3°E], Novoderzhkin, 3.07.1938, 1♂; Chistovsky, 3.08.1950, 1♀ (ZIN); *Saratov* Reg., Khvalynsky Nat. Park [52.48°N, 48.03°E], 27.06.2012, D. Astakhov, 1♂ (ZIN); *Ulyanovsk* Reg., Sengiley Hills Nat. Park, 54.0°N, 48.7°E, 16.07.2022, A. Nikolaeva, 1♂ (ZMUM); *Volgograd* Reg., Gorodishche [48.8°N, 44.5°E], steppe, 9.06.2012, D. Astakhov, 1♀ (ZIN); Kamyshin [50.1°N, 45.4°E], 25.07.1950, G. Viktorov, 1♂ (ZMUM); *Zaporozhye* Reg., Berdyansk env. [46.8°N, 36.8°E], 08.1954, 2♀ (ZMUM); **Turkmenistan**, *Ahal* Reg., Kopet-Dag, Koinekesir [38.22°N, 56.92°E], 25.06.1923, E. Smirnov, 1♀ (ZMUM).

Distribution. Europe and South-West Asia. It is uncommon in Western Europe from where it has been recorded from the southern and central parts. It is more common in Eastern Europe, recorded from Moldova, Crimea, the Caucasus and the Volga region, along the Volga River it is recorded in the north up to 54°N. It is also not rare in South-West Asia: Turkey, Iraq, Iran, Israel, S-W Turkmenistan. It seems that *C. catenata* prefers rather arid regions.

Coremacera fabricii Rozkosny, 1981
Figs 3, 7, 11, 12

Coremacera cincta Fabricius, 1794 (preocc.)

Material: Russia: *Moscow* Reg.: Moskovsky env., Meshkovo, 55.59°N, 37.33°E, 11–30.07.2017, K. Tomkovich, 3♂, 1♀; Podolsk env., Vesennyaya, 55.39°N, 37.53°E, 29.05.2018, K. Tomkovich, 1♂; Golitsino [55.6°N, 37.0°E] env., 7–21.06.1980, A. Shatalkin, 2♂, 2♀; Chashnikovo (56.04°N, 37.18°E) env., VI. 1973, (A. Shatalkin), 1♂; Dmitrov distr., Kostino env. [56.316°N, 37.764°E], N. Vikhrev: 9–10.06.2009, 2♂, 2♀; 1.07.2009, 1♀; 2.06.2010, 3♂ (all ZMUM); *Smolensk* Reg.,

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Fig. 3. *C. fabricii*, male, general view; variability of wings; surstyli ventral and lateral

Рис. 3. *C. fabricii*, самец, общий вид; вариабельность окраски крыльев; сурстили самца снизу и сбоку

Smolenskoye Poozerye National Park [55.5°N, 31.4°E]: 5–8.06.1992, R. Zlobin, 2♂; 13.06.1993, R. Zlobin (ZIN).

Distribution. Central Europe, rather uncommon species. To the north till Haapsalu, Estonia, 59°N (Elberg 1968), to the east till Moscow region. In Central European Russia mostly collected in June.

Coremacera marginata marginata Fabricius, 1775

Figs 4, 6

Coremacera tristis Harris, 1780
Coremacera limbata Gmelin, 1790
Coremacera crinicornis Fallen, 1820
Coremacera obscuripennis Loew, 1845 **syn. nov.**
Coremacera confluens Rondani, 1868 **syn. nov.**

Material: Austria, Salzburg, Hallein [47.7°N, 13.1°E], 20–24.07.2007, G. Pennards, 1♂, 1♀ (ZMUM); **Belarus**: *Gomel* Reg., Mozyr env., 52.04°N, 29.32°E, 29–31.07.2019, N. Vikhrev, 2♀; *Vitebsk* Reg.: Orsha env., 54.555°N 30.630°E, 28.07.2019, N. Vikhrev, 1♂ (all ZMUM); **France**: *Provence-Alpes-Côte d'Azur* region, Greolieres [43.795°N, 6.943°E], 24.08.1979, Heitmans, 1♂; *Normandy*, Seine Maritime foret de Brotonne [49.51°N, 0.79°E], 12.08.2009, G. Pennards, 1♀ (ZMUM); **Germany**, Berlin, Wernsdorfer See [52.37°N, 13.66°E], K. Gorodkov, 21.06.1981, 3♀ (ZIN). **Greece**, Kerkini, 41.21°N, 23.10°E, 1–5.06.2007, G. Ramel, 1♀ (ZMUM); **Iran**, *Razavi Khorasan* province, Mesched [36.3°N, 59.5°E], 15.09.1925, Jenikin, 1♀ (ZIN, paratype of *Coremacera marginata pontica* Elberg, 1968. This is the only known to me intermediate specimen, although it is more *C. m. marginata* than *C. m. pontica*.); **Italy**, Positano [40.63°N, 14.48°E], 2–3.09.1925, El. Miram, 2♀ (ZIN); **Latvia**, Tervete [56.48°N, 23.42°E], 7.07.1978, S. Kuznetsov, 1♂, 2♀ (ZIN); **Moldova**: Bendery [46.8°N, 29.5°E], 27.07.1953, A. Zhelokhovtsev, 1♀; Kishinev env., 21.06.1970, R. Kamenskaya, 1♀ (both ZMUM); Kishinev [47°N, 29°E], 5.06.1981, V. Korenev, 1♂, 1♀ (ZIN); **Netherlands**: Brabant, Oudland [51.55°N, 5.01°E], 2.06.2007, G. Pennards, 1♀; Meerssen [50.88°N, 5.75°E], 13.07.2009, G. Pennards, 1♂ (ZMUM); **Russia**: *Belgorod* Reg., Les na Vorksle Nat. Res. [50.60°N, 35.98°E], 15.07.1976, Afanasieva, 1♂ (ZIN); *Kursk* Reg.: Central Black Earth Nat. Res., oak forest [51.56°N, 36.08°E]: 24.06.1936, D. Dovnar,

Fig. 4. *C. m. marginata*, general view, dorsal (photo: Frank Koehler); surstyli ventral and lateral
Рис. 4. *C. m. marginata*, общий вид сверху (фото: Frank Koehler); сурстили самца снизу и сбоку

18.06.2008, 1♀; 20.07.2007, A. Ozerov, 1♂; 6.09.2007, N. Vikhrev, 1♀; A. Shatalkin, 1♂; Oboyan env., 51.56°N, 36.08°E, 21.07.2007, A. Ozerov, 1♂; *Lipetsk* Reg., railway station 265th km [52.62°N, 39.47°E], K. Tomkovich, 22.08.1999, 1♂ (ZMUM); *Mordovia* Reg.: Pushta vill. env., 54.71°N, 43.22°E: 18.07.2020, K. Tomkovich, 1♀; 1–5.09. 2020, N. Vikhrev, 1♂; Steklyannyi forestry, 54.894°N, 43.601°E, 5–7.07.2020, G. Semishin, 1♂, 1♀ (ZMUM). *Moscow* Reg.: Podolsk env., Vesennyaya, 55.39°N, 37.53°E, 2–5.08.2012, K. Tomkovich, 2♂, 1♀; Moskovsky env., Meshkovo, 55.59°N, 37.33°E, 26–30.07.2017, K. Tomkovich, 1♂; Naro-Fominsk [55.4°N, 36.7°E] env., 26.06.2007, D. Gavryushin, 1♀; *Penza* Reg., Nizhny_Lomov env. [53.5°N, 43.8°E], 23.06.1964, Chekanovsky, 1♀ (ZIN); *Ryazan* Reg., Kasimov env., Zelenoe, 54.969°N, 41.327°E, N. Vikhrev, 21–26.07.2013, 1♀ (ZMUM); *Saint Petersburg* Reg., Luga distr., Yaschera [59.15°N, 29.91°E], A. Stackelberg, 29.06.1955, 1♂; 20.08.1962, 1♂ (all ZIN); *Smolensk* Reg., Smolenskoye Poozerye National Park [55.5°N, 31.4°E]: 8–20.06.1992, R. Zlobin, 1♂, 3♀; 22.07–12.08.1991,

Fig. 5. *C. ussuriensis*, general view of the male, the female and male surstyli
Рис. 5. *C. ussuriensis*, общий вид самца и самки; сурстили самца

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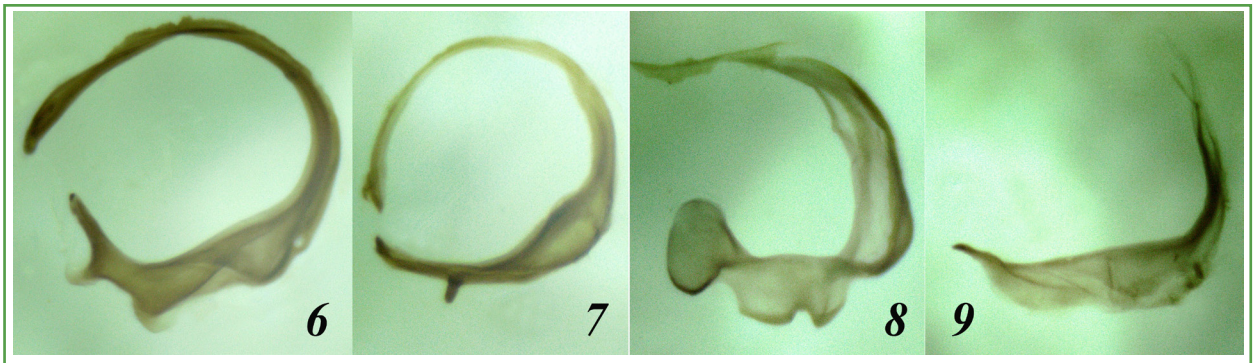


Figs 6–9. Sternite 6 of a male of *Coremacera*: 6 — *marginata*; 7 — *fabricii*; 8 — *catenata*; 9 — *ussuriensis*

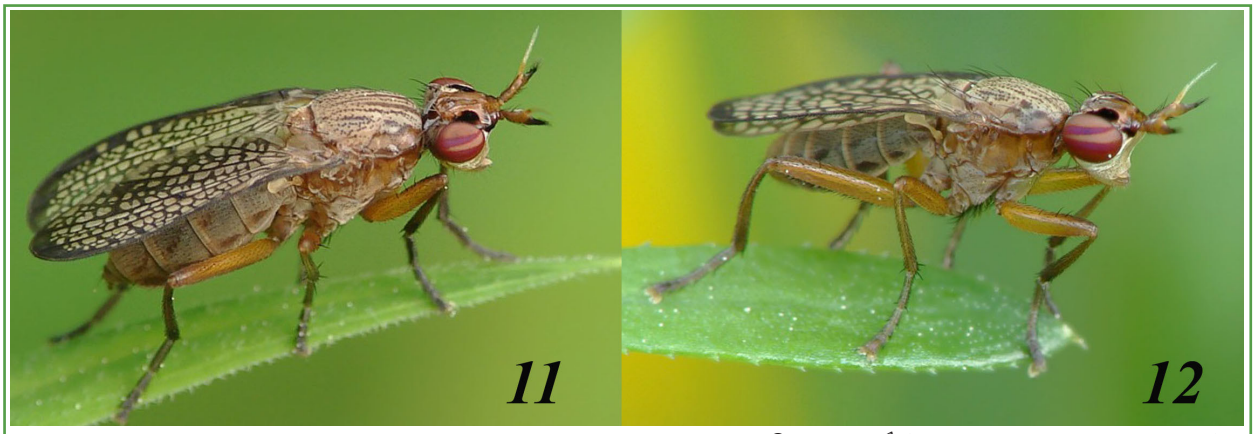
Рис. 6–9. Стернит 6 самцов *Coremacera*: 6 — *marginata*; 7 — *fabricii*; 8 — *catenata*; 9 — *ussuriensis*

R. Zlobin, 4♂, 4♀ (ZIN); *Voronezh* Reg., Liski env., Divnogorye [50.97°N, 39.32°E], 4–22.07.1994, R. Zlobin, 2♂, 1♀ (ZIN); **Serbia**, Crni Vrh, 43.407°N, 22.587°E, 800 m, 1–7.07.2015, N. Vikhrev, 1♂, 1♀; A. Ozerov and M. Krivosheina, 1♂, 1♀; **UK**, Hartslock [51.5°N, 1.12°W], 6–7.07.1999, C. Raper, 3♂; **Ukraine**: *Kropivnytsky* Reg., Elizavetgrad [Kropivnytsky, 48.5°N, 32.3°E], 5.07, E. Yatsentkovsky, 1♀ (ZIN); *Zakarpatsky* Reg.: 15 km S of Rakhiv [47.92°N, 24.17°E], 14.07.1964, L. Zimina, 2♀; 25 km N of Rakhiv [48.26°N, 24.35°E], 5.08.1964, L. Zimina, 2♀ (both ZMUM); *Kiev* Reg., Kiev, 10.08.1902, Yu. Vagner, 1♀; *Odessa* Reg., Odessa [46.5°N, 30.7°E], 7.08.1978, Yu. Verves, 1♂; *Poltava* Reg., Hadiach [50.37°N, 33.98°E], Knipovich, 1♀ (all ZIN).

Distribution. W Palaearctic. From ~60°N to ~40°N in W Europe and 46°N in E Europe. I have only seen in ZMUM and ZIN specimens collected west of the Volga River. Elberg (1968) listed specimens collected in Kazan (i.e. on the eastern bank of Volga) and from the western Urals, Perm region, Kungur, K. Borisova [Uchleskhoz, Preduralie NP, presently abolished, 57.36°N, 57.14°E]. However, these specimens were not found in ZIN where they should be stored. Anyway, *C. m. marginata* is unknown in Siberia, but appears to be present in South-West Asia: Turkey, Bolu [40.7°N, 31.6°E] and Hakkari [37.5°N, 43.7°E] (as *C. obscuripennis*) (Leclercq & Schacht 1986) and Iran, Mesched [36.3°N, 59.5°E] (as *C. m. pontica*) (Elberg 1968; Vikhrev et al. 2023). Recently

Fig. 10. *C. halensis*, male, general view

Рис. 10. *C. halensis*, самец, общий вид



Figs 11–12. *C. fabricii* from Wernigerode, 8.05.2009: 11 — ♀; 12 — ♂ (photo: Frank Marquard)
Рис. 11–12. *C. fabricii* из Wernigerode, 8.05.2009: 11 — ♀; 12 — ♂ (фото: Frank Marquard)

Khaghaninia et al. (2018) reported *C. marginata* from East Azerbaijan province of Iran, unfortunately without indication which subspecies was found.

Coremacera marginata pontica Elberg, 1968

Material: Armenia, Tsaghkadzor [40.53°N, 44.73°E, 1900 m], 15.07.1955, L. Zimina, 1♂; **Azerbaijan**, *Nakhchivan* Reg., Orduban [38.9°N, 46.0°E, 800 m], 31.07.1970, V. Rikhter, 1♂ (ZIN); **Georgia**, Borjomi [41.84°N, 43.39°E, 900 m], 1867, Brandt, 2♂, 1♀ (ZIN); **Russia**: *Chechen* Reg., Vedeno [42.96°N, 46.10°E, 750 m], 5.06.1972, V. Rikhter, 2♂, 1♀ (ZIN); *Crimea* Reg.: Alushta env., Crimean Nature Reserve [≈ 44.7°N, 34.3°E], 9.08.1955, B. Rodendorf, 1♂, 1♀; 12.07.1956, B. Rodendorf, 1♂, 3♀; Pionerskoe [44.88°N, 34.19°E]: 4–9.07.1976, L. Zimina, 2♂, 1♀; 15.06.1975, A. Zhelokhovtsev, 1♂; Kara-Dag [44.93°N, 35.23°E], 22.06.1982, L. Zimina, 1♀; Morskoe [44.83°N, 34.82°E], 13.08.2007, K. Tomkovich, 1♂ (all ZMUM); Alma R. [≈ 44.84°N, 33.63°E], 10.08.1899, Bashenov, 5♂, 1♀ (ZIN); *Dagestan* Reg., 15 km SW of Sergokala [≈ 42.33°N, 47.55°E], 15.07.1983, E. Narchuk, 15♂, 7♀ (ZIN); *Kabardino-Balkaria* Reg., Nalchik [43.5°N, 43.7°E], 12.07.1915, Golovleva & Kirichenko, 1♀ (ZIN); *Krasnodar* Reg.: Goryachy Klyuch [44.65°N, 39.15°E], 11.06.1997, K. Tomkovich, 1♀; Novorossiysk env., S Ozereevka [44.68°N, 37.63°E], 16.06.2001, K. Tomkovich, 1♂; Dakhovskaya env., valley of Belaya R., 44.199°N, 40.170°E, 465 m, 17–23.06.2009, K. Tomkovich, 1♀; 18–31.08.2009, K. Tomkovich, 2♂; (ZMUM); *Osetia-Alania* Reg.: Sukhotskoe [43.68°N, 44.44°E], 2.08.1988, A. Ozerov, 1♀; Tsey [42.79°N, 43.91°E, 1800 m], 16.09.1989, A. Shatalkin, 1♂; *Stavropol* Reg., Shpakovskoye [= Mikhaylovsk, 45.1°N, 42.0°E],

Figs 13–14. Undescribed females of *Coremacera* from the Far East: 13 — sp1; 14 — sp2
Рис. 13–14. Неописанные самки *Coremacera* с Дальнего Востока: 13 — sp1; 14 — sp2

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Fig. 15. *Euthycera* (*Coremacera*) *turkestanica*, male holotype, general view

Рис. 15. *Euthycera* (*Coremacera*) *turkestanica*, голотип, самец, общий вид

13.06.1988, S. Belokobylsky, 1♀ (ZIN); Essentuki env. [44.0°N, 42.9°E], no date, E. Shirokova, 2♂ ZMUM); *Volgograd* reg., Sarepta [48.52°N, 44.51°E], T. Bekker, 1868, 1♂, 2♀ (ZIN).

Distribution. Crimea and Caucasus, the latter also includes the lowlands adjacent to the north, such as the Stavropol and Volgograd regions. It is noteworthy that for the Black Sea territories west of Crimea (i.e. Odessa region and Moldova) only *C. m. marginata* was collected. Similar situation is in the Transcaucasian region: Armenia, Azerbaijan, Georgia, Dagestan — only *C. m. pontica* while in Turkey — only *C. m. marginata*. Thus, as far as we presently know *C. m. pontica* and *C. m. marginata* are nowhere sympatric, as it should be for subspecies of the same species by definition.

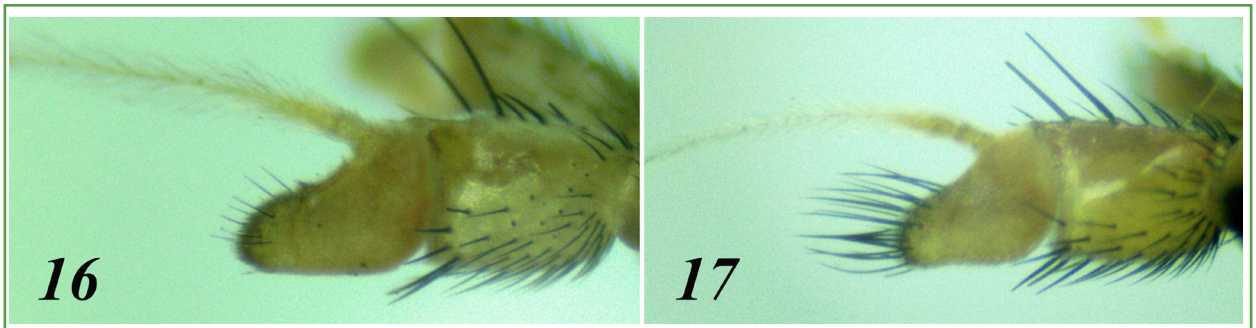
Coremacera turkestanica Elberg, 1968 is transferred to another genus, see *Euthycera turkestanica* in Chapter II.

Coremacera ussuriensis Elberg, 1968

Figs 5, 9

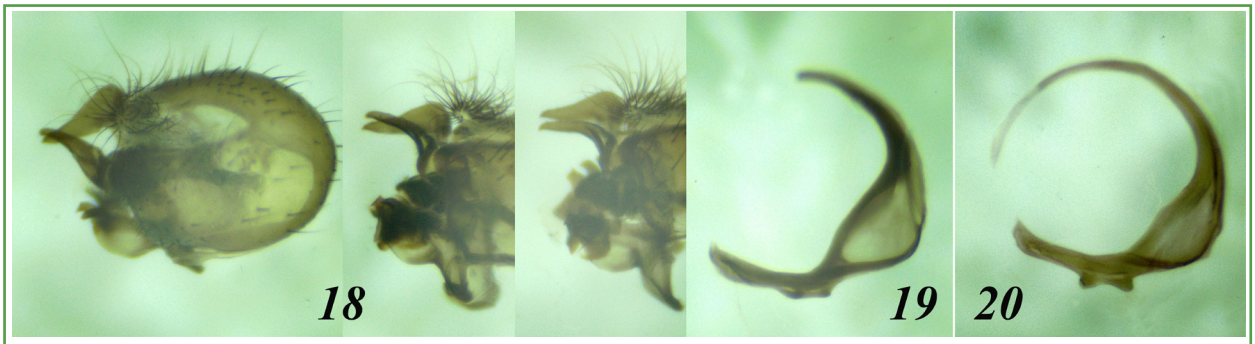
Type locality: Russia, Primorsky region, Lebehe [presently Tikhovodnoe, 44.44°N, 132.57°E].

Material: Russia: *Jewish* Reg., Listvyanka R. (≈48.10°N, 132.76°E), 12.08.2003, I. Melnik, 1♀ (ZMUM); *Primorsky* Reg., 20 km S of Spassk-Dalny, Evseevka [44.4°N, 132.9°E], 9.07.1993, S. Belokobylsky, 1♂ (ZIN); 30 km NW of Arseniev [44.29°N, 132.95°E], on light, 31.08.1999, Mironov, 1♀ (ZIN); Kamenushka vill. [43.62°N, 132.23°E]: 14.07–1.08.1983,



Figs 16–17. Postpedicel: 16 — *E. turkestanica* with fine and short apical setulae; 17 — *C. catenata* with longer and stronger apical setulae typical for *Coremacera*

Рис. 16–17. Postpedicel: 16 — *E. turkestanica* со слабыми и короткими апикальными волосками; 17 — *C. catenata* с типичными для *Coremacera* более длинными и сильными щетинками



Figs 18–20. *E. turkestanica* (18, 19), the holotype: 18 — postabdomen with surstyli, ventral and lateral; 19 — sternite 6; 20 — *E. hrabei*, sternite 6
Рис. 18–20. *E. turkestanica* (18, 19), голотип: 18 — постабдомен и сурстили, снизу и сбоку; 19 — стернит 6; 20 — *E. hrabei*, стернит 6

A. Shatalkin, 5♂, 3♀; 6–20.08.1983, A. Ozerov, 2♂, 2♀; 15.07–13.08.1984, A. Shatalkin, 2♂, 4♀; 13–15.08.1987, A. Shatalkin, 3♀; 19–23.08.1989, S. Churkin, 2♂, 1♀ (ZMUM); Kedrovaya Pad' Nat. Res., [43.1°N, 131.4°E]: 23.07.1984, A. Shatalkin, 2♀ (ZMUM).

Distribution. So far known only from the Russian Far East.

Remarks. The holotype was not found in ZIN collection where it should be stored. Presumably it is still in Tartu, Estonia, where Elberg worked.

Discussion

Male genitalia. For diagnostic by the male genitalia, authors proposed to use the surstyli (as gonostyli in Rozkosny (1987) or Vala (1989)), sternite 6, sternite 5 and the structure of inner copulatory organ.

(1) The shape of the surstyli should be species specific because they are responsible for the male to female contact during copulation. However, the visible shape of surstyli strongly depends on the angle of view. I have tried to illustrate both ventral and lateral projections, they are more or less useful depending on species.

(2) Sternite 6. Rozkosny (1987) and Vala (1989) named it so. Knutson (1987: fig. 18): named the same sclerite (in *Tetanocera plebeja*) as syntergosternite 6+7. Later Rozkosny & Knutson (2006) used the term sternite 6 for this sclerite in *Euthycera*; and I follow the last publication. Sternite 6 is strongly sclerotized, its wide part is located on the ventral side of the abdomen, its narrow part encircles the right lateral and dorsal sides of the abdomen. The narrow part of sternite 6 is often partially breaks off during dissection, but only the thickened ventral part is important for diagnostic purpose. Isolated sternites 6 have the shape of a hoop, so they lie flat on the slide and we look at them at about the same right angle. As follows from Figs 6–9, the shape of sternite 6 works as clear identity card of species of *Coremacera*.

(3) Sternite 5. I doubt that the structure of this small, soft and film-like sclerite has a diagnostic value. I don't use it for the *Coremacera* genus.

(4) Comparing isolated internal copulatory organs with drawings and annotations in the literature, I have never been able to come to reliable conclusions. The shape of this organ is very intricate, the observed two-dimensional projection critically depends on the angle of view. It would make sense to return to the discussion if someone shows that there are real differences, that these are not individual variability, and suggests a reproducible way to illustrate them.

So far, the shape of sternite 6 as a main character and the shape of surstyli as additional one are enough for identification of all species which I regard as valid ones.

Synonymy. As follows from the key below, *C. m. pontica* reliably differs from *C. m. marginata* only by the colour of the legs, which according to Vikhrev (2023: 840) is a weak diagnostic character. Elberg (1968) found that the genitalia of both taxa are the same, and proposed a taxonomic level of subspecies for

 https://www.doi.org/10.33910/2686-9519-2024-16-3-579-593

C. m. pontica. So far, everyone (including me) agrees with Elberg's decision. The only examined specimen with intermediate colour of legs is from the very south-eastern corner of the natural range of *C. marginata*, from Iran, [Razavi Khorasan province], Mesched [36.3°N, 59.5°E], 15.09.1925, Jenikin, 1♀ (ZIN, indicated by Elberg (1968) as paratype of *Coremacera marginata pontica*).

C. marginata pontica is a good starting point to discuss the correct approach to other *marginata*-like species of *Coremacera*: *C. obscuripennis* and *C. confluens*. The differences between these species can be summarized as below.

a. Rozkosny (1987), Vala (1989) and Rivosecchi (1992) pointed out the differences of the wing pattern: *C. marginata* has medium large rounded pale spots, *C. confluens* has the larger and mostly not rounded pale spots, *C. obscuripennis* has the darkest wings. All these authors also provided photos of the wings: Rozkosny (1987: figs 423, 424); Vala (1989: planche 7: o, p); Rivosecchi (1992: Tav. XI: a, b, c). Indeed, the wing pattern may be darker, paler or medium dark. It is a widely and gradually variable character, but each author drew a line between these states according to his own taste. In ZMUM and ZIN collections there are specimens with different wing pattern all identified as *C. marginata* by J. Verbeke, K. Elberg and R. Rozkosny. More or less the same variability is present in specimens of isolated *C. marginata pontica*, should we describe *C. obscuripennis/confluens pontica*? I am convinced that the only reasonable solution is to regard such differences of the wing pattern as intraspecific variability of *C. marginata*.

b. Loew (1845) characterized *C. obscuripennis* as having large dark spots around the bases of the mesonotal setulae. The same variability as above (a), and the same conclusion.

c. Loew (1845) and Rozkosny (1987) characterised *C. obscuripennis* as having "face with longitudinal median brown stripe". Sueyoshi (2001) and Vikhrev (2023) discussed taxonomic value of this character in Far Eastern *Limnia*. We came to a conclusion that most probably it is intraspecific variability, either inherited or induced by external conditions. The face of *C. marginata* has a distinct sexual difference: in most males the face is densely dusted by yellowish-white microtrichia, while in females it is partly or entirely (most of females) bare. The bare area in the middle of the face forms a more or less distinct dark(er) median line. I don't regard this line as diagnostic character.

d. None of Sciomyzidae experts (Rozkosny, Vala, Rivosecchi) have indicated any comprehensible differences of the above considered taxa in the structure in the male genitalia.

e. *C. m. marginata* and *C. m. pontica* are geographically isolated throughout their natural ranges. Such distribution permits us to be sure that they are at least good subspecies. In contrast with it, *C. marginata*, *C. obscuripennis* and *C. confluens* were reported from almost the same areas. This makes it impossible to consider them as subspecies and raises additional doubts that they are valid species.

Thus, the species considered above have no comprehensible diagnosis, they only "produce unnecessary entities". I propose that *Coremacera marginata* Fabricius, 1775 = *C. obscuripennis* Loew, 1845 **syn. nov**. = *C. confluens* Rondani, 1868, **syn. nov**.

Key for Palaearctic *Coremacera*

1. Unmistakable species due to characteristic wing pattern with three brown transverse stripes in apical half as in Fig. 1. (The larger *Coremacera*, body length 8-9 mm, wing 7-7.5 mm. Postpedicel of short-triangular shape. Orbital spots small. Scutum with small dark spots around bases of setulae and with 3 pairs of elongated brown spots along *dc* rows; *dc* 0+2, *ac* 0+1. Legs pale brown. Male *f3* with rows of *av* and *pv* in apical half, female *f3* with 3 strong ventral setae around middle. Uncommon species known from S Europe and S-W Asia.) . . . . ***amoena*** Loew
— Wing without three brown transverse stripes **2**
2. Frontal spots deep black and remarkably large, about 1.5 times longer than distance between frontal setae, both frontal setae inserted from the black area. Disc of scu-

tum with dark spots around bases of setulae. Postpedicel of trapezoid shape, elongate **3**

— Dark frontal spots small, much smaller than distance between frontal setae, only anterior frontal seta inserted from the dark area. Disc of scutum without dark spots around setulae. Postpedicel of equilateral triangle shape, short (Fig. 17) **5**

3. Prescutellar *ac* absent. Costal margin of wing with large subquadrate pale spots; the rest of wing with large subquadrate or subpentagonal pale spots (Fig. 3). Small, body size 5–5.5 mm Dark spots around scutal setulae small. Central Europe. (Male with femora and tibiae yellow, female with darkened tibiae.). ♂: sternite 6 at ventral part with one finger-like thickening (Fig. 7); surstyli gradually narrowed from base to apex (Fig. 3) . . . . . ***fabricii* Rozkosny**

— Prescutellar *ac* present. Costal margin of wing unicolour brownish; the rest of wing with small numerous rounded pale spots (Fig. 4). Large, body size 7–8 mm, rarely 6 mm. Dark spots around scutal setulae very distinct (Fig 4). ♂: sternite 6 at ventral part with three hill-shaped thickenings (Fig. 6); surstyli wide in basal 3/4 and abruptly narrowed at apex (Fig. 4) . . . . . **4 *marginata*** Fabricius

4. At least femora brown. W Europe and temperate part of E Europe, also Turkey . . . . . ***m. marginata*** Fabricius

— Femora and tibiae pure yellow. Caucasus with adjacent lowlands and Crimea . . . . . ***pontica*** Elberg

5. Face with black spot in middle. *dc* 0+2; *ac* 0+1. Scutum yellow, with pair of grey submedian vittae (less distinct in male, distinct in female as in Fig. 2) and brown spots (in male 1 pair, in female 2-3 pairs). Wing: costal margin (= cell R2+3) dark with 3–5 subquadrate pale spots; the rest of wing with a reticulate pattern, but area along vein R4+5 pale-hyaline. ♂: sternite 6 at ventral part with ear-like thickening at apex and two more partly fused trapezoid thickenings (Fig. 8); surstyli gradually narrowed from base to apex (Fig. 2). ♀: *f3* without strong ventral setae. Europe and S-W Asia . . . . . ***catenata*** Loew

— Face without black spot. *dc* 0+1; *ac* absent. Scutum brownish with indistinct narrow vittae. Wing with costal margin (cell R2+3) mostly pale-hyaline; only in apical 1/3 to 1/4 with 2–3 small grey spots (♂, Fig. 5) or in apical 1/2 with 4–5 small dark spots (♀, Fig. 5). ♂: sternite 6 at ventral part evenly thickened and with pointed apex (Fig. 9); surstyli wider, trapezoid shape (Fig. 5). ♀: *f3* in apical half with strong *av* and *pv* setae. Far East . . . . . ***ussuriensis*** Elberg

Chapter II. Taxa of Coremacera which require clarification

Coremacera halensis Loew, 1847

Fig. 10

Material: France, *Provence-Alpes-Côte d'Azur* region, Greolieres [43.795°N, 6.943°E], 24.08.1979, Heitmans, 1♂ (ZMUM).

Discussion. Both Rozkosny (1987: 45–47) and Vala (1989: 147–154) characterized *C. halensis* as species similar to *C. fabricii*. According to the authors these species differ as follows:

— Anterior wing margin mainly dark brown, at most with 3–5 small pale spots. Mesonotum densely grey dusted; with large and distinct dark spots around bases of setulae (as in *C. marginata*) and with some larger brown spots in addition. Postpedicel of equilateral triangle shape, shorter. Femora bicolour, with dark bases . . . . . ***halensis*** Loew.

— Anterior wing margin mainly pale, with more numerous pale spots. Mesonotum thinly dusted, brownish; with small dark spots around bases of setulae and with larger brown spots absent or indistinct. Postpedicel of trapezoid shape, elongated. Femora unicolour . . . . . ***fabricii*** Rozkosny.

I have a single male from France which entirely fits *C. halensis* criteria (Fig. 10). All 20 specimens from Central European Russia listed here entirely fit *C. fabricii* criteria. This is an argument for the validity of *C. halensis*. However, there are serious arguments against it as well. (1) Genitalia of the male identified as *C. halensis* was examined and found the same as in *C. fabricii*. (2) To fill the lack of Western European material I examined images of *C. fabricii* at https://diptera.info/

 https://www.doi.org/10.33910/2686-9519-2024-16-3-579-593

photogallery.php site. I found interesting images from Germany, Wernigerode [51.8°N, 10.8°E], 8.05.2009 (Figs 11, 12). Both specimens were photographed at the same place and time, they look as typical *C. fabricii* except for the wing pattern. A female has the wings of *C. halensis*, while male has those of *C. fabricii*. Thus, the wing pattern can't be used as reliable diagnostic character.

Comparing this case with *C. m. pontica*, I believe that most probably there are two subspecies: *C. halensis halensis* in the very west of Europe and *C. halensis fabricii* in the rest of the territory, with a contact zone in Germany. More European material is required for final conclusion.

***Coremacera* sp1** "atypical *ussuriensis*"
Fig. 13

Material: Russia, *Primorsky* Reg., Kedrovaya Pad' Nat. Res., [43.1°N, 131.4°E]: 28–29.07.2013, I. Gomyranov, 2♀ (ZMUM).

Remarks. These females differ from normal specimens of *C. ussuriensis* as follows: mesonotum densely grey dusted, with distinct dark spots around bases of setulae and with some larger brown spots in addition; postpedicel of trapezoid shape, elongated and more densely setulose at apex (Fig. 13). It is worth noting that the other two females collected in the same locality and date but 30 years ago were typical *C. ussuriensis*. So far I interpret it as one more example of wide and somewhat irregular variability in *Coremacera*. More material is required.

***Coremacera* sp2**
Fig. 14

Material: China, Beijing, 24.05.1935, Zhenzhurist [= N. N. Filippov], 1♀ (ZMUM).

Descriptive notes. Female (Fig. 14). Body brown, legs yellow. Head with black spot around anterior orbital seta and large black orbito-antennal spot, both distinct. Face without round dark median spot. Postpedicel of intermediate shape, with strong and distinct setulae at apex. Mesonotum thinly grey dusted; with brown spots around bases of setulae and with two pairs larger brown spots in addition. Wing brown, with numerous pale spots all over the surface. *f3* in apical half with 2–3 *pv* setae.

Discussion. This female well differs from all other *Coremacera*, especially unusual is the wing pattern. However, considering above discussed variability in the genus, I prefer not to describe a new species by single female specimen.

Euthycera turkestanica Elberg, 1968
Figs 15, 16, 18–20

Coremacera turkestanica Elberg, 1968
Euthycera turkestanica Elberg, 1968, **comb. nov**.

Material: Holotype: ♂, **Uzbekistan**, Tashkent, Kaunchi [41°1N, 69.1°E], 24.07.1925 (ZIN).

The holotype is in a good condition although right mid and hind legs absent. The male genitalia are in a vial with glycerol.

Descriptive notes. Head with small brown spots around anterior orbital seta and small indistinct orbito-antennal spot. Face with round dark median spot (Fig. 15). Postpedicel triangular, with 7–9 very fine and short setulae at apex. The comparison of these setulae with the same apical setulae in *C. catenata* is shown in Figs 16–17. Scutum evenly light-brown without distinct vittae. Chaetotaxy: *dc* 0+2, *ac* 0+1. Wing. Costal margin (= cell R2+3) mostly pale with 6–7 brown spots; the rest of wing with irregular reticulate pattern (Fig. 15).

Discussion. The difference between *Coremacera* and *Euthycera* is only in the presence of setulae at the apex of the postpedicel in the former genus. To which genus belongs specimen with 7-8 weak and short setulae at apex of postpedicel, instead of 15-20 relatively strong and long setulae (compare Figs 16 and 17)? I suppose it belongs to *Euthycera* for the following reasons. (1) The male sternite 6 and surstyli are identical to those of *E. hrabei* Rozkosny, 1969, which also inhabits Central Asia (Figs 19 and 20). (2) Among 15 specimens identified as *E. hrabei* in ZMUM and ZIN collections there are female and male collected in Kazakhstan (Almaty, 43.218°N, 76.934°E, 18.06.2008, D. Gavryushin). The female has a typical for *Euthycera* bare postpedicel, while the male has the same weak and short setulae as the holotype of *E. turkestanica* but even more sparse: 1 on the left antenna and 3 on the right one. (3) The wing pattern of *turkestanica* is more similar to that of *Euthycera* than to any *Coremacera*.

So, the diagnosis of genus *Coremacera* should be clarified as follows:

— Postpedicel with strong (as in Fig. 17) setulae at apex . . . . . *Coremacera*

— Postpedicel bare or rarely with few minute setulae (as in Fig. 16) at apex . . . *Euthycera*

Thus, *Coremacera turkestanica* Elberg, 1968 is *Euthycera turkestanica* **comb. nov**. and *Euthycera turkestanica* Elberg, 1968 = *E. hrabei* Rozkosny, 1969 **syn. nov**.

Apart from the fact that there is only one diagnostic character to differ *Coremacera* and *Euthycera* and this single character may be doubtful, there are several parallelisms between *Coremacera*, *Euthycera* and *Dictyacium*. (1) *C. catenata* and *E. stictica* share facial spot and have very similar male genitalia. (2) *C. catenata* and *E. flavostriata* have the same wing pattern. (3) *C. amoena* shares with *E. chaerophylli* similar wing pattern and large body size. (4) Nearctic *Dictyacium ambiguum* (see: https://www.inaturalist.org/observations/42206280) looks as *C. marginata* with elongated antenna and without setulae at apex of postpedicel.

I believe that molecular data will show, that *Coremacera* is at most a subgenus of *Euthycera*.

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