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FIRST RECORD OF THE SOFT-WINGED FLOWER BEETLE FROM THE GENUS *CERAPHELES* MULSANT ET REY (COLEOPTERA: MALACHIIDAE) IN UKRAINE

Кравченко, О. М. Перша знахідка малашки роду *Cerapheles* Mulsant et Rey (Coleoptera: Malachiidae) в Україні. *Вісник Харківського ентомологічного товариства*. 2018. Т. XXVI, вип. 2. С. 8–14.

Наведено дані про першу знахідку роду жуків-малашок *Cerapheles* Mulsant et Rey, 1867 і виду *C. terminatus* (Ménétriés, 1832) в Україні (Львівська та Волинська обл.). Охарактеризовано оселища та кормові рослини імаго цього виду. Наведено основні відмінності *Cerapheles* від близького роду *Anthocomus* Erichson, 1840, а також перепис самця та коротку характеристику самки *C. terminatus* на основі сучасних підходів у таксономії малахійд. 5 рис., 1 табл., 18 назв.

Ключові слова: Україна, нові знахідки, *Cerapheles terminatus*, Coleoptera, Malachiidae, таксономія.

Кравченко, А. М. Первая находка малашки рода *Cerapheles* Mulsant et Rey (Coleoptera: Malachiidae) в Украине. *Изв. Харьк. ентомолог. о-ва*. 2018. Т. XXVI, вып. 2. С. 8–14.

Приведены данные о первой находке рода жуков-малашек *Cerapheles* Mulsant et Rey, 1867 и вида *C. terminatus* (Ménétriés, 1832) в Украине (Львовская и Волынская обл.). Охарактеризованы местообитания и кормовые растения имаго этого вида. Приведены основные отличия *Cerapheles* от близкого рода *Anthocomus* Erichson, 1840, а также переписание самца и краткая характеристика самки *C. terminatus* на основе современных подходов в таксономии малахиейд. 5 рис., 1 табл., 18 назв.

Ключевые слова: Украина, новые находки, *Cerapheles terminatus*, Coleoptera, Malachiidae, таксономия.

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The soft-winged flower beetles genus *Cerapheles* Mulsant et Rey, 1867 and species *C. terminatus* (Ménétriés, 1832) are recorded for the first time for Ukraine (Lviv and Volyn Regions). The habitats and host plants of adults of this species are characterized. The main morphological differences of *Cerapheles* from the related genus *Anthocomus* Erichson, 1840, as well as the redescription of male and the brief characteristics of female of *C. terminatus* are provided based on the current approaches in the soft-winged flower beetles taxonomy. 5 figs, 1 tab., 18 refs.

Keywords: Ukraine, new record, taxonomy, *Cerapheles terminatus*, Coleoptera, Malachiidae.

Introduction. The genus *Cerapheles* Mulsant et Rey, 1867 from the soft-winged flower beetles (Malachiidae) now includes seven species of worldwide fauna (Greiner, 1937). Three of them are distributed in Palaearctic, but no records about any species still were from Ukraine. Below author presents data on the first find of *C. terminatus* (Ménétriés, 1832) in Ukraine, on its preferred habitats and host plants, on the main differences of the genus *Cerapheles* from the morphologically similar genus *Anthocomus* Erichson, 1840, as well as the redescription of male and provision of addition characteristics of *C. terminatus* female based on the modern approaches in taxonomy of the soft-winged flower beetles.

Materials and methods. Material was collected by author using standard entomological methods: sweeping by entomological net, hand searching on plants, shaking of aquatic plants, followed by sampling of beetles from the water surface with an aquarium net, sifting of plant remnants by the soil sieve. All material are stored in author's personal collection.

Results and discussions. Based on observations in the Hydrological Reserve 'Pishchansky' (Great and Small Pishcha lakes, Fig. 1.) in the end of May–beginning of June 2017, *Cerapheles* beetles resided in the littoral part of the lakes in the places of the growth sedge (*Carex vesicaria* L.), the common reed (*Phragmites australis* (Cav.) Trin. ex Steud.), and the broadleaf cattail (*Typha latifolia* L.), however the yellow iris (*Iris pseudacorus* L.) was absent in these habitats, despite it grows in a plurality of banks of drainage canals.

The depth in these parts of the lakes varies from 20 to 40 cm. The bottom is strongly silty with interweaving of blue-green and green algae and dead cane remnants, and on the surface of the water are thick accumulations of the common frogbit (*Hydrocharis morsus-ranae* L.).

Females of *C. terminatus* are wingless. They actively moved along dead reed stalks, some of which had many holes made by various insects that developed there, then reached for sedge inflorescences, where they feed of pollen (Fig. 2). Some of them descended along thick dry reeds stalks nearly to the surface of the water, bent under the belly, touched by its tip the plant, froze for 10–15 min, and then again ran very quickly along the stalks. Perhaps they laid eggs, and the hatching larvae could use the holes in the reed stalks as a temporary shelter.

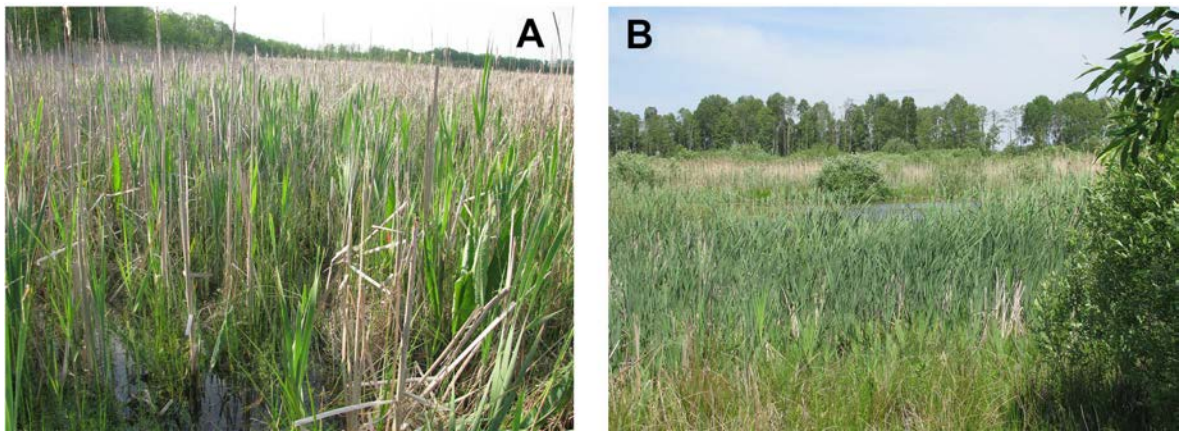


Fig. 1. The habitat of *C. terminatus* (aquatic biotopes): A — Great Pishcha lake; B — Small Pishcha lake.

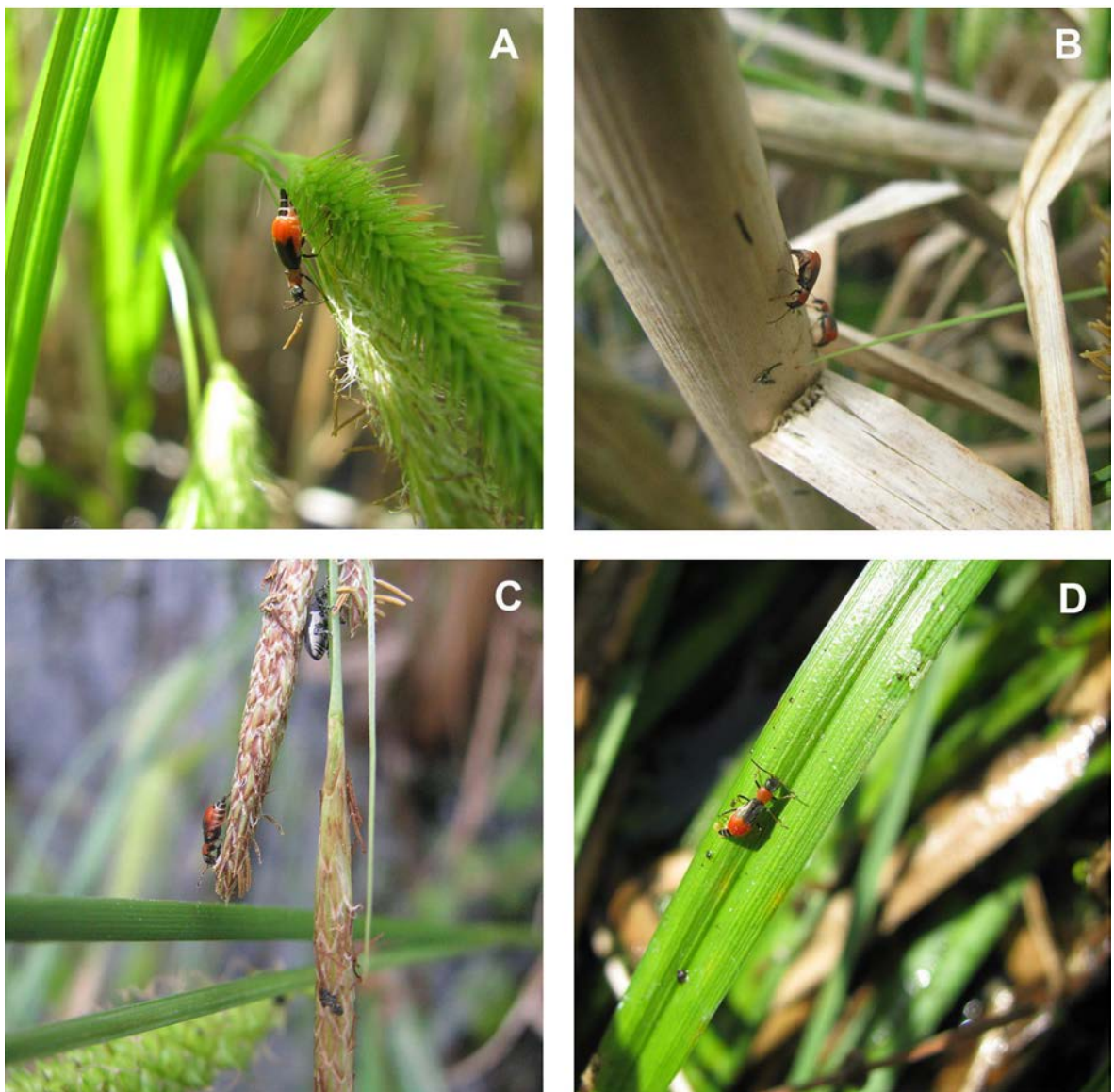


Fig. 2. *C. terminatus*, ♀: A, C — on the sedge inflorescences; B — laying eggs on old broadleaf cattail stalks (*Typha latifolia* L.); D — in natural environment.

Observing the imago, the males were not detected, but when shaking off plants on the surface of the water, individuals of both sexes were collected.

Genus *Cerapheles* Mulsant et Rey, 1867

Genus *Cerapheles* differs from close genus *Anthocomus* by some characters (Tab. 1, Fig. 3).

Table 1. Comparative table of distinctive morphological characters for the genera *Cerapheles* and *Anthocomus* (Fig. 3)

Characters	<i>Cerapheles</i>	<i>Anthocomus</i>
Males		
Apex of elytra	impressed dorsally (Fig. 3 B)	impressed frontally (Fig. 3 A)
Elytral internal sutural angle	raised up, with vertical tuft of white hairs (Fig. 3 B)	not raised up, with vertical curved flat plates (Fig. 3 A)
Pronotum	1.20-times width to length, distinctly narrowed from middle to base (Fig. 3 C)	1.05-times width to length, quadrate (Fig. 3 D)
Apical segment of maxillary palpi	protruded inward, truncated at the tip (Fig. 3 E)	emarginated inward, pointed at the tip (Fig. 3 F)
Frons	with distinct U-shaped impression, with slight elevation in the middle and with sharp supraorbital ridges	with very shallowly impression, almost flat, without sharp supraorbital ridges
Antennae	filiform (Fig. 3 G)	serrate (Fig. 3 H)
Females		
Wings	absent	developed

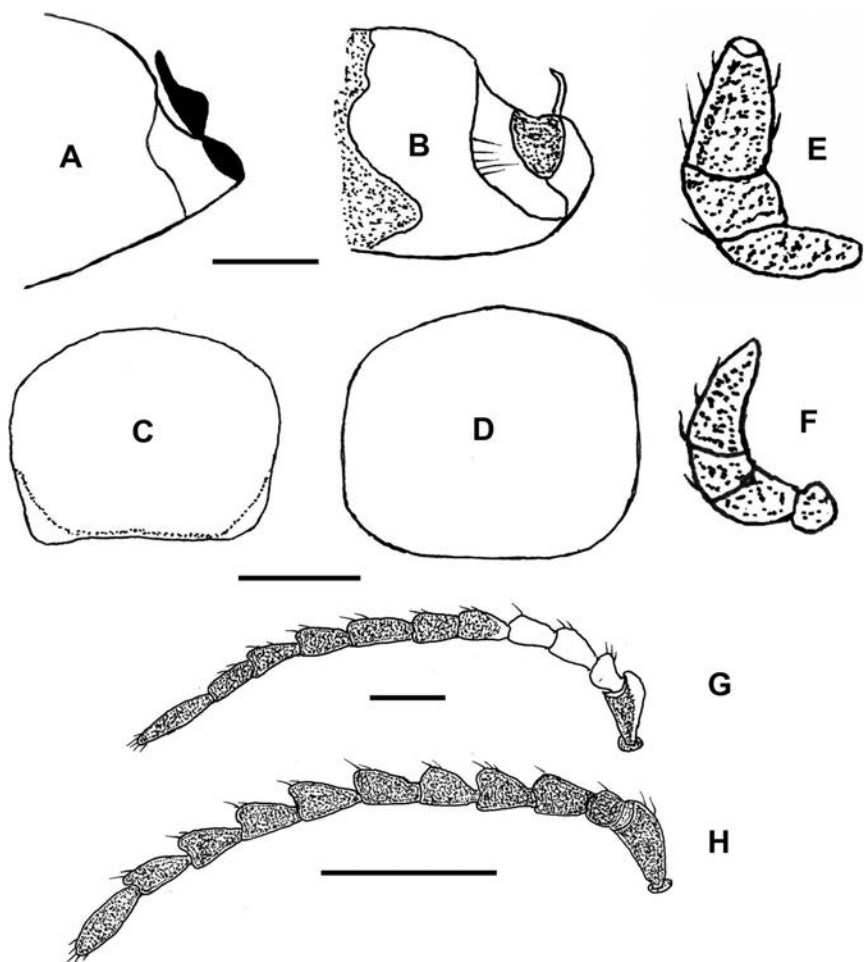


Fig. 3. Distinctive morphological features of *C. terminatus* (B, C, E, G) and *A. rufus* (A, D, F, H): A, B — apex of elytra with appendages; C, D — pronotum; E, F — apical segment of maxillary palpi; G, H — antennae. Scale bar 0.5 mm.

Three of seven species of the genus are distributed in the southern part of the West Palaearctic: *C. lateplagiatus* (Fairmaire, 1862) is known from France, Portugal, Spain (Mayor, 2007), *C. utebensis* Hodgson et Plata, 1987 — from Spain, and *C. zoelleri* Flach, 1895 — from Romania, Turkey, Transcaucasia, Middle East, Sinai Peninsula and Saudi Arabia (Mayor, 2007; Constantin, 2016). In contrary, area of the fourth species, *C. terminatus* (Ménétriés, 1832), is much wider and includes Central and partly South Europe, North Caucasus, and recorded also from Iraq, Syria, Turkey, Turkmenistan, Uzbekistan (Szalóki, Merkl, 2005; Mayor, 2007; Чернышёв, 2011; Constantin, 2016). In Europe species still was known from Czech Republic and Slovakia (Švihla, 1993), western and central Poland (Kuśka, 1993; Borowiec, 1994).

***Cerapheles terminatus* (Ménétriés, 1832)** (Figs 3B, 3C, 3E, 3G, 4, 5)

= *Anthocomus festivus* Redtenbacher, 1842, = *Cerapheles obscuricornis* Pic, 1906, = *Melyris venusta* Guérin-Ménéville, 1844

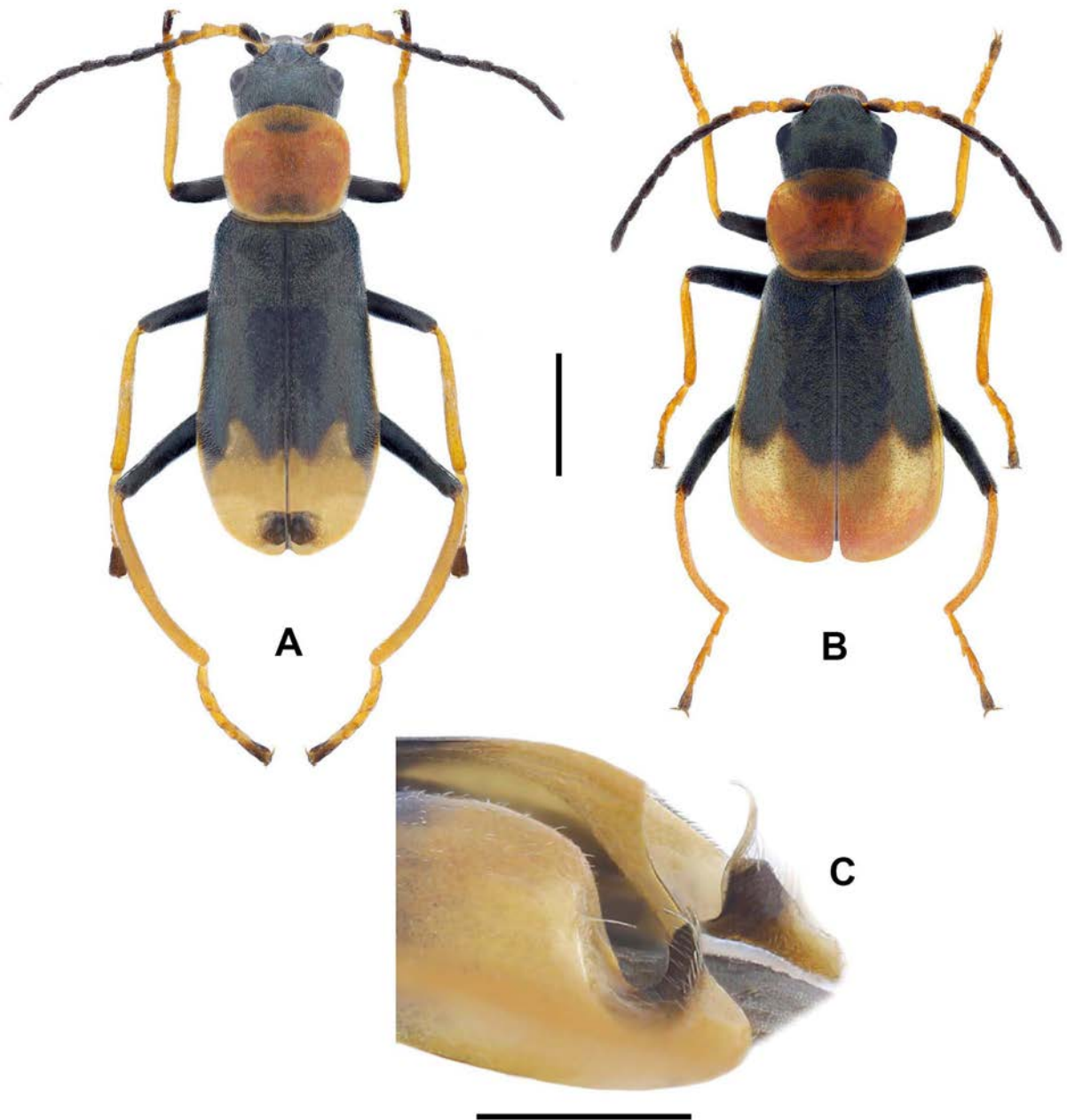


Fig. 4. *C. terminatus*, habitus: A — ♂; B — ♀; C — apex of male elytra. Scale bar 0.25 mm.

References. The original description of *C. terminatus* (Ménétriés, 1832) was very short and incomplete, and more detail redescription of males and females of this species were made later (Mulsant, Rey, 1867; Peyron, 1877; Abeille de Perrin, 1891). Later on morphological characters of this species were very briefly characterized only in various keys (Reitter, 1908; Kuhnt, 1913; Якобсон, 1915; Evers, 1979); however, many diagnostic features currently used in the taxonomy of malachiid beetles were not used.

In this regard, below male redescription, and some additional characters for female are provided, basing on the current approaches in taxonomy of malachiids. Author hopes these allow correct identification of this species in Ukraine and neighboring countries.

Redescription: ♂ (Figs 3C, 3B, 3F, 4A, 4C, 5A, 5C–G). Body length 3.5–4.1 mm, width at elytral base 1.1 mm.

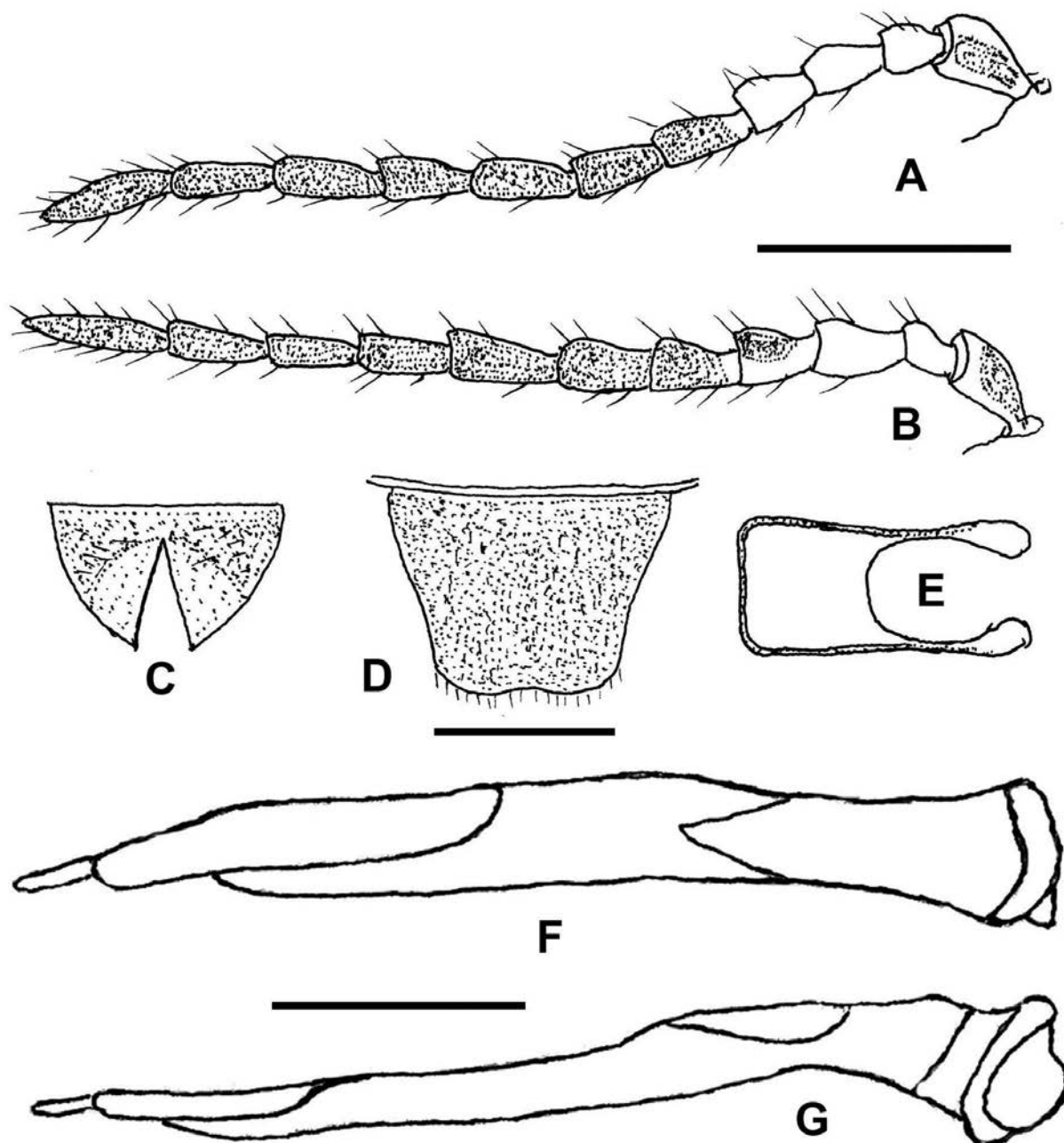


Fig. 5. *C. terminatus*: A — right antenna, ♂; B — right antenna, ♀; C — apical sternite, ♂; D — apical tergite, ♂; E — tegumen, ♂; F — aedeagus, dorsal view; G — aedeagus, lateral view. Scale bar 0.25 mm.

Head in front of imaginary line connecting antennal sockets, 1st–4th antennal segments, tibia and tarsi (except for terminal segment), pronotum and elytra posteriorly reddish-yellow, mesepimers yellow, rest of body blackish-green, slightly shiny.

Head at the level of eyes somewhat narrower than anterior part of pronotum. Clypeus trapezoid, transversal, membranous, sloping to labrum, yellow; labrum transversal, with dark disc and reddish-yellow margins; apical segment of maxillary palps somewhat shorter than preceding ones, with widely truncated tip, with light margins, while other segments completely dark. Genae and postgenae black.

Head surface with well developed microsculpture, submatt, black, with sparse decumbent pubescence.

Frons with distinct U-shaped impression between eyes, with slight elevation in the middle and with sharp supraorbital ridges; area along fronto-clypeal suture yellow.

Antennae 11-segmented, filiform, long, surpassing base of elytra, 1st–4th antennal segments reddish-yellow; 1st segment club-shaped, slightly darkened on the middle, 2nd segment oval, 3rd one widely-conical, its length subequal to width, 4th segment club-shaped, 5th — cylindrical, 1.5 times longer than width, 6th–10th ones somewhat conical, 11th segment 1.7 times longer than preceding one, narrowed apically; 6th–11th segments black, covered by white decumbent hairs, with long black standing hairs at apex.

Pronotum transversal, 1.2 times wider than length, its frontal corners somewhat blunted, its sides subparallel till middle, very slightly convex, distinctly narrowed posteriorly and less convex than in anterior half, sided from middle widely impressed. Surface of pronotum with very fine microsculpture, matt, evenly covered by short white decumbent hairs.

Scutellum big, square, well visible.

Elytra 2.8 times longer than width, gradually widened from base, before apex narrowed and then widely rounded; they at base slightly narrower than pronotum at middle, humeri visible, slightly protruding. Apex of elytra impressed dorsally, black, internal corner raised, turning to wide dark plate, which possess long vertical tuft of white hairs; latter curved inside apically and form hook. Disc of elytra with transverse rugulose microsculpture, which gradually fades to side edges and top. Whole surface of elytra evenly covered by white decumbent pilosity, slightly shiny, with one long seta below humeri.

Legs slightly thickened, covered by short white decumbent hairs, hind femora does not reach top of elytra, all femora black; fore- and middle tibiae straight, hind tibiae curved; fore tibia, all tarsal segments, except for terminal, reddish-yellow. Fore tarsi simple, 4th tarsal segment shortest, 5th (terminal) the longest, equal to 3rd and 4th together, claws short, thin, with transparent plate at base.

Body ventrally very finely punctuated, covered by dense decumbent pubescence, blackish-green.

6th sternite transversal, narrowed to apex, with triangle notch medially that surrounded by smooth impression, disk hairless, sides with standing hairs directed to notch. Apical tergite slightly transversal, narrowed to base, shallowly notched on apex, with distinct microsculpture and well marked rows of long white decumbent hairs, directed to apex; tegumen square, with narrow lobes, their length not longer than length of tegumen. Aedeagus straight when seen dorsally, with widely pointed apex; when seen laterally it slightly bent downwards, its anterior part with well visible endophallus.

♀ (Figs 4B, 5B). Total body length 3.6–4.3 mm, width at elytral base 0.8–1.0 mm. Wings absent. Elytra without appendages at apex. 3rd and 4th antennal segments narrower than in males, conical, 5th to 10th segments cylindrical, slightly longer than width, gradually rounded at tips; 1st to 4th segments reddish-yellow, rest of segments black. Apex of terminal segment of maxillary palps yellow. 6th gastral tergite slightly transversal, 1.2 times wider than length, sharply narrowed to apex and gradually rounded, straight at base.

Material. Ukraine, Lviv Region, Yavorov Distr., Yavorov National Natural Park, vicinity of Ivano-Frankovo, 49°97'67.16" N, 23°66'16.32" E, along a fishery pond, 02.06.2012 (O. Kravchenko) — 1 ♀; Ukraine, Lviv Region, Yavorov Distr., Natural Reserve 'Roztochia', 49°97'63.82" N, 23°66'28.29"E, along the fishery pond, 31.05.2015 (O. Kravchenko) — 1 ♀; Ukraine, Volyn Region, Shatsk Distr., 2 km W of vil. Pishcha, Tugor, 51°60'55.99" N, 23°78'60.44" E, meadow vegetation along the fishery pond, 19.05.2016 (O. Kravchenko) — 1 ♀; Ukraine, Volyn Region, Shatsk Distr., vil. Pishcha, Hydrological Reserve 'Pishchansky', 51°61'50.65" N, 23°81'14.68" E, marshy shore of the Great Pishcha lake, 29.5.2016 (O. Kravchenko) — 2 ♂♂, 1 ♀; ibidem, 31.05.2017 (O. Kravchenko) — 2 ♂♂, 5 ♀♀; ibidem, 10.06.2018 (O. Kravchenko) — 1 ♀; Ukraine, Volyn Region, Shatsk Distr., vil. Pishcha, Hydrological Reserve 'Pishchansky', 51°62'15.56" N, 23°82'53.68" E, marshy shore of the Small Pishcha lake, 16.06.2016 (O. Kravchenko) — 2 ♂♂; ibidem, 04.06.2017 (O. Kravchenko) — 2 ♂♂, 8 ♀♀.

Ecology. There was information (Abeille de Perrin, 1890, 1891; Peyron, 1877; Kuška, 1993; Burakowski, Mroczkowski, Stefańska, 2000) that the *C. terminates* were collected on flowers of the yellow iris, and mentioned authors supposed that these beetles feed on the iris.

However, for the territory of Volyn, the cited data were not confirmed: iris was absent in the habitats of *C. terminates* along lake banks, and females of this species feed of pollen of the sedge. On the other hand, very many flowering iris grew along the canal between Great Pishcha lake and fish ponds, but specimens of *C. terminates* were completely absent there.

Consequently, it is safe to say that the forage plant of *C. terminates*, at least in our conditions, is *Carex vesicaria*.

Conclusions. 1. Throughout 2012–2018 the density of population of *C. terminates* in the aquatic biotopes of the Great and Small Pishcha lakes was stable, with a little fluctuation in 2013 and 2018, when the water level in the lakes decreased, and the littoral part became heavily overgrown.

2. Period of existing imago of *C. terminates* was quite short, end of May–mid June.

3. Imago of *C. terminates* in our conditions feed of pollen of the sedge (*Carex vesicaria*).

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