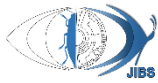


Original Article 

# New faunistic records of crane flies (Diptera: Tipuloidea) from the Balkan Peninsula

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**ABSTRACT.** Tipuloidea species from the Western Palearctic, including the Balkan region, have been intensively studied for the last century. Nevertheless, research in recent years shows that different regions of the Balkans are unevenly investigated, and new species or new data are constantly being discovered. The aim of this study is to contribute new data to the distribution of Tipuloidea species in the Balkan Peninsula for two families, Limoniidae and Tipulidae. Here we document for the first time 25 species in Albania, Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Montenegro, and North Macedonia. All these new faunal data contribute to a better understanding of the true dimension of Tipuloidea biodiversity in the Balkan region, one of the most species-rich areas in Europe.

**KEYWORDS:** Europe, Faunistic, Limoniidae, Photo-documentation, Tipulidae

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## INTRODUCTION

The Balkan Peninsula is one of the most important biodiversity hotspots in Europe, due to a combination of complex physical and evolutionary processes leading to a high level of endemism and a high number of range-restricted species, and it is an important source of Europe's current biodiversity (Theowald & Oosterbroek 1986; Popov & Fet 2007; Kryštufek & Reed 2004; Kovačević et al. 2025). Tipuloidea, a major taxonomic unit of the order Diptera, includes four families: *Cylindrotomidae*, *Limoniidae*, *Pediciidae*, and *Tipulidae*, and it is currently represented by 15,750 recognized species worldwide (Oosterbroek 2026). The taxonomy and faunistic research on Tipuloidea in the Balkan region has a significant tradition. Since the 19th century, numerous researchers have expanded our knowledge of the region's fauna, contributing with descriptions of an important number of new taxa or faunistic records (Bezzi 1911, 1914; Strobl 1902, 1904). Later, important revisions and monographs were published, like those of Lackschewitz (1940a, 1940b), Lackschewitz and Pagast (1940, 1941, 1942), Oosterbroek (1975, 1978, 1979a, 1979b, 1979c, 1980); Simova-Tošič (1977), Starý (1974); Krzeminski & Starý (1989, 1993); among others. All this data is well documented and updated in the Catalogue of the Craneflies of the World, which is also the most significant reference source for the present-day research efforts on Balkan Tipuloidea (Oosterbroek 2026). In recent years, the Tipuloidea fauna of the Balkan region has been intensively investigated; without claiming to be exhaustive, we will mention only a few significant works, such those of Bilalli et al. (2021); Graf et al. (2023); Hubenov (2018, 2021, 2025);

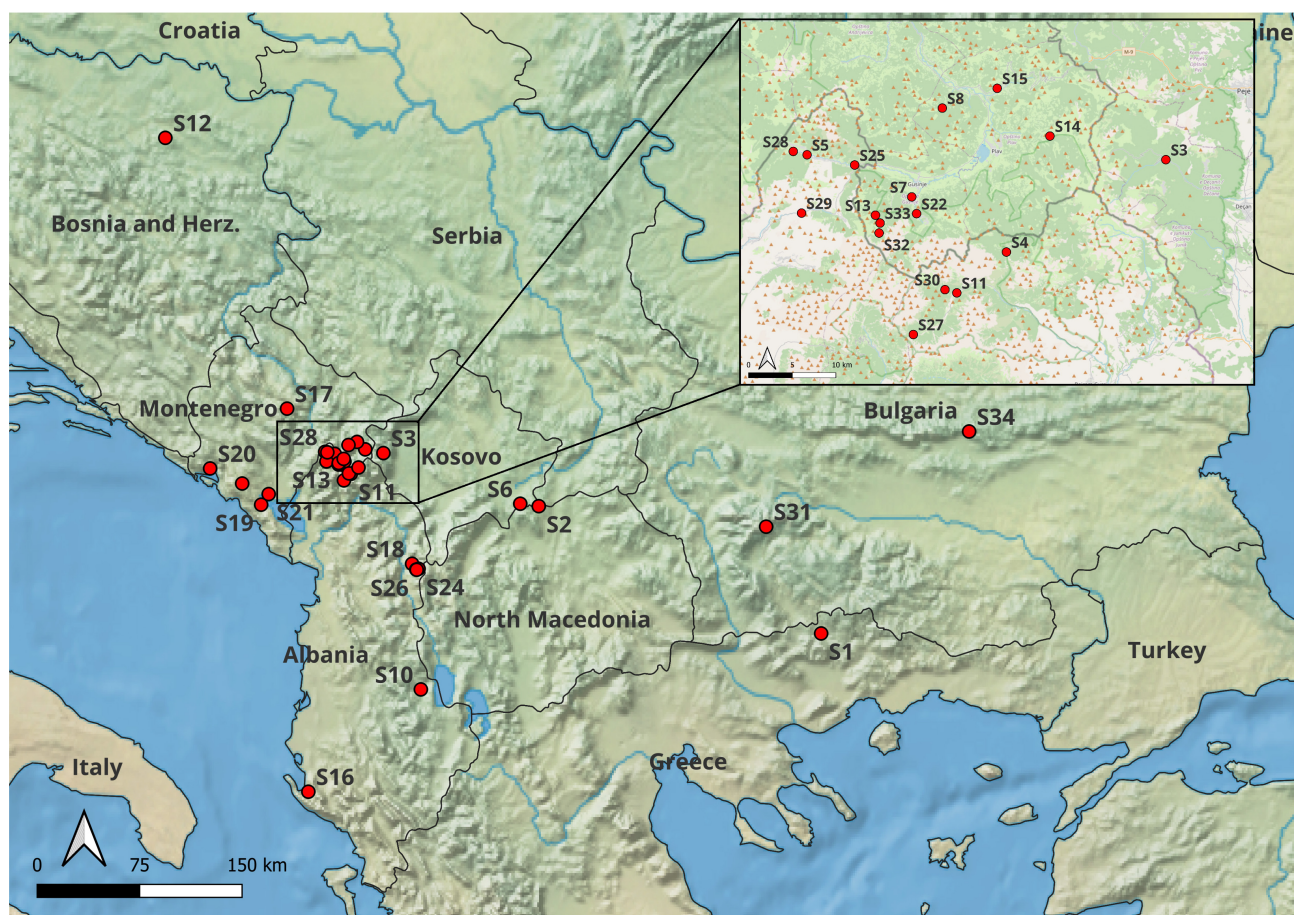
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Keresztes et al. (2018); Kolcsár et al. (2013, 2015, 2017a, 2017b, 2018a, 2018b, 2023a, 2023b); Ivković et al. (2020); Starý (2012); Vogtenhuber (2012), and others. Despite these advances, however, comprehensive surveys of the region's Tipuloidea fauna remain limited. As a result, many species are still under-sampled or undocumented, highlighting the need for deeper research into the faunistic diversity of the Balkan region.

This study aims to contribute to a deeper understanding of the Tipuloidea fauna of the Balkan region and to expand existing knowledge by documenting new sampling data, detailing the current distribution of the species, and discussing and photographically supporting taxonomic decisions of the mentioned species.

## MATERIAL AND METHODS

Here we summarize the collection sites and data of our Balkan faunal expeditions, which started in the 2000s and continue to this day, which took place in the following Balkan countries: Albania, Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Montenegro, and the Republic of North Macedonia in 34 different sampling locations. The sampling sites and their most important geographical reference information are presented in Figure 1. Adult specimens of Limoniidae and Tipulidae were collected from different countries of the Balkan region between 2006 and 2025. During daytime collections, specimens were captured with standard entomological nets, and nocturnal species were collected using UV light traps. Specimens were preserved in 96% ethanol and stored in the Diptera collection of the Faculty of Biology and Geology (DCFBG), Cluj-Napoca, Romania. For morphological examination, the posterior half of the abdomen of female and male individuals was removed and immersed overnight in a 10% KOH solution at room temperature to remove soft tissues.



**Figure 1.** Map showing the distribution of the 34 sampling stations (S1–S34).

The genitals were washed in glacial acid for one hour to neutralize KOH residues, then gradually transferred to a more dilute to more concentrated alcohol series, from 25% to 96% ethanol, and then placed in a 50:50 glycerol-ethanol mixture for approximately one hour. Finally, the male and female genitalia were placed in 100% glycerol for long-term preservation, based on the methodology of Jürgen Kappert (2026). If necessary, additional body parts were also examined, such as wings, legs, etc. Wing photos were taken using an OPTICA® stereomicroscope (SLX-3) with an attached OPTIKA® Camera (C-P20CC). Photos of the genital structures were captured with a compound Olympus microscope (CX23) with Canon® 650D cameras, equipped with standard plan achromatic objectives, and were used in photo documentation of the taxonomically most important morphological characters. Zerene Stacker software was used for image stacking. The stacking process consisted of 10–15 individual exposures with the stereomicroscope and 20–50 exposures with the compound microscope. Identification was carried out using morphological keys and comparison with reference specimens from existing collections (for ex. the DCFBG, Cluj Napoca, Romania) and using reference works downloaded from the Catalogue of the Crane Flies of the World (Oosterbroek 2026) available at <https://ccw.naturalis.nl/>. Terminology of body parts, wing venation, male and female genital structures follows Theowald (1978), Mannheims (1967), and Stubbs (2021).

## RESULTS

Here we present new faunistic data for a total of 25 Limoniidae and Tipulidae species from different Balkan countries.

### Class Insecta Linnaeus, 1758

### Order Diptera Linnaeus, 1758

### Suborder: Nematocera Duméril, 1805

### Superfamily Tipuloidea Latreille, 1802

### Family Limoniidae Speiser 1909

### Subfamily Chioneinae Rondani, 1861

### Genus *Ellipteroides* Becker 1907

**Type species.** *Ellipteroides limbatus* Becker, 1907

### *Ellipteroides (Protogonomyia) alboscuteallatus* (Roser, 1840)

[Fig. 2]

**Material examined.** 1 ♂, GREECE: Potamoi, Paramotamio Dasos Nestou N.P., Nestos river, 337 m, 41°23'30.55"N, 24°4'57.88"E (Fig. 1, S1), 28.VII.2007, leg.: Keresztes L.

**Taxonomic remarks.** The species belongs to the subgenus *Protogonomyia*, with a conspicuous yellowish-pale scutellum, yellow stripes on the side of the thorax and abdomen, in combination with the following distinguishing features: wing having discal cell,  $R_2$  vein much longer than  $R_{2+3}$  (Fig. 2A), and characteristic male genitalia, with male tergite 9 shorter than the length of the gonocoxite, and characteristically shaped gonostyli arising from halfway up the gonocoxite (Fig. 2B–C) (Stubbs 2021).

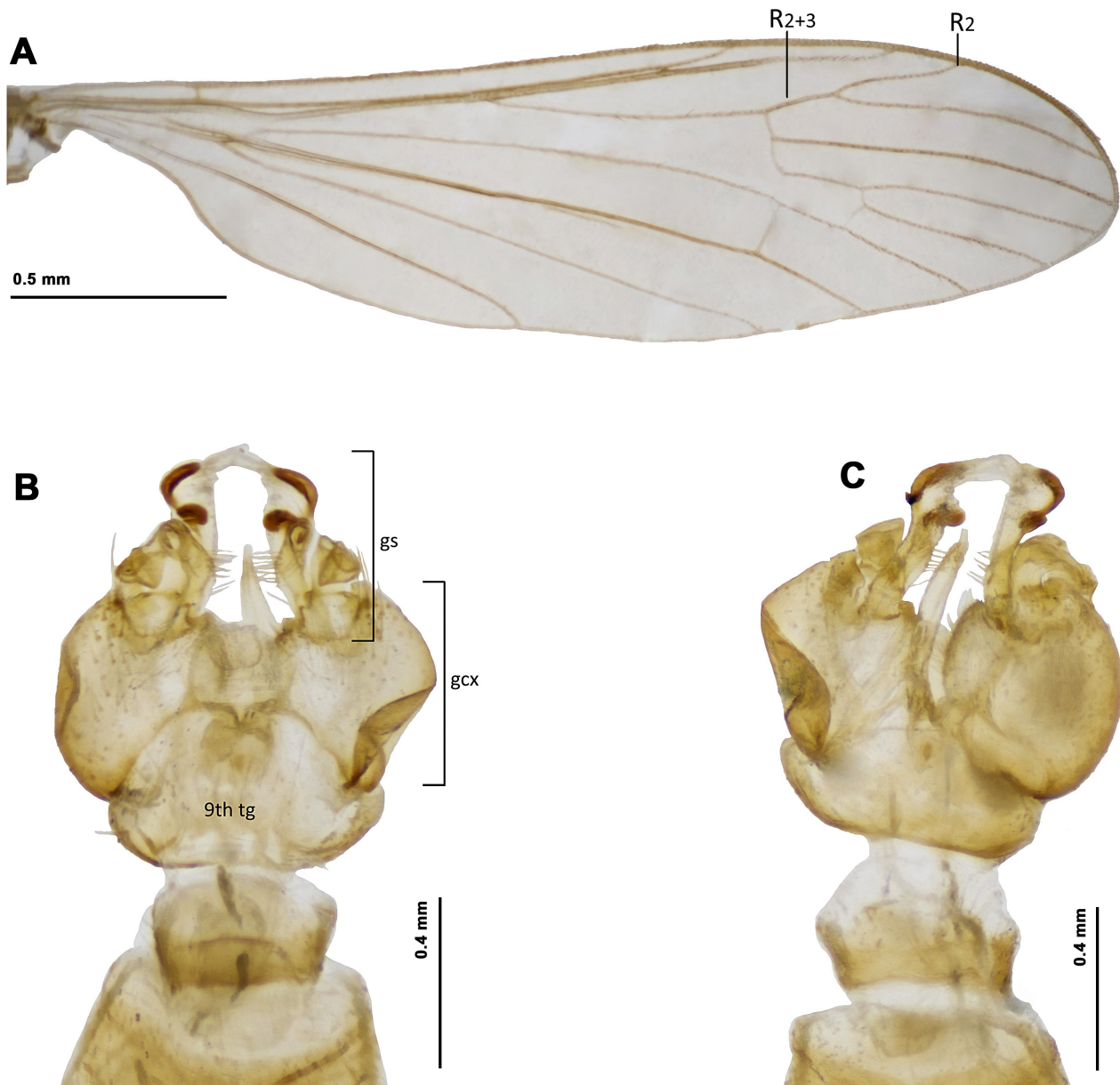
**Distribution.** The species has been sporadically recorded across Europe, from Western Europe (including Great Britain) to the European part of Türkiye and Morocco (Oosterbroek 2026). This is the first record from Greece.

### Genus *Erioptera* Meigen, 1803

**Type species.** *Erioptera lutea* Meigen, 1804

### *Erioptera (Erioptera) lutea* Meigen, 1804

[Fig. 3]

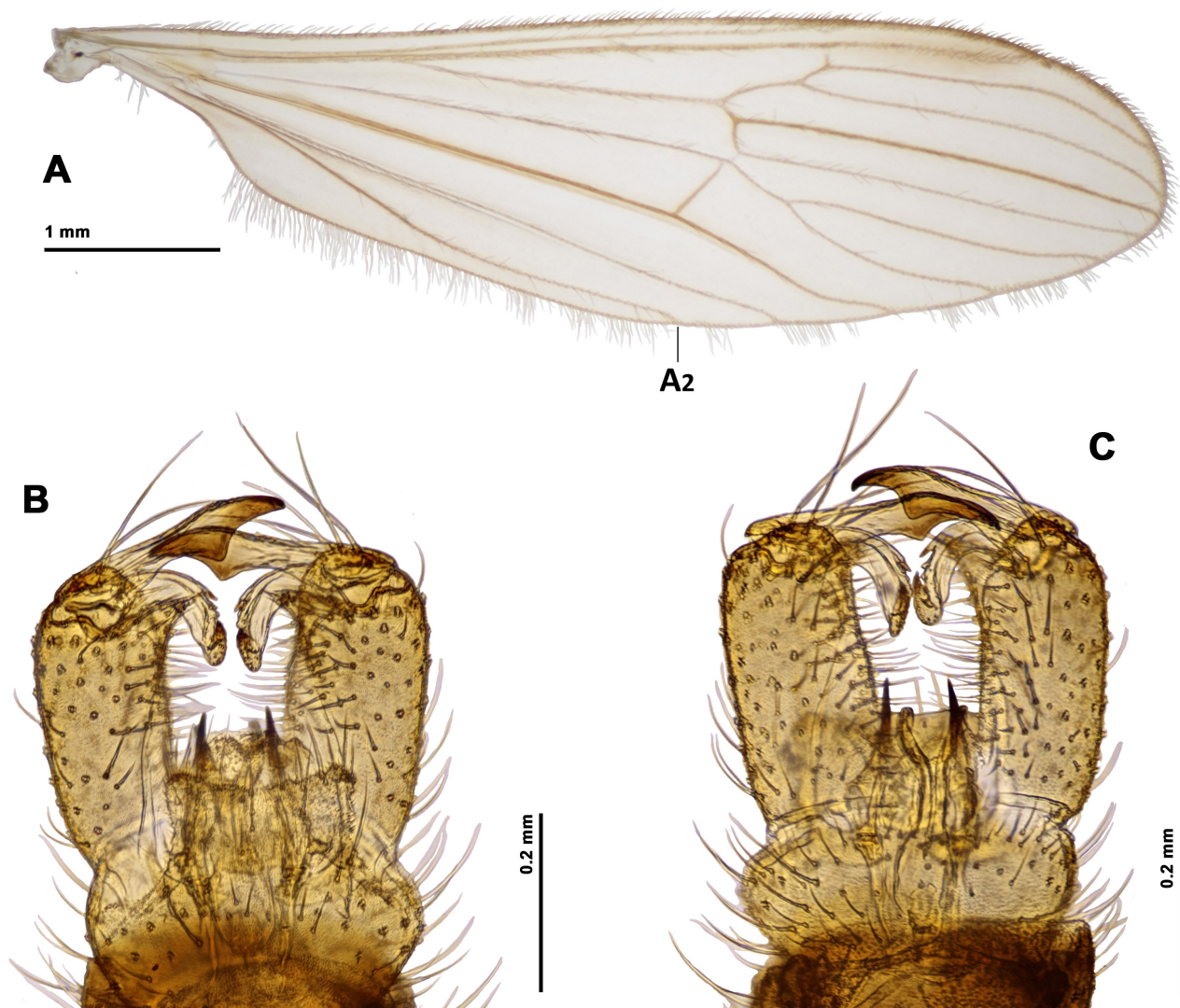


**Figure 2.** *Ellipteroides (P.) alboscuteallatus* (Roser, 1840), wing and male genitalia. **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view. Abbreviations: gcx – gonocoxite, gs – gonostylus, R – radial veins, tg – tergite.

**Material examined.** 3 ♂♂, 1 ♀, NORTH MACEDONIA: Bellanoc, Likovë, 939 m, 42°14'18.28"N, 21°33'54.21"E (Fig. 1, S2), 19.VIII.2017, leg.: A. Bilalli, M. Musliu.

**Taxonomic remarks.** The species is characterized by a glabrous wing membrane, a sinuous A2 vein with its distal part running parallel to the hind margin of the wing (Fig. 3A), in combination with general brownish color of the body combined with some yellow parts, and a very dark knob on the halteres (Podenas et al. 2006; Stubbs 2021). Male genital structures, especially the dorsal and ventral division of the gonostylus, have a conspicuous shape and form in dorsal and ventral view (Fig. 3B–C).

**Distribution.** The species is widely distributed in the Palaearctic region from the western limit of Europe to central Asia, including the Balkan region. It is known as a highly adaptable and ubiquitous species on the muddy edges of various types of water, including wet forests, seeps, puddles, and open muddy soils (Oosterbroek 2026).



**Figure 3.** *Erioptera* (*E.*) *lutea* Meigen, 1804, wing and male genitalia. **A.** Right wing with the sinuous  $A_2$  vein; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view. Abbreviations: A – anal veins.

### Genus *Idiocera* Dale, 1842

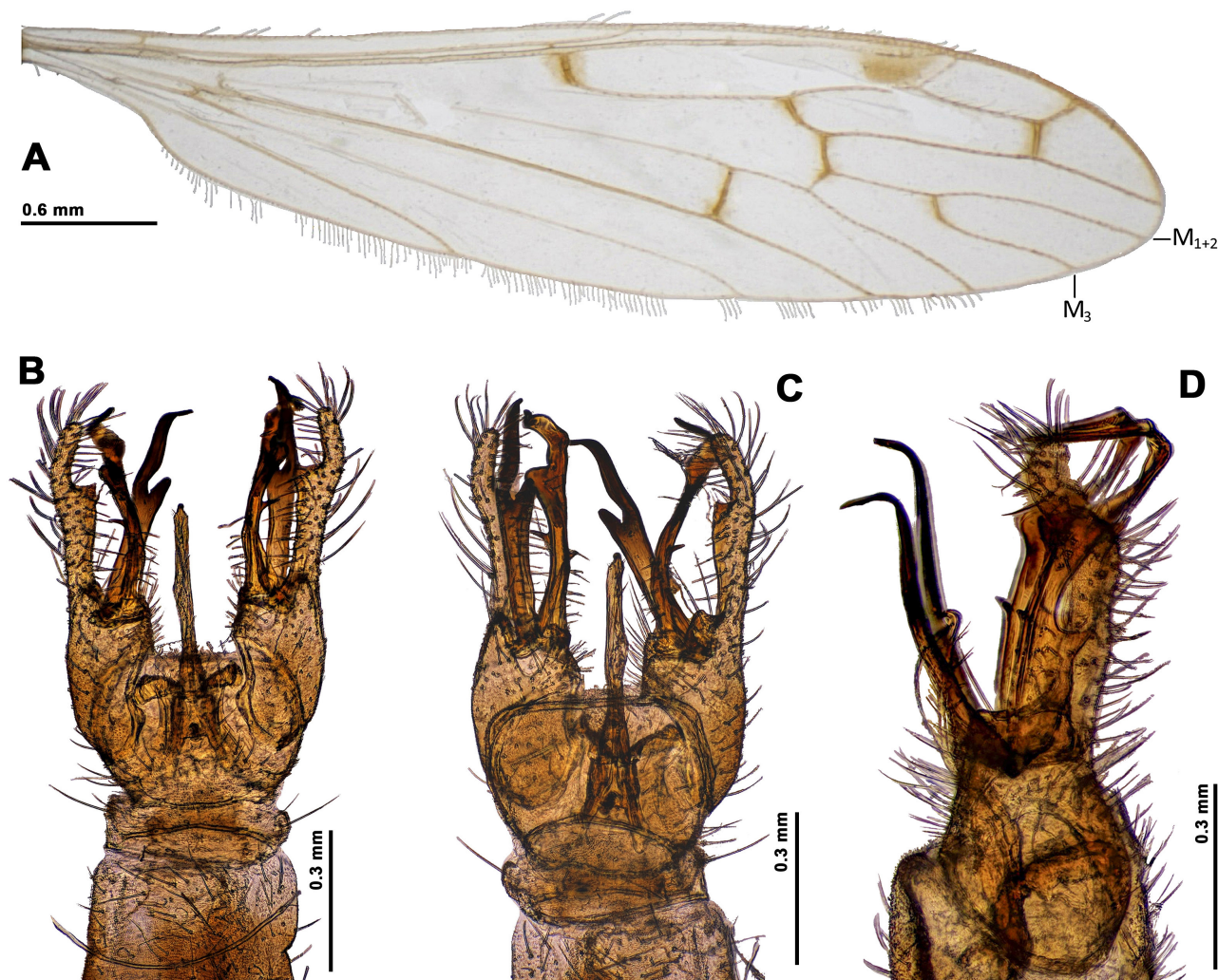
**Type species.** *Idiocera pulchella* Dale, 1842

#### *Idiocera* (*Euptilostena*) *jucunda* (Loew, 1873)

[Fig. 4]

**Material examined.** 2 ♂♂, 1 ♀, KOSOVO: Lumbardhi i Deçanit river, Bjeshkët e Nemuna N.P., 974 m, 42°35'17.73"N, 20°10'47.15"E (Fig. 1, S3), 15.VI.2024., leg.: A. Bilalli, H. Ibrahim, D. Geci, L. Grapci-Kotori.

**Taxonomic remarks.** The species belongs to a taxonomic group comprising only three Western Palaearctic species. The European species of the subgenus *Euptilostena* have recently been reconsidered (Starý & Ujvárosi 2005). In this publication, the authors discuss the details and variability of the male and female genitalia of *I. (E.) jucunda*, in comparison with the closest relative *I. (E.) paulsi* (Starý & Ujvárosi 2005). The most distinctive feature of *I. (E.) jucunda* is the presence of a small spot at the  $M_{1+2}$ - $M_3$  fork of the wings (Fig. 4A), as well as the shape of the dorsal lobe of the gonocoxite, which is shorter and thicker, with a subterminal triangular internal process, and the shape of the dorsal gonostyle, which is shorter and wider, with various teeth and spines, the distal part strongly curved downwards and gradually narrowing to a pointed tip (Starý & Ujvárosi 2005) (Fig. 4B–D).



**Figure 4.** Wing and male genitalia of *Idiocera (E.) jucunda* (Loew, 1873). **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view; **D.** Male genitalia, lateral view. Abbreviations: M – median veins.

**Distribution.** It is a rare species, sporadically observed in Central and Southern Europe, including the Balkan region, and has an important conservation status, as it has been observed particularly along undisturbed, pristine rivers, on sandy or gravelly shores (Oosterbroek 2026).

#### Genus *Molophilus* Curtis, 1833

**Type species.** *Molophilus ater* Curtis, 1833

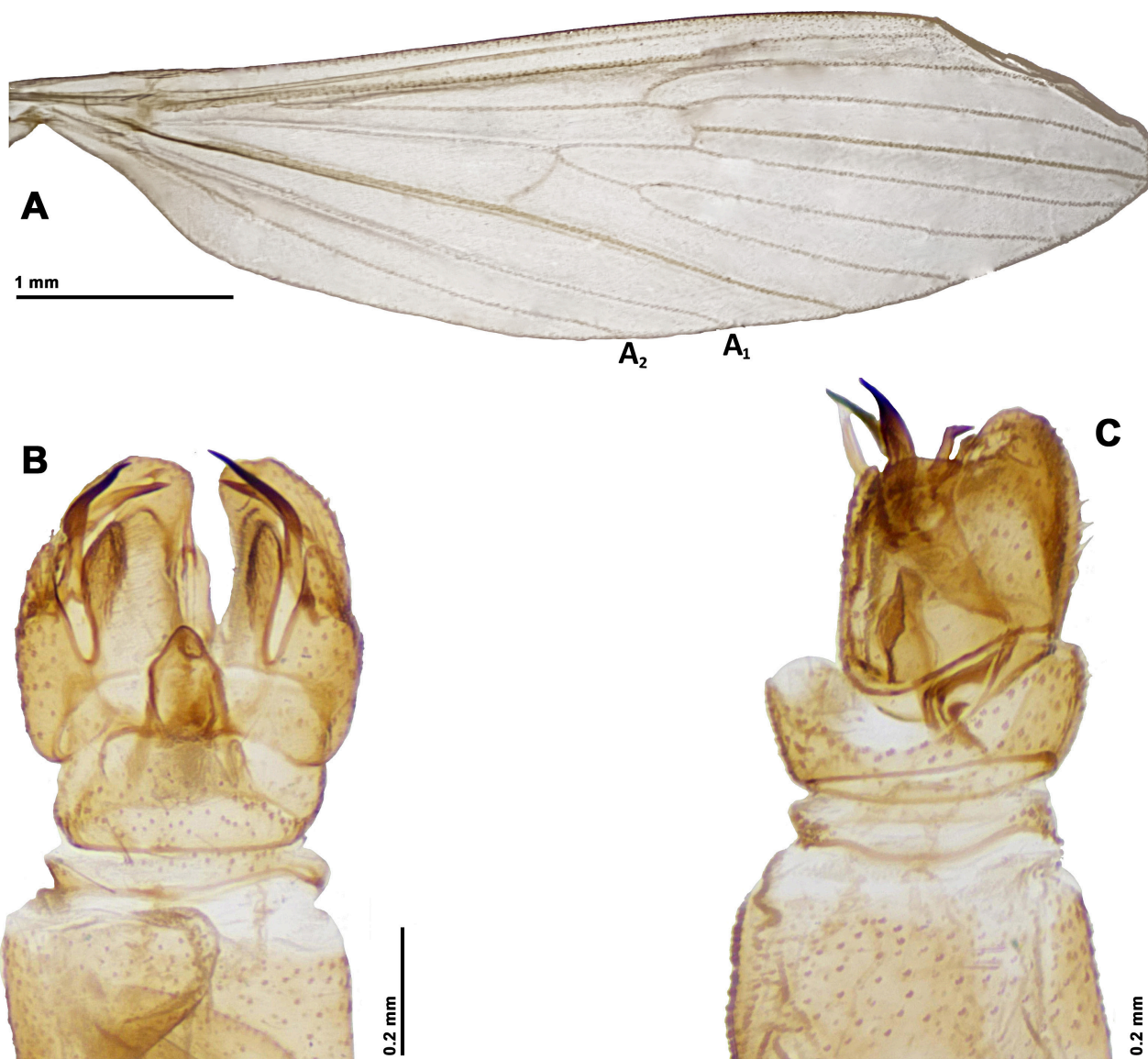
#### *Molophilus (Molophilus) brevihamatus* Bangerter, 1947

[Fig. 5]

**Material examined.** 1 ♂, ALBANIA: Cerem, Valbona, Bjeshkët e Nemuna Mts., 1136 m, 42°29'36.08"N, 19°57'27.44"E (Fig. 1, S4), 12.VI.2022, leg.: Keresztes L.

**Taxonomic remarks.** The species is apparently similar to *Molophilus (M.) propinquus* (Egger, 1863), having a wing in general narrow, with veins bearing long hairs, with few cross-veins, lack of discal cell, with anal vein short and straight (Fig. 5A) (Stubbs 2021), but differs from related species in the structure of the hypopygium, especially in the shape of the penis, which is noticeably thickened at the base and only tapers at the distal end (Stary 1971a) (Fig. 5B–C).

**Distribution.** It is a rare species in Central and Southern Europe, including the Balkan region; most records are found along the mountainous rivers and streams of the Carpathians, Alps, and Balkan Mountains (Oosterbroek 2026).



**Figure 5.** Wing and male genitalia of *Molophilus (M.) brevihammatus* Bangerter, 1947. **A.** Right wing; **B.** Male genitalia, ventral view; **C.** Male genitalia, lateral view. Abbreviations: A – anal veins.

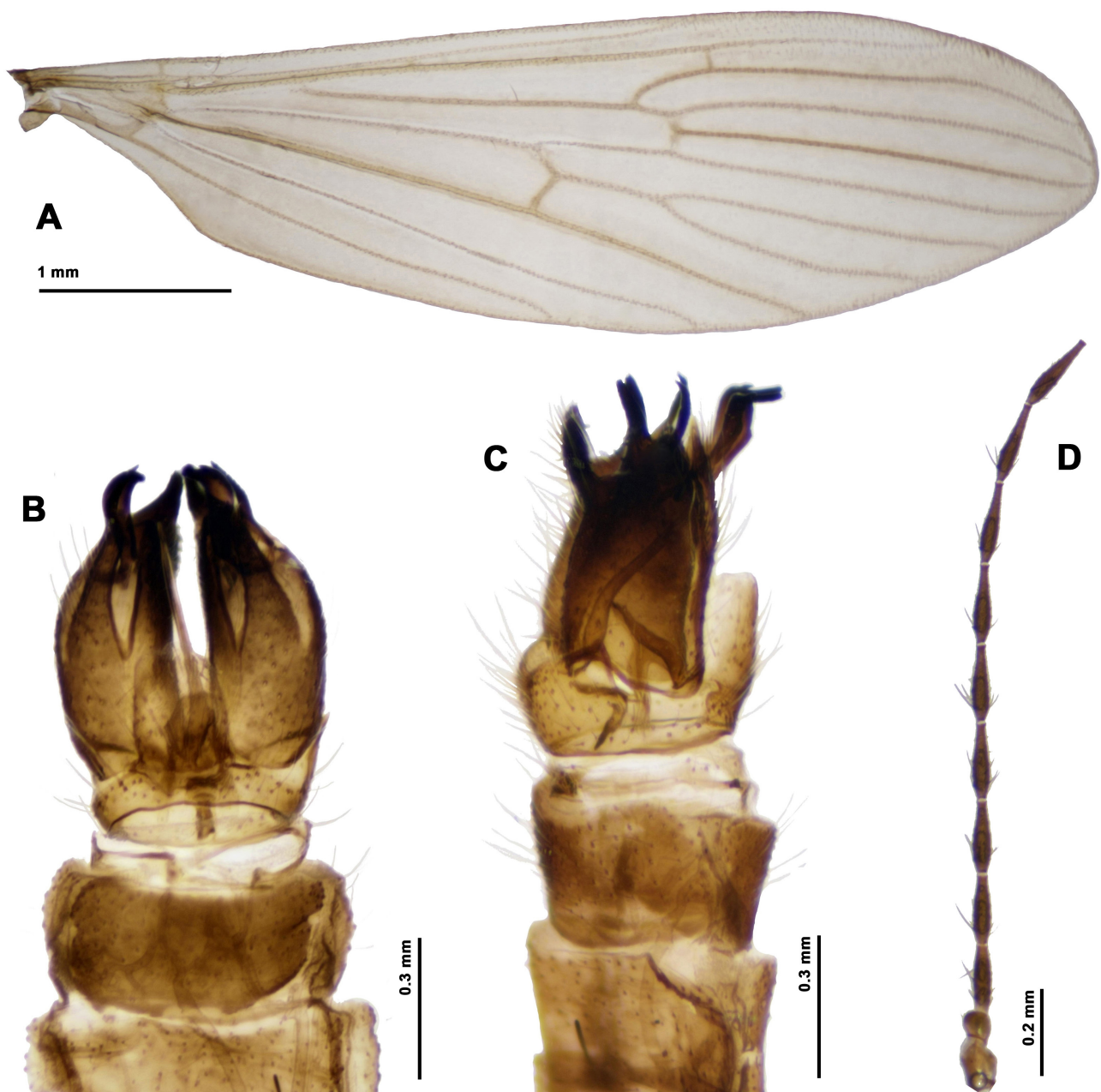
### *Molophilus (Molophilus) nodicornis* Lackschewitz, 1935

[Fig. 6]

**Material examined.** 1 ♂, ALBANIA: Vermosh i Keq, trees near road, 1059 m, 42°35'35.88"N, 19°40'47.21"E (Fig. 1, S5), 10.VI.2023, leg.: Keresztes L.

**Taxonomic remarks.** The species belongs to the species-rich genus *Molophilus*, which is represented by 89 different species in Europe alone (Oosterbroek 2026), but it can be very well distinguished from the known species based on the characteristically shaped antennae with rounded and elongated flagellar segments (Fig. 6D), wing and details of the genital appendages of males (Starý 1971b) (Fig. 6A–C).

The most important distinctive characters of the species are the relatively elongated gonocoxite, with two prominent dorsal processes at the end. The ventral lobe of the gonocoxite is long, relatively thin, and ends sharply. The outer gonostylus is simple, shorter than the inner one, strongly serrated, and pointed at the end. The inner gonostylus has a thorn-like process subapically, then curved at a sharp angle and rounded at the end. The penis is slender and rather long (Fig. 6B–C).



**Figure 6.** Wing and genitalia of *Molophilus (M.) nodicornis* Lackschewitz, 1935. **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, lateral view; **D.** Right antenna of male.

**Distribution.** The species was recorded sporadically in Northern and Central Europe, and it is very rare in the Balkan region, with a single previous record from Montenegro (Oosterbroek & Simova-Tošić 2004; Oosterbroek 2026). The presence of the species from Albania is an important new addition to the Tipuloidea biodiversity of the Balkan region.

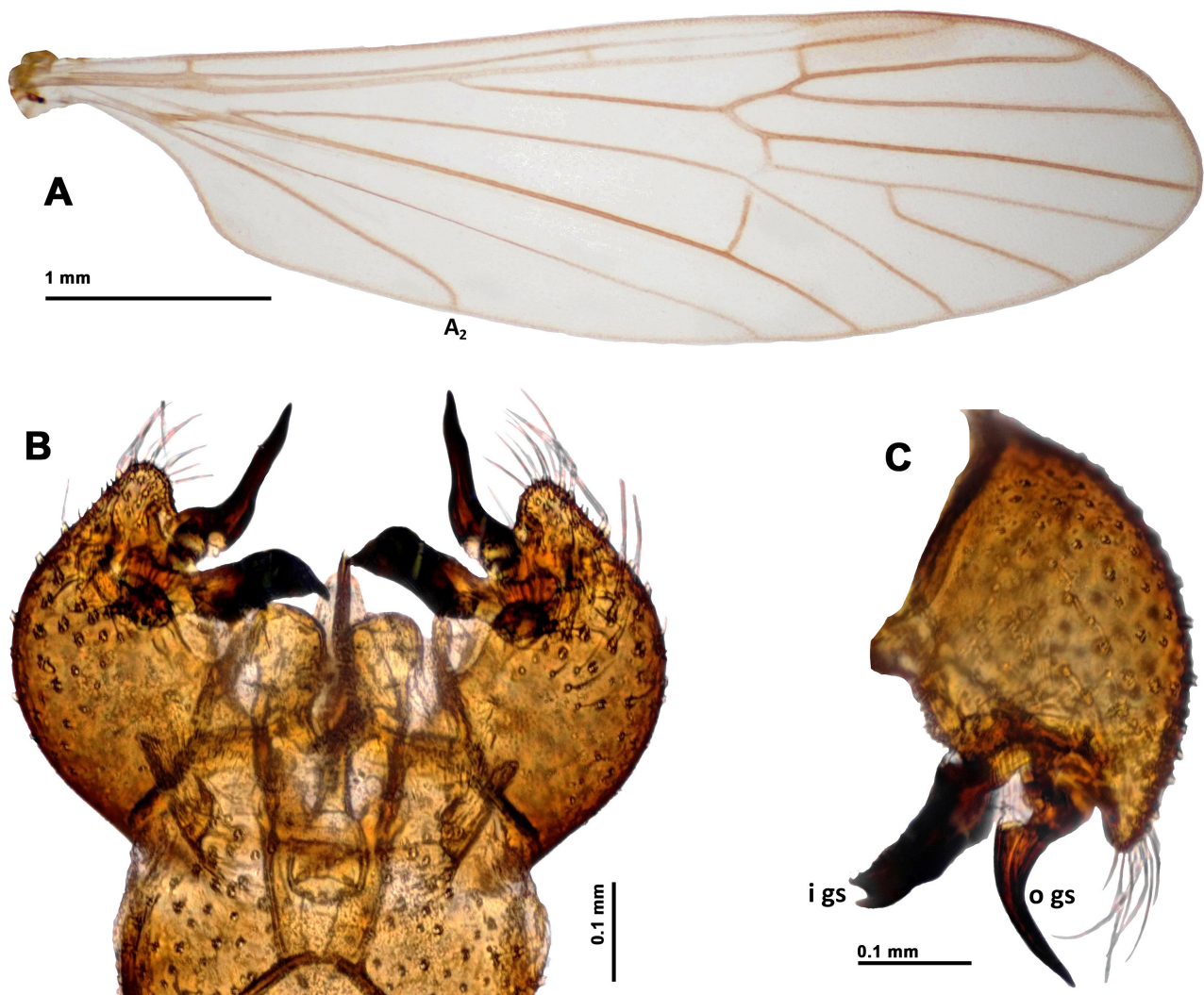
#### Genus *Ormosia* Rondani, 1856

**Type species.** *Ormosia nodulosa* (Macquart, 1826)

#### *Ormosia (Ormosia) hederæ* (Curtis, 1835)

[Fig. 7]

**Material examined.** 1 ♂ 1 ♀, KOSOVO: Dëbëlldeh, 1050 m, 42°15'16.30"N, 21°24'0.30"E (Fig. 1, S6), 8.X.2017, leg.: A. Bilalli, M. Musliu.



**Figure 7.** Wing and genitalia of *Ormosia* (*O.*) *hederæ* (Curtis, 1835). **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Gonocoxite with gonostyli, lateral view. Abbreviations: A – anal veins, i gs – inner gonostyle, ogs – outer gonostyle.

**Taxonomic remarks.** Like other *Ormosia* species, the species has relatively short and broad wings, which usually lack discal cell. The  $A_2$  vein is straight, slightly curved at the distal end (Fig. 7A). The wings are usually covered with fine hairs, and especially in males, the flagellar segments are very bulbous at the base and form a long neck apically (Stubbs 2021). According to Stubbs (2021), published illustrations of male genitalia are generally misleading, but the outer gonostyle is curved, slender, and thorn-like in shape, while the inner gonostyle has a completely different, narrowly cleft at the very blunt distal end (Fig. 7B–C).

**Distribution.** The species is generally widespread from Western Europe, including Great Britain, to Central Asia (Pamir region) (Oosterbroek 2026). In the Balkan region, it was previously recorded only from Bulgaria (Hubenov 2025). We collected the specimens in a damp, swampy forest ditch in Kosovo.

### Genus *Tasiocera* Skuse 1890

**Type species.** *Tasiocera fusca* Skuse, 1890

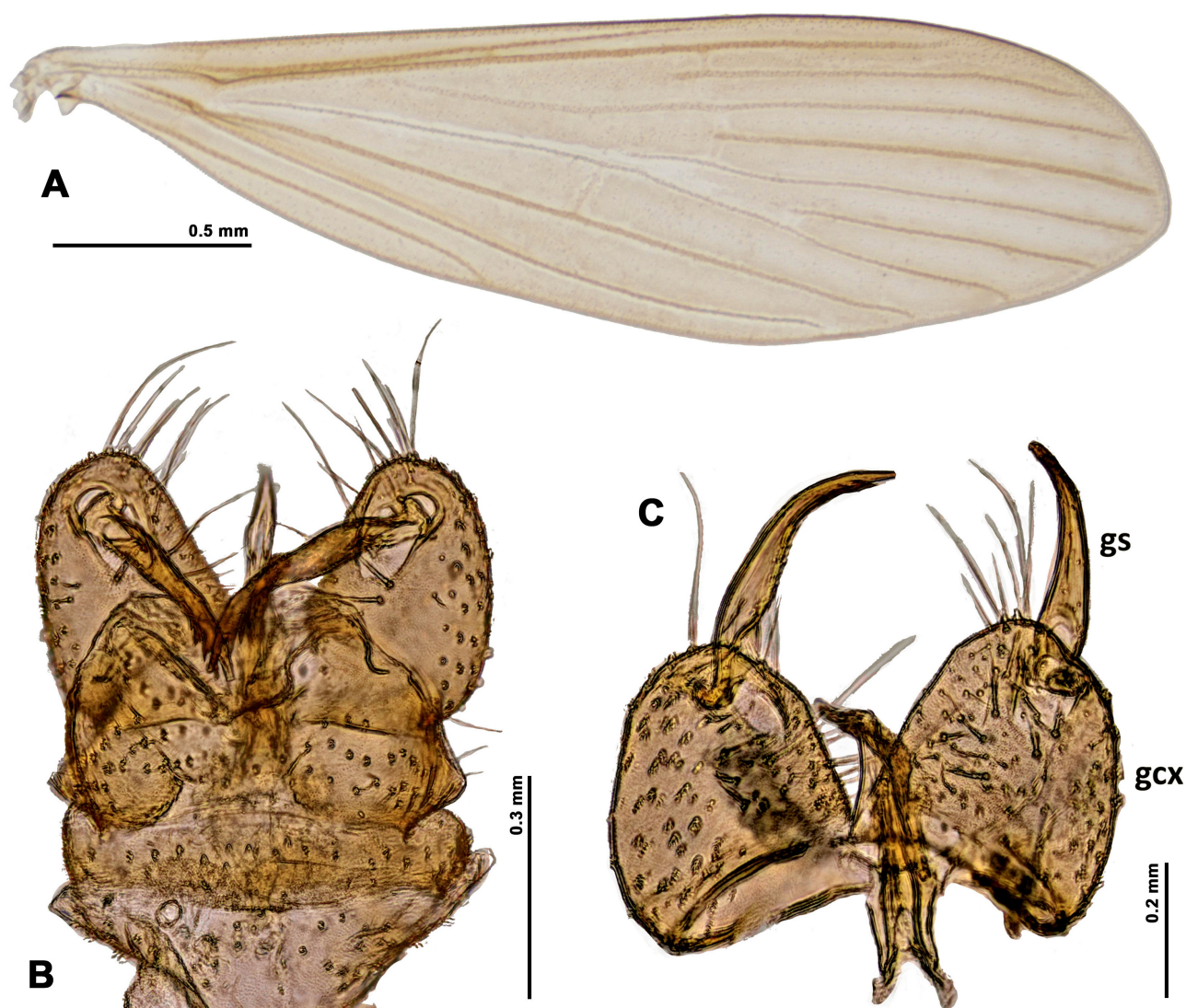
#### *Tasiocera* (*Dasymolophilus*) *murina* (Meigen, 1818)

[Fig. 8]

**Material examined.** 1 ♂, MONTENEGRO: Gusinje, Krojet e Ali Pashë Gucisë carst spring complex, 927 m, 42°33'0.15"N, 19°49'32.30"E (Fig. 1, S7), 12.VI.2023, leg.: Keresztes L.; 1 ♂, Murino, 972 m, 42°38'28.33"N, 19°52'5.89"E (Fig. 1, S8), lateral muddy spring brook, 14.VI.2023, leg. Keresztes L. 1 ♂ ALBANIA: Radomire (before), 1199 m, waterfall, 41°49'0.55"N, 20°28'37.54"E (Fig. 1, S9), 8.VI.2022, leg.: Keresztes L.; 3 ♂♂, Ura e Golikut, small springs, 462 m, 41°0'57.81"N, 20°30'49.33"E (Fig. 1, S10), 3.V.2019, leg.: Keresztes L.; 2 ♂♂, Valbona, Bujtina e Luginës, near main river, 936 m, 42°27'4.81"N, 19°53'18.70"E (Fig. 1, S11), 10.VI.2022, leg.: Keresztes L.

**Taxonomic remarks.** The wings of this small species are quite similar to those of some *Molophilus* species, being densely covered with hairs (Fig. 8A). However, the male genitalia are quite distinctive, with the gonocoxite rather flat and chitinized only on the lateral surface, with a single pair of slightly curved gonostyles, the basal half of which is swollen, while the apical half is slender and pointed (Stubbs 2021) (Fig. 8B–C).

**Distribution.** *Tasiocera* species are very small, tiny crane flies that are often overlooked by collectors. This is why this generally widespread species in the Western Palaearctic has only sporadic data all over Europe, and this is highly true to the Balkan region, previously recorded only from Bulgaria (Oosterbroek 2026). Based on our data, it can be stated that the species is much more widely distributed in the Balkans than the literature suggests.



**Figure 8.** Wing and male genitalia of *Tasiocera (D.) murina* (Meigen, 1818). A. Right wing; B. Male genitalia, dorsal view; C. Male genitalia, ventral view. Abbreviations: gcx – gonocoxite, gs – gonostyle.

## Subfamily Limnophilinae Bigot, 1854

### Genus *Afrolimnophila* Alexander, 1956

**Type species.** *Limnophila africana* Alexander, 1920

#### *Afrolimnophila abludens* (Savchenko, 1971)

[Fig. 9]

**Material examined.** 1 ♂, BOSNIA AND HERZEGOVINA: Brezic, Ozren Mts., 863 m, 44°37'29.82"N, 18°14'7.63"E (Fig. 1, S12), 12.VII.2008, leg.: Keresztes L.

**Taxonomic remarks.** This species belongs to the genus *Afrolimnophila*, which has recently been revised in Europe. Discussed on species with spotted wings, in addition with a supranumerary cross-vein between veins M and Cu, and a distinct general structure of the male genitalia, recorded as a new species, *A. eleonora* Starý & Kolcsár, 2021 from Romania and Greece (Starý & Kolcsár 2021). In 2022, however, another important comprehensive work on Western Palaearctic *Afrolimnophila* was published, including key of the species (Pilipenko 2022). In this work, the author divides the West Palaearctic *Afrolimnophila* species into two groups: one containing the species with mostly spotted wings, to which the European species belong, and another containing the species with mostly transparent wings, which are mainly found in the Caucasus. Following the key to the West Palaearctic *Afrolimnophila* (Pilipenko 2022), the specimen collected by us in the Balkans can be assigned to *A. abludens* (Savchenko, 1971). The identity of the specimen is supported based on the combination of the following characters: wing unicolor without other dark spots except for distinct brownish pterostigma, wing venation with vein  $M_{1+2}$  subequal in length to cell  $m_1$  (Fig. 9A), head with occipital spot, distal end of femora and tibiae only slightly darkened, abdomen brown, lighter to yellow at the posterior margin of the abdominal segments. Male genitalia of characteristic shape (Fig. 9B–F), with posterior margin of inner gonostylus without tooth (Fig. 9D).

**Distribution.** The species was previously recorded from the Caucasus (Oosterbroek 2026, Pilipenko 2022). This is the first record of the species in Europe.

### Genus *Austrolimnophila* Alexander, 1920

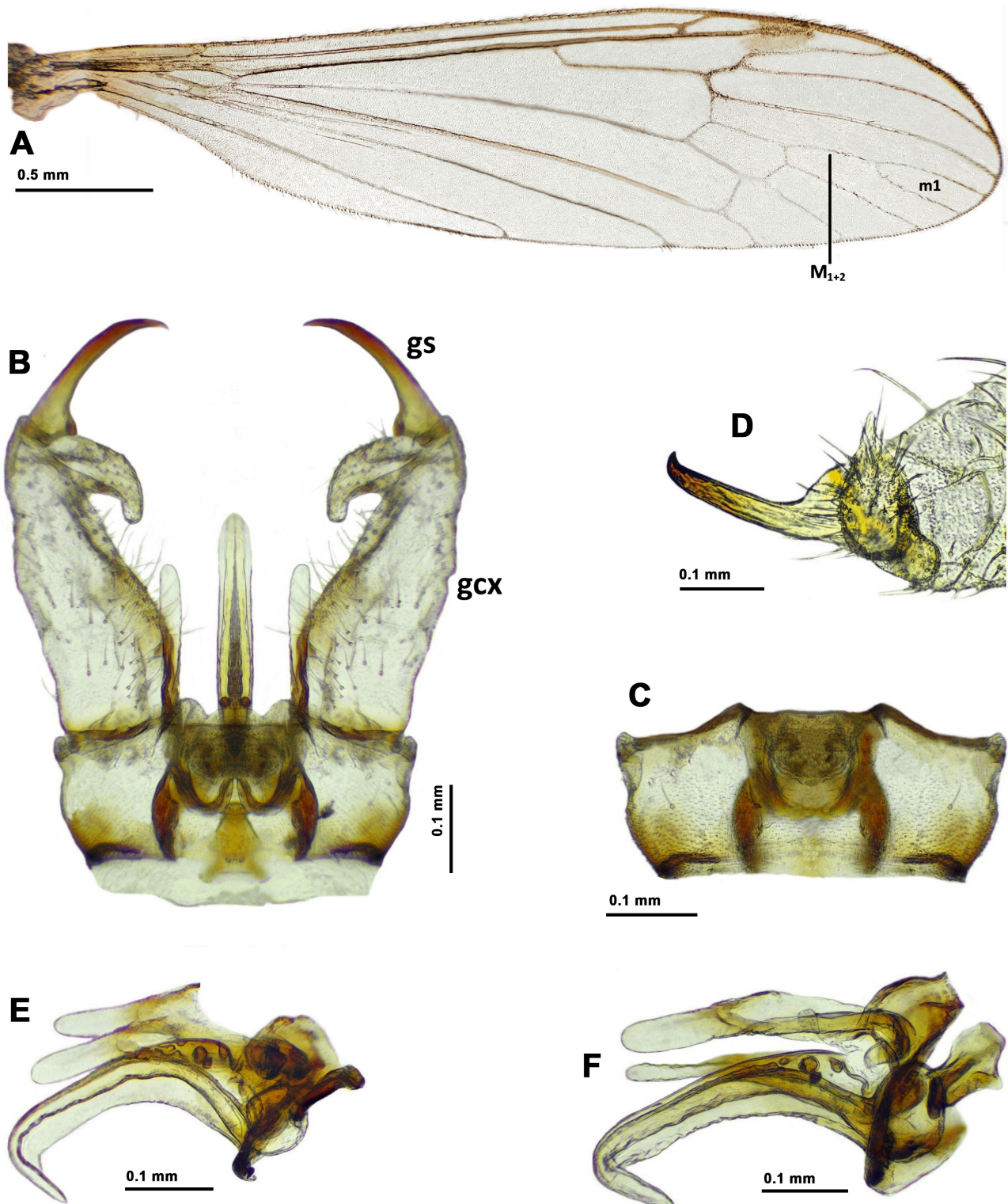
**Type species.** *Limnophila ochracea* (Meigen, 1804)

#### *Austrolimnophila (Austrolimnophila) ochracea* (Meigen, 1804)

[Fig. 10]

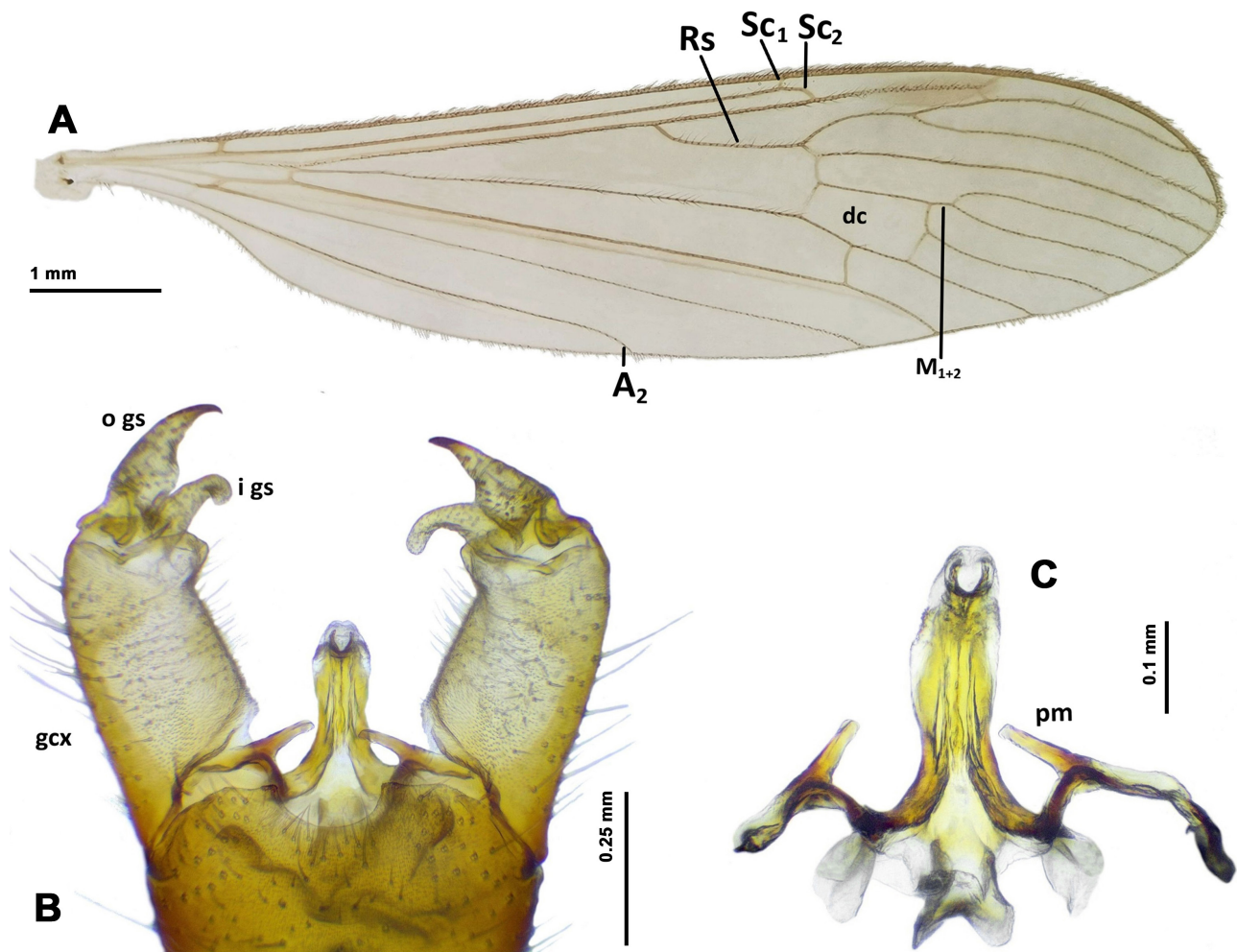
**Material examined.** 4 ♂♂, ALBANIA: Cerem, Valbona, Bjeshkët e Nemuna, 1136 m, 42°29'36.08"N, 19°57'27.44"E (Fig. 1, S4), 12.VI.2022, leg.: Keresztes L.

**Taxonomic remarks.** The subgenus *Austrolimnophila*, genus *Austrolimnophila* is represented in the Balkan region with two closely related species, *A. ochracea* and *A. brevicellula* Starý, 1977, but different in some small details in wing venation (Fig. 10A) and male genital structures (Fig. 10B–C). The much more common and widespread Western Palaearctic species, *A. ochracea*, can be clearly distinguished from the more restricted, Balkan species, *A. brevicellula* based on the following characters: brownish species, in male abdomen with a blackish ring, just before the genitalia. According to Starý (1977), *A. ochracea* has a distinct venation in relation with *A. brevicellula*:  $Sc_1$  is situated approximately at the level of the origin of Rs fork;  $Sc_2$  is relatively long, about 3 times as long as  $Sc_1$ , reaching  $R_1$  distally from the end of  $Sc_1$ . The origin of Rs is located distally from the place where the  $A_2$  vein reach the wing margin. Rs is almost as long as  $R_{2+3}$ ; the latter is strongly curved. The discal cell is relatively long,  $M_{1+2}$  short, approx. 1/7 of the length of  $M_2$  (Fig. 10A). The 9th tergite is dark, concave in the middle of the posterior margin, the gonocoxite is long and cylindrical, both gonostyles are hairy, the outer gonostyle narrows into a darkly pigmented inwardly curved apex, the inner gonostyle is conical, blunt (Fig. 10B). The paramerium is rod-shaped, dark, with a blunt tip (Fig. 10C). The penis curves gradually upwards, the dorsal apodemes of the vesica are relatively short.



**Figure 9.** Wing and male genitalia of *Afrolimnophila abludens* (Savchenko, 1971). **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** 9<sup>th</sup> segment, dorsal view; **D.** Detail in gonostyli, interior view; **E.** Aedeagus with parameres, lateral view; **F.** Idem, slightly rotated to the right.

**Distribution.** The species is relatively common all over Europe, including the Balkan region. The species was frequently recorded from various countries, so the presence of the species in Albania was expected. It is a common species in woodland, especially in wet patches rich in dead wood (Oosterbroek 2026).



**Figure 10.** Wing and male genitalia of *Austrolimmophila (A.) ochracea* (Meigen, 1804). **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male aedeagal complex, dorsal view. Abbreviations: A – anal veins, dc – discal cell, gcx – gonocoxite, gs – gonostyle; i gs – inner gonostyle, o gs – outer gonostyle, M – median veins, pm – parameres, Rs – radial sector, Sc – subcostal vein.

### Genus *Dicranophragma* Osten Sacken, 1860

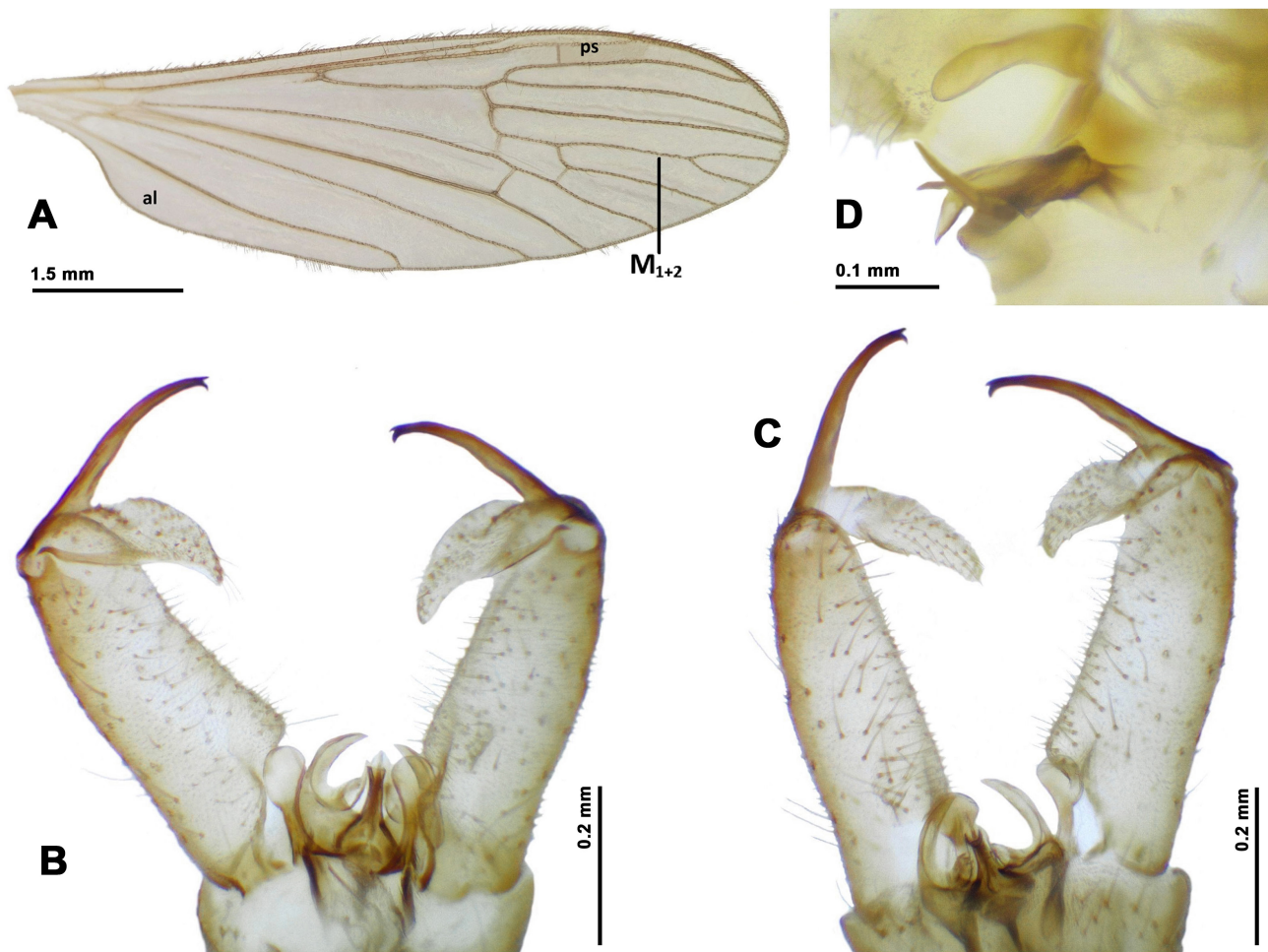
**Type species.** *Limmophila adjuncta* (Walker, 1848)

#### *Dicranophragma (Brachylimnophila) separatum* (Walker, 1848)

[Fig. 11]

**Material examined.** 1 ♂, MONTENEGRO: Grebaje, Prokletje NP., under Talianka peak, 1777 m, 42°31'52.47"N, 19°46'30.36"E (Fig. 1, S13), 6.VII.2022, leg. Keresztes L.; 1 ♂, Plav, Babino Polje, 1715 m, 42°36'45.00"N, 20°1'5.58"E (Fig. 1, S14), 3.VII.2021, leg.: Keresztes L.

**Taxonomic remarks.** In Europe, six different species are recognized as belonging to the subgenus *Brachylimnophila*, genus *Dicranophragma*, with highly similar species and difficult taxonomy, which claim a high-resolution examination of the male genital parts, especially the aedeagal complex, in combination with some other body parts (Mederos et al. 2020; Starý & Reusch 2009; Stubbs 2021). A combination of the following characters were used to species level identification of specimens collected by us: mostly dark antennae, femora with an extended dark area close to the apex, wings are broader, with rather pale pterostigma, but with a well-developed anal lobe and anal cell, fork of  $M_{1+2}$  shorter than its stem (Stubbs 2021) (Fig. 11A). The male genitalia are rather similar in all European species (Fig. 11B–C) but different mostly in lateral view of the aedeagal complex (Fig. 11D), with aedeagus bifurcate at distal end in two short and subacute tips, lower arm is broader than the upper projection (Starý & Reusch 2009).



**Figure 11.** Wing and male genitalia of *Dicranophragma (B.) separatum* (Walker, 1848). **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view; **D.** Aedeagal complex, lateral view. Abbreviations: **al** – anal lobe, **M** – median veins, **ps** – pterostigma.

**Distribution.** The estimation of the real distribution of the species is difficult because of its difficult taxonomy. However, based on Oosterbroek's database (2026), it seems that the species is generally distributed in Europe, and it was also reported from a few countries in the Balkans, like Bulgaria or Serbia, so the occurrence of the species from Montenegro was also expected (Oosterbroek 2026).

### Genus *Idioptera* Macquart, 1834

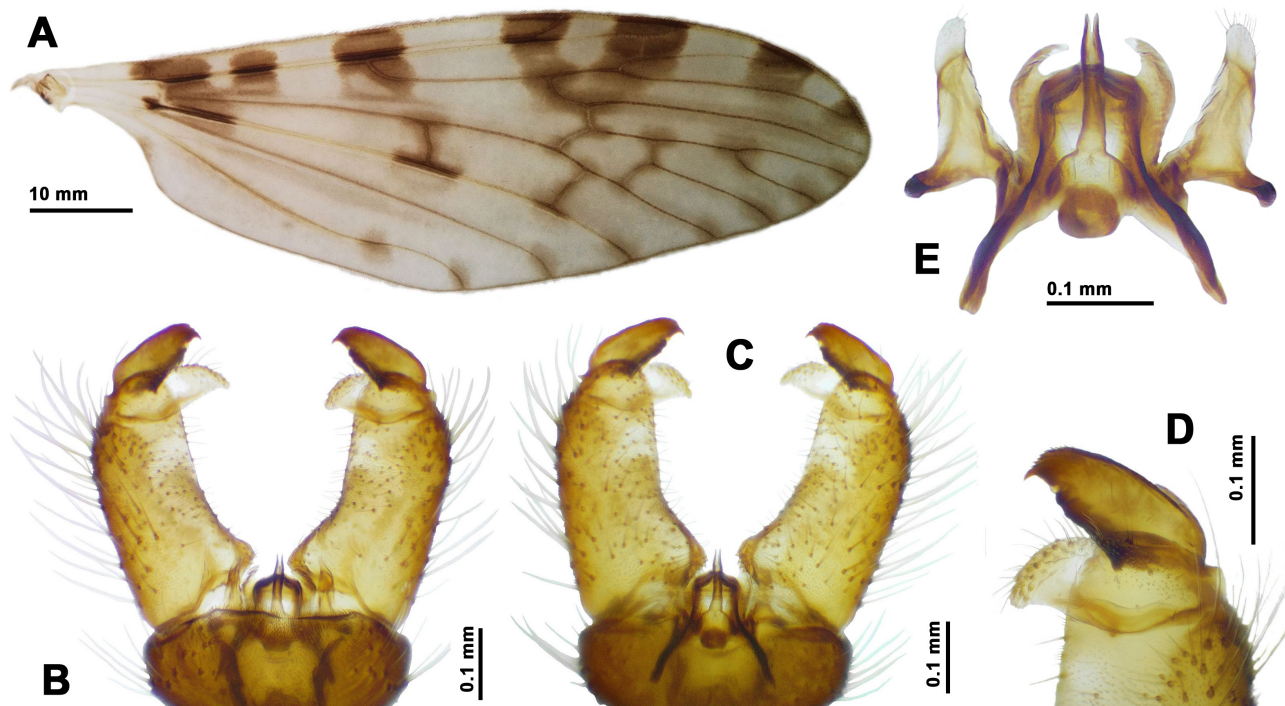
**Type species.** *Idioptera pulchella* Macquart, 1834

### *Idioptera mundata* (Loew, 1870)

[Fig. 12]

**Material examined.** 1 ♂, MONTENEGRO: Plav, Babino Polje, 1548m, 42°36'45.00"N, 20°01'05.58"E (Fig. 1, S14), 13.VI.2023, leg.: Keresztes L.; 1 ♂, Velika, 1020 m, 42°39'41.22"N, 19°56'41.11"E (Fig. 1, S15), 14.VI.2023, leg.: Keresztes L.

**Taxonomic remarks.** The species belong to genus *Idioptera* based on the supranumerary cross-vein in cell bm (Santos & Ribeiro 2024), in addition with the broader, wedge-shape wings, presence of conspicuous brown wing markings and spots, mostly along the anterior margin and at cross-veins and vein junctions, but also at the distal end of longitudinal veins near the wing margin and the presence of a grey strip along vein  $R_{4+5}$ . (Fig. 12A). Male genital structure of characteristic shape, mostly the shape of aedeagal complex, including aedeagal lobe, dorsal and lateral apodeme of the vesica (sperm pump) (Stubbs 2021, Podenas 2023) (Fig. 12B–E).



**Figure 12.** Wing and male genitalia of *Idioptera mundata* (Loew, 1870). **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view; **D.** Inner and outer gonostylus, dorsal view; **E.** aedeagal complex, dorsal view.

**Distribution.** The species is widely distributed in Europe and has been collected several times in the Balkans (Oosterbroek 2026). This is the first record of the species from Montenegro.

### Genus *Pilaria* Sintenis, 1889

**Type species.** *Limnobia discicollis* Meigen, 1818

#### *Pilaria discicollis* (Meigen, 1818)

[Fig. 13]

**Material examined.** 1 ♂, ALBANIA: Tragjas, Rrepet e Izvorit, 20 m, 40°19'24.95"N, 19°30'37.90"E (Fig. 1, S16), 30.IV.2019, leg.: Keresztes L.

**Taxonomic remarks.** The thorax of the species is clearly defined, blacker above, and bright orange on the sides (Stubbs 2021). Wing, without wing marking, the stigma is pale, but hairy, which is less visible in the photo below (Fig. 13A), and the  $M_{1+2}$  is forked. The male genitalia have a characteristic shape (Fig. 13B–C). The most characteristic diagnosis is the shape of the aedeagus in lateral view (Fig. 13D).

**Distribution.** The species is widely distributed in the Western Palearctic, extending from Kazakhstan to the Balkans, and has been collected several times in the Balkans (Oosterbroek 2026). This is the first record of the species from Albania.

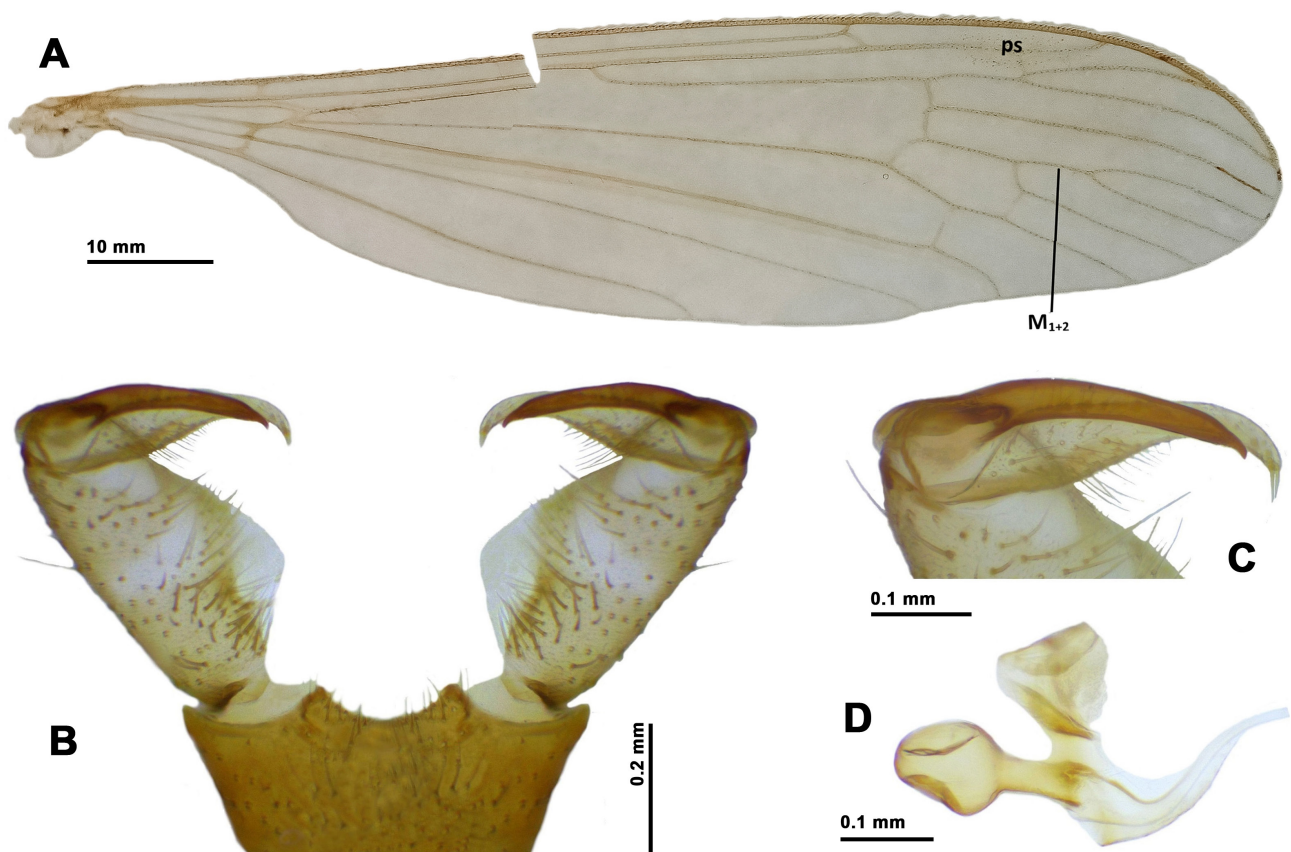
### Genus *Phylidorea* Bigot, 1854

**Type species.** *Limnobia fulvonervosa* Schummel, 1829

#### *Phylidorea (Macrolabina) alexanderi* (Starý, 1974)

[Fig. 14]

**Material examined.** 2 ♂♂, MONTENEGRO: Dragovica Polje, Gorniju Moracu, Redice, 1081 m, 42°52'45.90"N, 19°19'15.32"E (Fig. 1, S17), 1.VI.2009, leg.: Balint, M.



**Figure 13.** Wing and male genitalia of *Pilaria discicollis* (Meigen, 1818). **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Inner and outer gonostylus, dorsal view; **D.** Aedeagal complex, lateral view. Abbreviations: M – median veins, ps – pterostigma.

**Taxonomic remarks.** The species was described from Bulgaria by Starý (1974) and belongs to the subgenus *Macrolabina*, genus *Phylidorea*, as recently revised by Podenas et al. (2022). According to Starý (1974) it is a generally large dark brown species, similar in general appearance to the closest related European species *P. (M.) nigronotata* (Siebke, 1870), but different in wing venation and structure of the male genitalia as follows:  $R_s$  is about twice as long as  $R_{2+3}$ , the spot at the base of  $R_s$  is indistinct (Fig. 14A), the middle depression of the posterior margin of the tergite 9 is relatively narrow, the dorsal process of gonostylus is short, broad and blunt, the outer gonostylus is glabrous and asymmetrically bifurcated at the tip (Fig. 14B–C).

**Distribution.** This species has a limited distribution in the Balkans; previously known only from Bulgaria, later recorded from Romania and Serbia (Kolcsár et al. 2021; Oosterbroek 2026; Starý 1974). This is the first record of the species from Montenegro.

### Subfamily Limoniinae Speiser, 1909

#### Genus *Lipsothrix* Loew, 1873

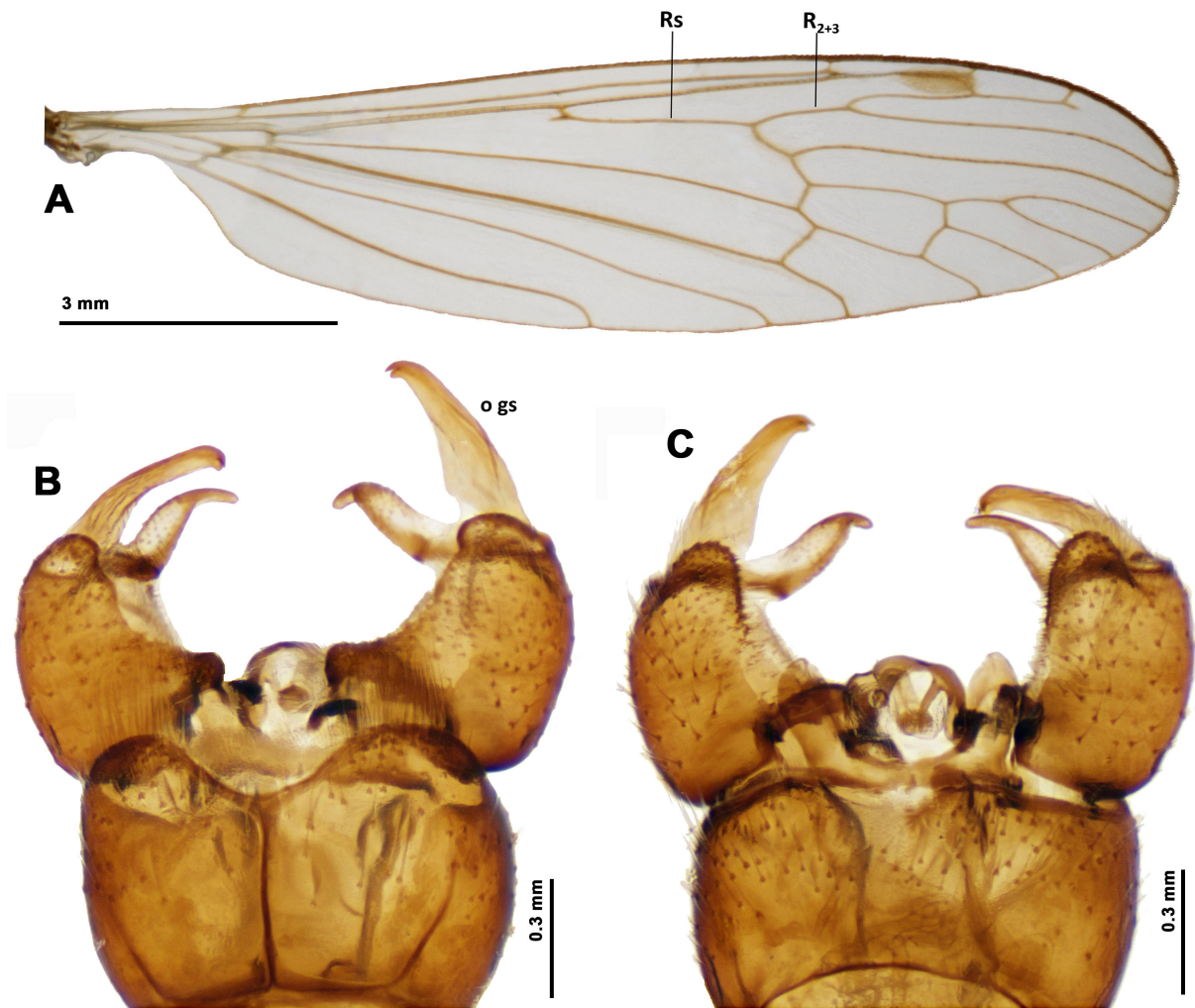
**Type species.** *Lipsothrix errans* Loew, 1873

#### *Lipsothrix ecucullata* Edwards, 1938

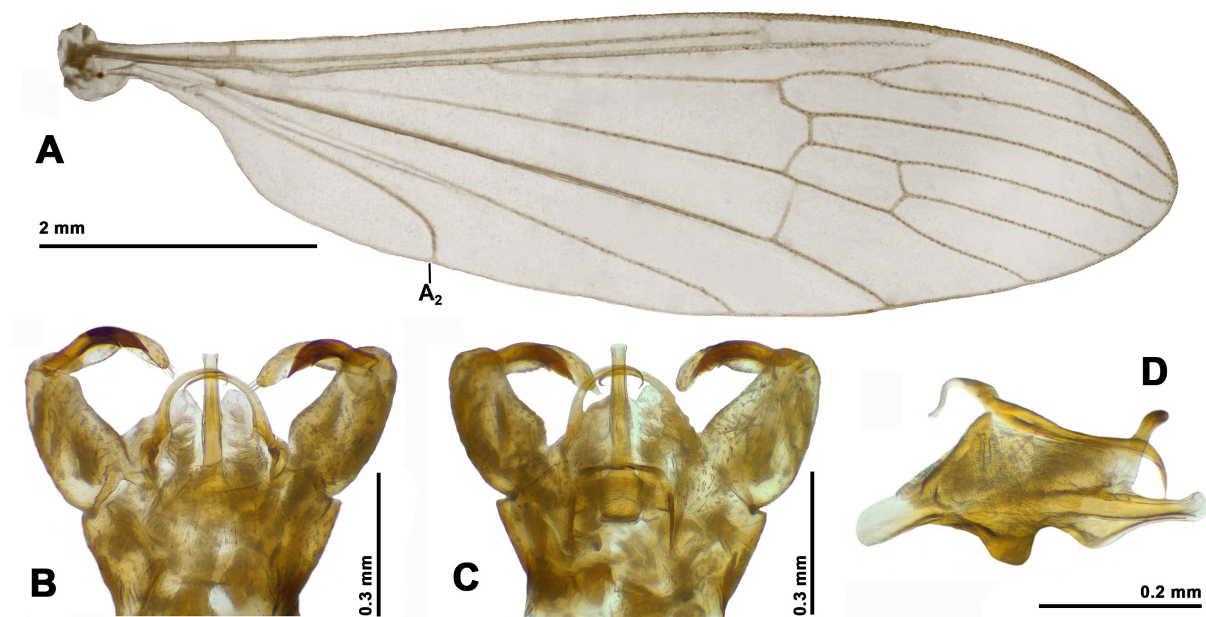
[Fig. 15]

**Material examined.** 1 ♂, MONTENEGRO: Gusinje, Ali Pasha karst spring complex, 927 m, 42°33'0.15" N, 19°49'32.30"E (Fig. 1, S7), 4.VII.2021, leg.: Keresztes L.

**Taxonomic remarks.** The Western Palaearctic region is home to six distinct, but morphologically very similar species, recently revised and clarified by Hancock et al. (2015) and Petersen (2015).



**Figure 14.** Wing and male genitalia of *Phylidorea (M.) alexanderi* (Starý, 1974). **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view. Abbreviations: o gs – outer gonostylus, R – radial veins, Rs – radial sector.



**Figure 15.** Wing and male genitalia of *Lipsothrix ecucculata* Edwards, 1938. **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view; **D.** Aedeagus, lateral view. Abbreviations: A – Anal veins.

The most important characters for *L. ecucullata* are the entirely yellow body, femora with black distal end, wing without darkened stigma (Fig. 15A), but with macrotrichia along veins, on vein  $A_2$  with only few, 3–6 macrotrichia (less visible in the photo below). Male with only 8<sup>th</sup> abdominal sternite darkened, hypopygium dark brown, gonocoxite and gonostyli subequal in length, and aedeagus straight at the outer portion (Savchenko 1982) (Fig. 15B–D).

**Distribution.** The species is widely distributed in Europe, mostly in northern parts (Oosterbroek 2026). This is the first record of the species from Montenegro and from the Balkan region.

### Genus *Rhipidia* Meigen, 1818

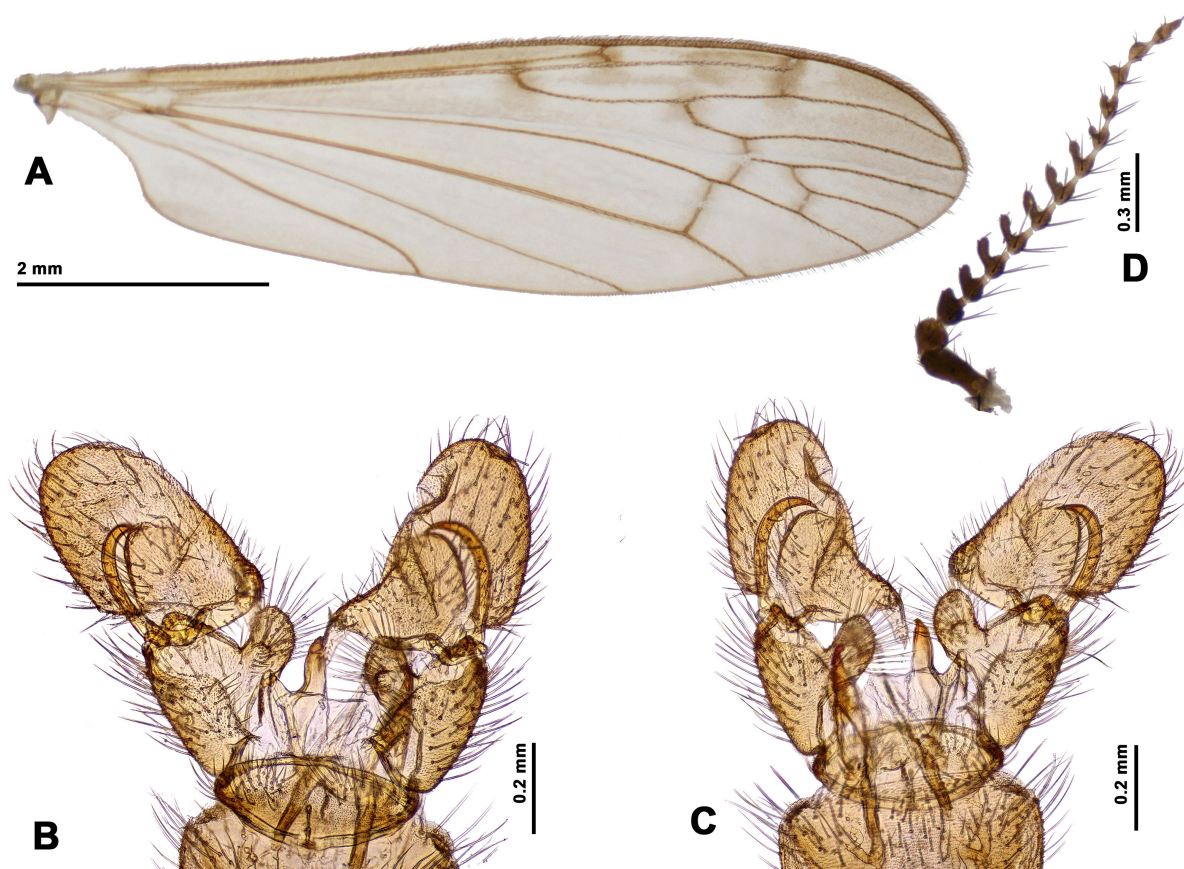
Type species. *Rhipidia maculata* Meigen, 1818

#### *Rhipidia (Rhipidia) uniseriata* Schiner, 1864

[Fig. 16]

**Material examined.** 1 ♂, ALBANIA: Cerem, Valbona, Bjeshkët e Nemuna, 1136 m, 42°29'36.08"N, 19°57'27.44"E (Fig. 1, S4), 12.VI.2022, leg.: Keresztes L.; 1 ♂, Vasije, Korab Mts., springbrook, 1150 m, 41°51'23.73"N, 20°26'8.20"E (Fig. 1, S18), 9.VI.2022, leg.: Keresztes L., Simon F.G.P.; 2 ♂♂, Valbona, Bujtina e Lugines, near main river, 936 m, 42°27'.81"N, 19°53'18.70"E (Fig. 1, S11), 10.VI.2022, leg.: Keresztes L.

**Taxonomic remarks.** The species is characterized by the conspicuous comb-like lobes present on the flagellar segments of the antennae (Fig. 16D). In this particular species, the male flagellum has only one series of pectination, but also the wings lack the most basal spot on the basal half of the wing, before the base of  $R_s$  vein (Fig. 16A) (Stubbs 2021). Male genitalia are highly similar with close related species, e.g., *R. ctenophora* Loew, 1871 (Fig. 16B–C).



**Figure 16.** Wing and male genitalia of *Rhipidia (R.) uniseriata* Schiner, 1864. A. Right wing; B. Male genitalia, dorsal view; C. Male genitalia, ventral view; D. Left antenna of male.

**Distribution.** The species is widespread in the Western Palaearctic and has been recorded from various countries in the Balkan region (Oosterbroek 2026). This is the first record from Albania.

### Family Tipulidae Latreille 1802

#### Subfamily Tipulinae Latreille, 1802

#### Genus *Nephrotoma* Meigen, 1803

Type species. *Tipula crocata* Linnaeus, 1758

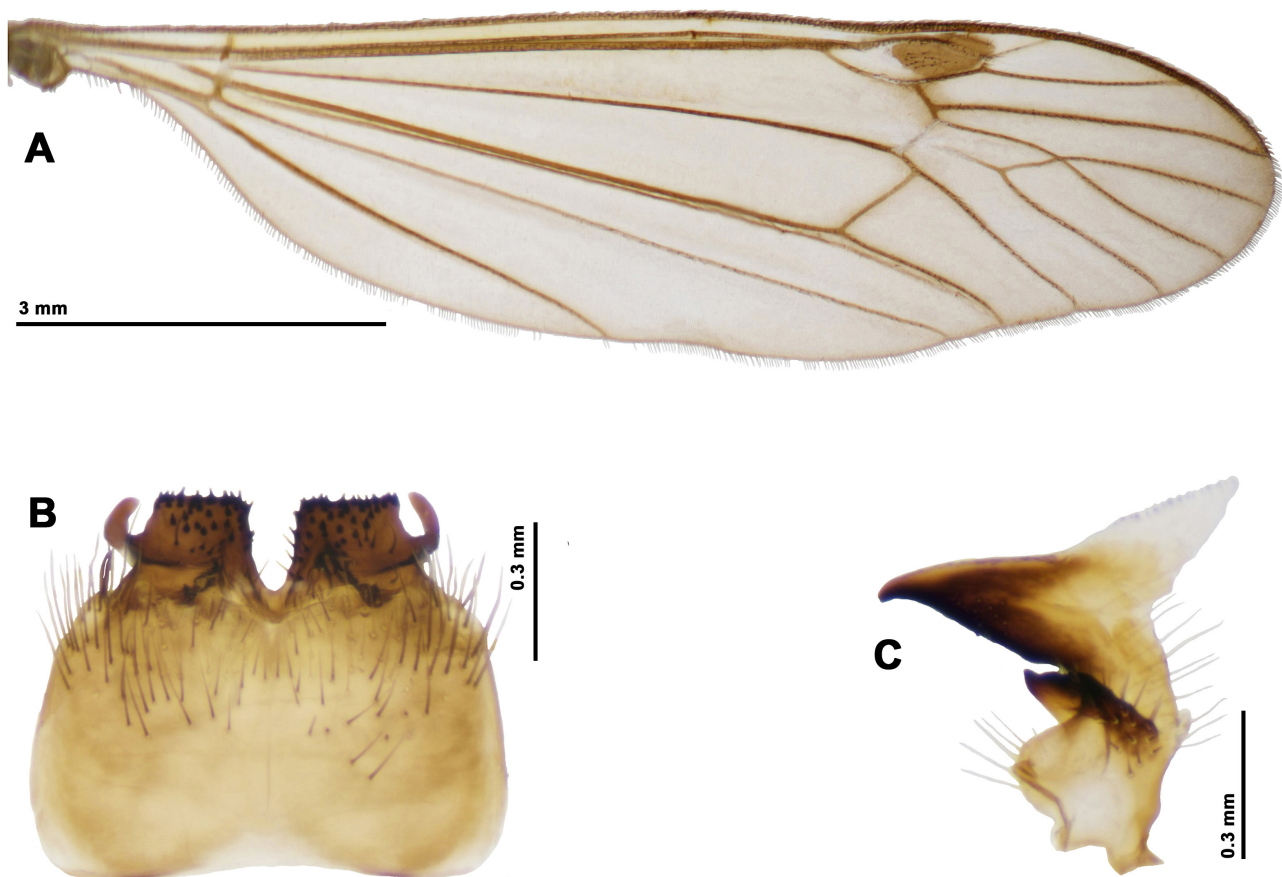
#### *Nephrotoma guestfalica* (Westhoff, 1879)

[Fig. 17]

**Material examined.** 1 ♂, MONTENEGRO: Virpazar, Shkodra lakeshore, 5 m, 42°14'53.11"N, 19°05'23.25"E (Fig. 1, S19), 3.V.2022, leg.: Terec A.; 4 ♂♂, 1 ♀, Morinj, Kotor Bay, 114 m, 42°29'13.38"N, 18°38'4.62"E (Fig. 1, S20), 12.VII.2007, leg. Keresztes L.; 4 ♂♂, 1 ♀, Zabljak Crnojevica, 15 m, 42°19'5.72"N, 19°9'24.90"E (Fig. 1, S21), 15.V.2010, leg.: Keresztes L.

**Taxonomic remarks.** *Nephrotoma* are characteristically yellow and black striped crane flies, mostly on the thorax, and antennae with flagellar segments having a basal whorl of bristles. In addition, *N. guestfalica* has only the dark stigma on its wing (Fig. 17A), and in males, the 9th abdominal tergite has a distinctive shape, and the inner clasper has a long, triangular posterior lobe (Fig. 17B–C).

**Distribution.** The species is widespread in the Western Palaearctic and has been recorded from various countries in the Balkan region (Oosterbroek 2026). This is the first record from Montenegro.



**Figure 17.** Wing and male genitalia of *Nephrotoma guestfalica* (Westhoff, 1879). A. Right wing; B. Male 9<sup>th</sup> tergite, dorsal view; C. Inner gonostylus, exterior lateral view.

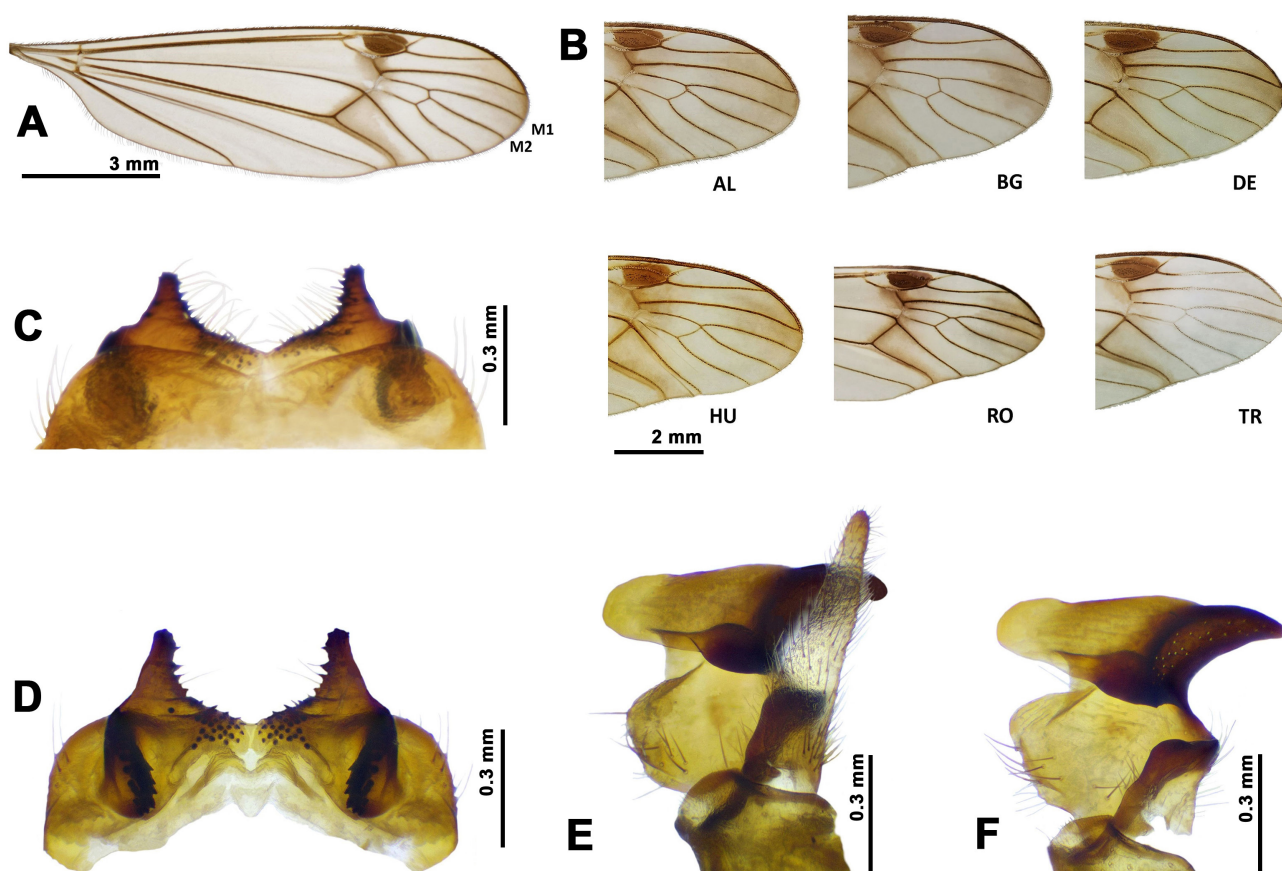
*Nephrotoma quadrifaria* (Meigen, 1804)

[Fig. 18]

**Material examined.** 2 ♂♂, MONTENEGRO: Vusanje, Donbalici, Eco Katun Rossi, 928 m, 42°31'58.19"N, 19°49'56.49"E (Fig. 1, S22), 6.VII.2021, leg.: Keresztes L.; 2 ♂♂, Cetinje, Cetinje Monastery, 682 m, 42°23'16.71"N, 18°55'13.44"E (Fig. 1, S23), 30.IV.2014, leg.: Kolcsar L.P.

**Taxonomic remarks.** In addition to the dark stigma on the wings of this species, there is also a dark band on the wings below the stigma, and a distinct shape of the posterior end of the male 9<sup>th</sup> abdominal tergite (Fig. 18C–D). Savchenko (1957) mentioned, among others, the distinct shape of cell M<sub>1</sub>, which is petiolate in *N. q. quadrifaria*, but sessile in *N. q. farsidica* (Savchenko, 1957). Comparing populations from Central Europe (Germany, DE, Hungary, HU and Romania, RO) and the Balkan regions (Bulgaria, BG, Albania, AL and Türkiye, TR) we find a rather variable shape of cell M<sub>1</sub> from petiolate to sessile and broadly sessile, without a clear geography pattern, also noticed by Oosterbroek in 1978 (Fig. 18A–B). Besides this, the wings have a more or less developed dark area at the apex. Nevertheless, the shape of the inner claspers of males was similar in all specimens investigated by us, especially the well-developed posterior lobe (Fig. 18E–F), but never reduced, as it is in *N. q. farsidica* (Savchenko, 1957) recorded from Azerbaijan and Iran (Savchenko 1957).

**Distribution.** The species is widespread in the Western Palaearctic and has been recorded from various countries in the Balkan region (Oosterbroek 2026). This is the first record from Montenegro.



**Figure 18.** Wing and male genitalia of *Nephrotoma q. quadrifaria* (Meigen, 1804). **A.** Right wing, specimen from Montenegro; **B.** Variability of the cell m<sub>1</sub>; **C.** Male 9<sup>th</sup> tergite, dorsal view; **D.** Male 9<sup>th</sup> tergite, ventral view; **E.** Inner clasper with outer clasper, lateral, exterior view; **F.** Inner clasper with outer clasper detached, lateral, exterior view. Abbreviations: AL – Albania, BG – Bulgaria, DE – Germany, HU – Hungary, M – median veins, RO – Romania, TR – Türkiye.

## Genus *Tipula* Linnaeus, 1758

**Type species.** *Tipula oleracea* Linnaeus, 1758

### *Tipula (Acutipula) tenuicornis* Schummel, 1833

[Fig. 19]

**Material examined.** 2 ♂♂, ALBANIA: Radomire, Korab Mts., 1613 m, springs, 41°49'23.52"N, 20°29'5.91"E (Fig. 1, S24), 8.VI.2022, leg.: Keresztes L.

**Taxonomic remarks.** The species comprises large crane flies with distinctive wing markings (Fig. 19C). The male genitalia include a deeply notched prominence at the apex of the posterior margin of tergite 9 (Fig. 19B), and a distinctly shaped inner clasper (Fig. 19C).

**Distribution.** This European species is distributed in Central and Northern Europe, but is also widespread in various countries in the Balkan region (Oosterbroek 2026). This is the first record from Albania.

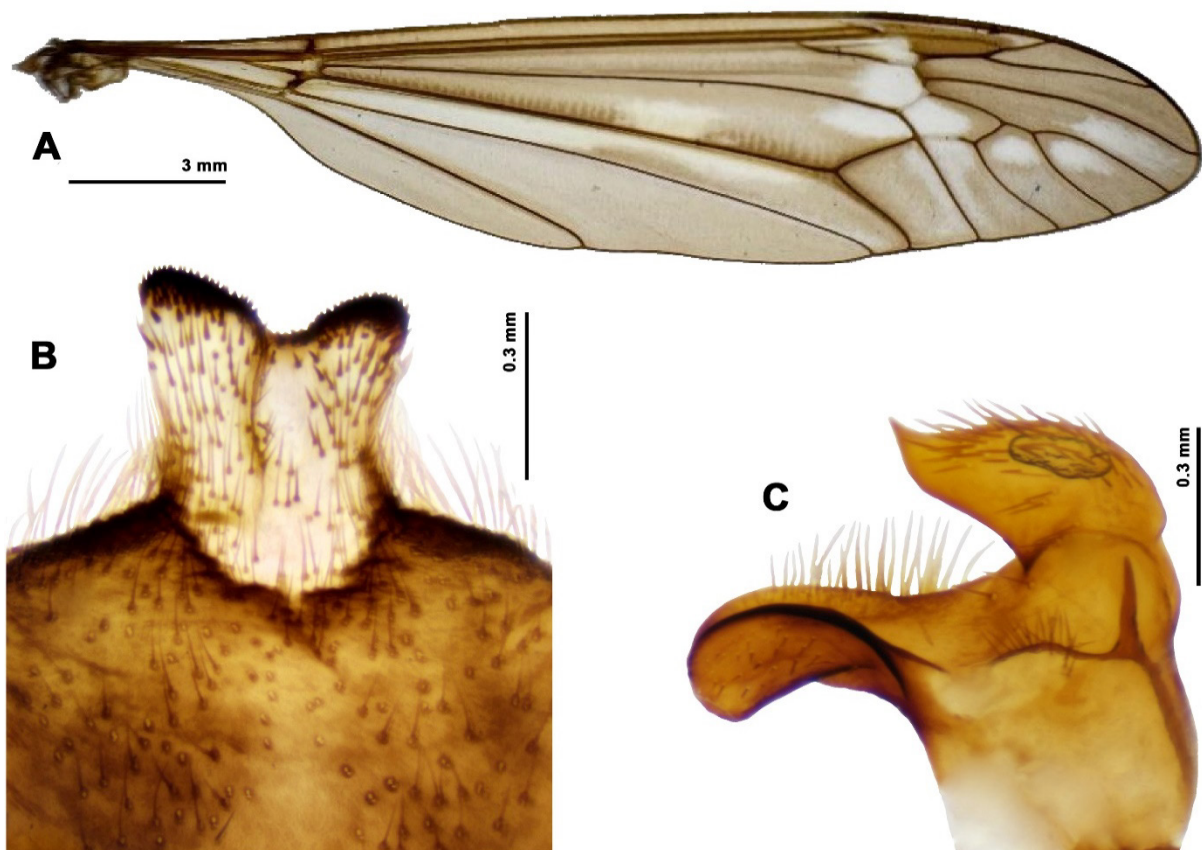
### *Tipula (Acutipula) vittata* Meigen, 1804

[Fig. 20]

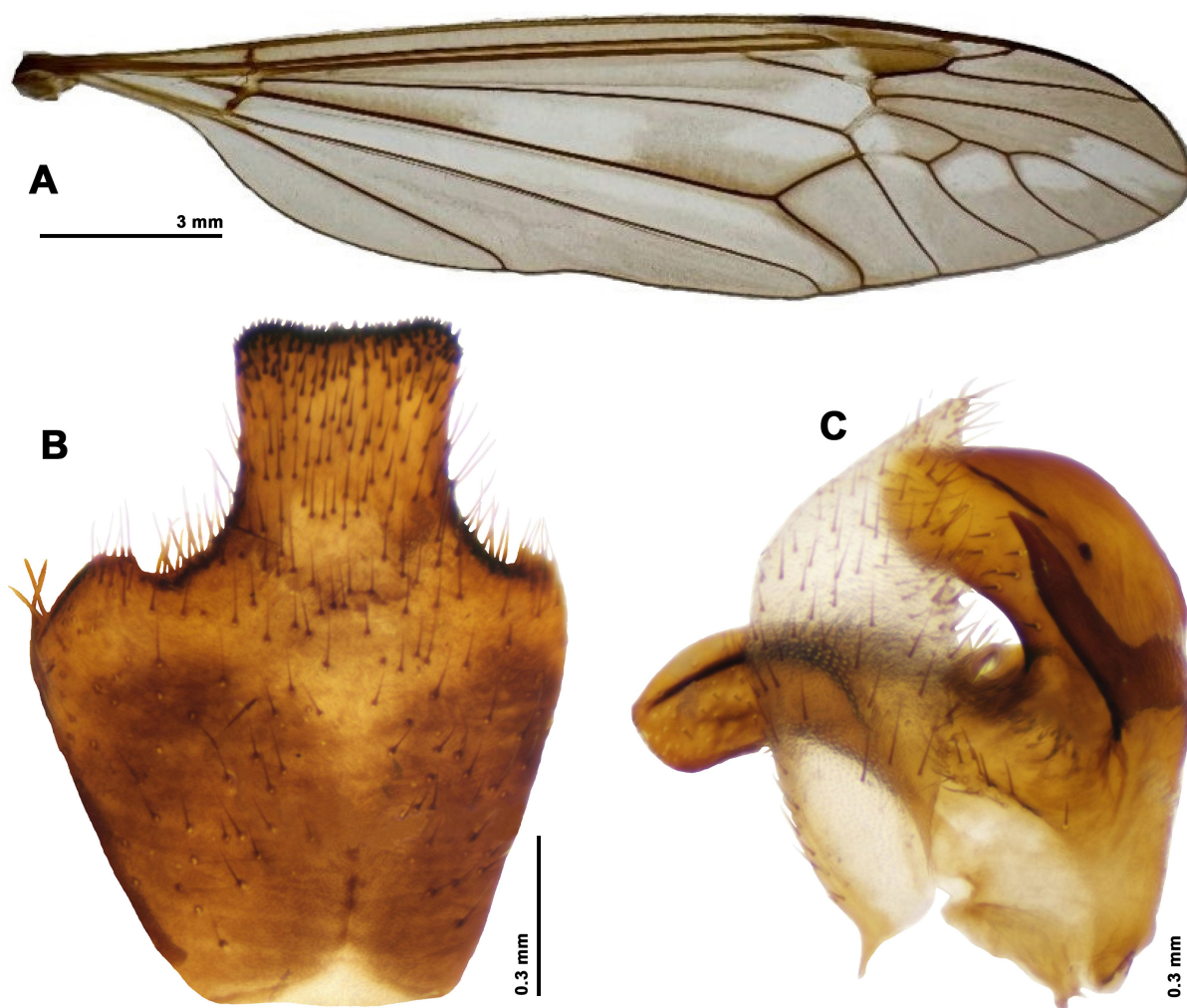
**Material examined.** 1 ♂, ALBANIA: Cerem, near Bujtina, Valbona, Bjeshkët e Nemuna, 1136 m, 42°29'36.08"N, 19°57'27.44"E (Fig. 1, S4), 12.VI.2022, leg. Keresztes L.

**Taxonomic remarks.** This is a large grayish species with strongly marked wings (Fig. 20A), with a white stripe extending to the wing tip, male genitalia include a shallower notched prominence at the apex of the posterior margin of tergite 9 (Fig. 20B), and a distinctly shaped inner clasper (Fig. 20C).

**Distribution.** The species is widely distributed in the Western Palaearctic region (Oosterbroek 2026). This is the first record of the species from Albania.



**Figure 19.** Wing and male genitalia of *Tipula (A.) tenuicornis* Schummel, 1833. A. Right wing; B. Male 9<sup>th</sup> tergite; C. Male interior clasper.



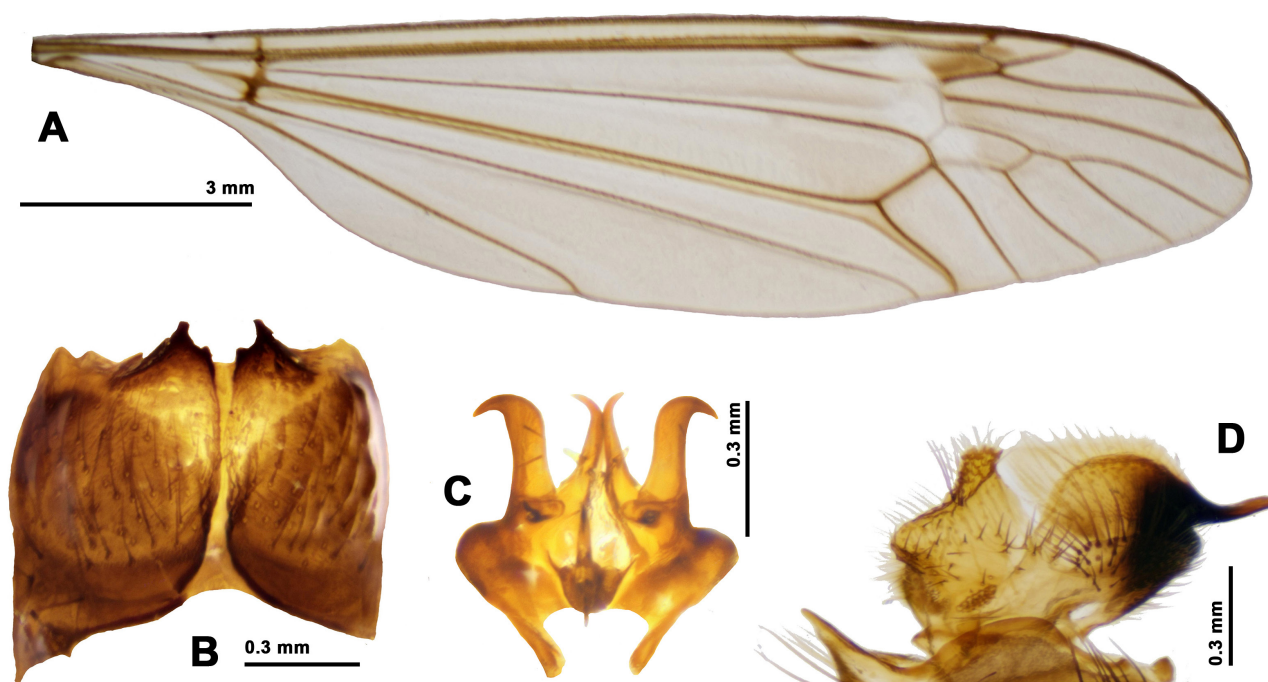
**Figure 20.** Wing and male genitalia of *Tipula (A.) vittata* Meigen, 1804. **A.** Right wing; **B.** Male 9<sup>th</sup> tergite; **C.** Male interior clasper, lateral view.

***Tipula (Lunatipula) animula* Mannheims, 1967**

[Fig. 21]

**Material examined.** 2 ♂♂, ALBANIA: Cerem, Valbona, Bjeshkët e Nemuna, 1136 m, 42°29'36.08"N, 19°57'27.44"E (Fig. 1, S4), 12.VI.2022, leg.: Keresztes L.; 1 ♂, Lepushe, Bashkimi, Ujevara e Bashkimit, 998 m, 42°34'58.08"N, 19°44'46.16"E (Fig. 1, S25), 12.VI.2023, leg. Keresztes L.; 2 ♂♂, Ujemire, under white cliffs, Korab, 1178 m, 41°49'5.58"N, 20° 28'21.94"E (Fig. 1, S26), 9.VI.2022, leg.: Keresztes L.; 1 ♂, Valbona, National Park Valbona, Rragam, Ujevara e Rrogamit, 1244 m, 42°24'30.65"N, 19°49'40.21"E (Fig. 1, S27), 11.VI.2022, leg. Keresztes L., Simon F.G.P.; 1 ♂, Vermosh, trees near road, 1059 m, 42°35'35.88"N, 19°40'47.21"E (Fig. 1, S5), 10.VI.2023, leg.: Keresztes L.; 1 ♂, 1 ♀, Vermosh, Velipoja, lateral brook with boulders, 1115 m, 42°35'48.25"N, 19°39'.71"E (Fig. 1, S28), 10.VI.2023, leg.: Keresztes L.

**Taxonomic remarks.** The species belongs to the most species-rich subgenus *Lunatipula* of the genus *Tipula*, with mostly clear wings, but frequently with a white lunula between stigma and discoid cell (Fig. 21A). Many similar species occur in the Balkans, which can be identified at species level mostly on fine details of the male genital structures, for example, details on the male 9<sup>th</sup> tergite, inner dististyle (id) and adminiculum. *T. (L.) animula* was first described by Mannheims (1967) based on a single male specimen, similar to *T. (L.) anicilla* Mannheims, 1967, but with distinct shape of the male 9<sup>th</sup> tergite, and a highly different adminiculum (Fig. 21B–D).



**Figure 21.** Wing and male genitalia of *Tipula (L.) animula* Mannheims, 1967. **A.** Right wing; **b.** Male 9<sup>th</sup> tergite; **c.** Adminiculum; **d.** Male interior clasper.

**Distribution.** The species has a limited distribution, restricted to the Balkan region, with scarce records from Bosnia and Herzegovina (Mannheims 1967; Simova-Tošić & Oosterbroek 2003), Bulgaria (Kolcsár et al. 2023b), Greece (Oosterbroek 2009), Montenegro, and North Macedonia (Simova-Tošić & Oosterbroek 2003). This is the first record of the species from Albania.

#### *Tipula (Lunatipula) graeca* Oosterbroek & Vukovic, 1989

[Fig. 22]

**Material examined.** 1 ♂, ALBANIA: Tamare, Gropat e Selces, 1057 m, 42°32'0.15"N, 19°40'19.50"E (Fig. 1, S29), 10.VI.2023, leg. Keresztes L.

**Taxonomic remarks.** The species was described by Oosterbroek and Vukovič (1989) from Greece, based on some important differences in male genitalia, comparing with close related *T. (L.) heros* Egger, 1863, mostly based on the inner dististyle with distinct anterior beak and a well-developed dorsal crest, and with posterior lobe of dististyle only with and inconspicuous hooklet, between others (Fig. 22A–D).

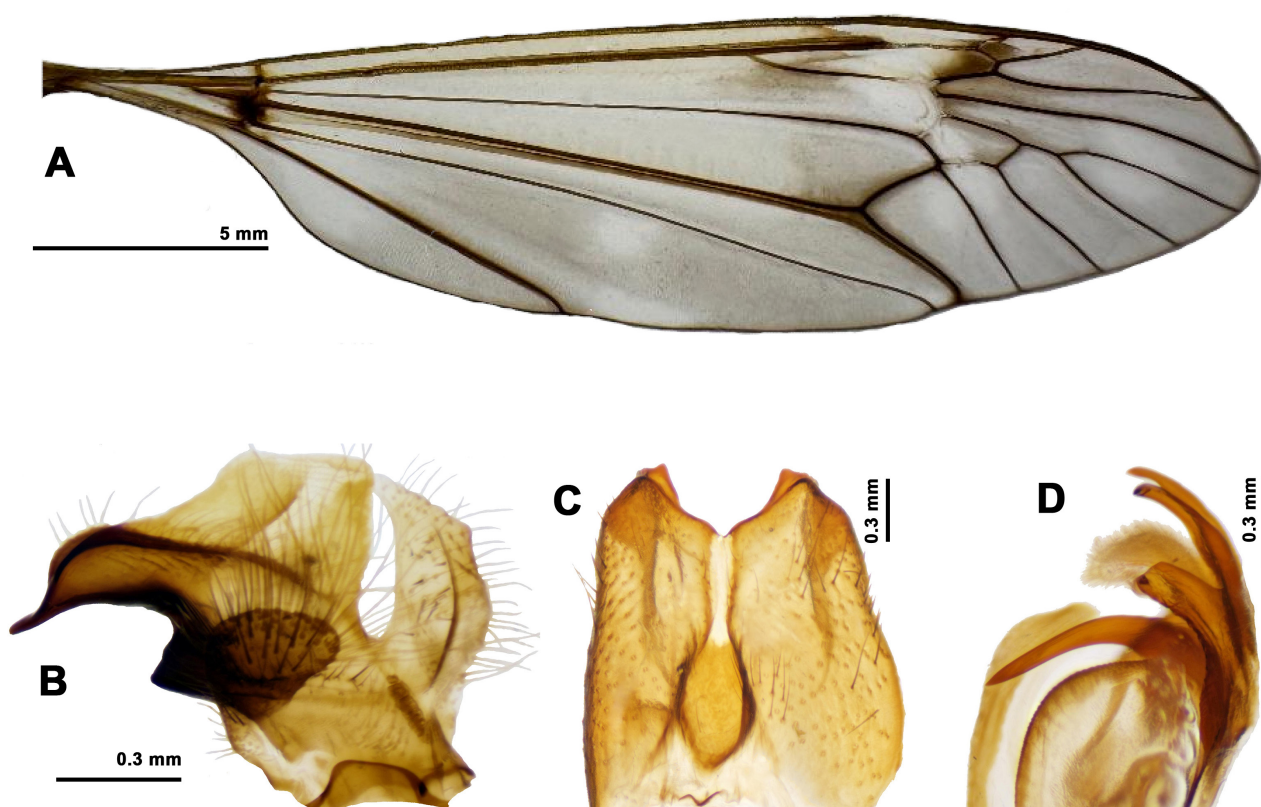
**Distribution.** The species was previously recorded from Greece only (Oosterbroek 2026). This is the first record of the species from Albania.

#### *Tipula (Lunatipula) tergestina* Loew, 1873

[Fig. 23]

**Material examined.** 1 ♂, ALBANIA: Valbona, Kukaj, near Gethouse Rosi, 1135 m, 42°27'16.79"N, 19°52'19.34"E (Fig. 1, S30), 11.VI.2022, leg.: Keresztes L.; 1 ♂, Ujemire, under white cliffs, Korab, 1178 m, 41°49'5.58" N, 20°28'94"E (Fig. 1, S26), 9.VI.2022, leg.: Keresztes L.

**Taxonomic remarks.** The species was treated by Mannheims (1966) as a synonym of *T. (L.) bispina* Loew, 1873, later erected to valid species by Theissing (1987), based on the following important discriminative characters: the wings are yellowish brown, the stigma is grayish brown, lunula inconspicuous, narrow, extending to the height of the discal cell (Fig. 23A).



**Figure 22.** Wing and male genitalia of *Tipula (L.) graeca* Oosterbroek & Vukovic, 1989. **A.** Right wing; **B.** Inner dististyle; **C.** Male 9<sup>th</sup> tergite; **D.** Adminiculum.

Male genitalia is very well developed; tergite 9 has a short, narrow notch between the bluntly hook-shaped terminal lobes pointing towards the middle (Fig. 23B, C, G). Sternite 8 with strongly developed central plates, consisting of short blackish-brown bristles, between two fields of elongated, longer yellow bristles, on the inner side of the base of the appendage. Appendages of sternite 8 with a broad, light-colored base and somewhat flattened, non-angled, dark, rather pointed terminal spines, the outer one usually significantly wider than the inner one (Fig. 23E). Posterior appendages of sternite 9 with thick base, two-branched, the inner branch short and membranous, the outer one long, wider, approximately parallel-sided and flat, with distal end variable, more or less rounded (Fig. 23F). Outer dististyle strongly angled backwards and extended. Inner dististyle with an approximately trapezoidal front part, a clearly distinct small rear part, the outer edge is highly variable, ranging from barely to very strongly jagged (Fig. 23D) (Theischinger 1987).

**Distribution.** The species has been recorded only from Greece and North Macedonia. This is the first reliable record of the species from Albania.

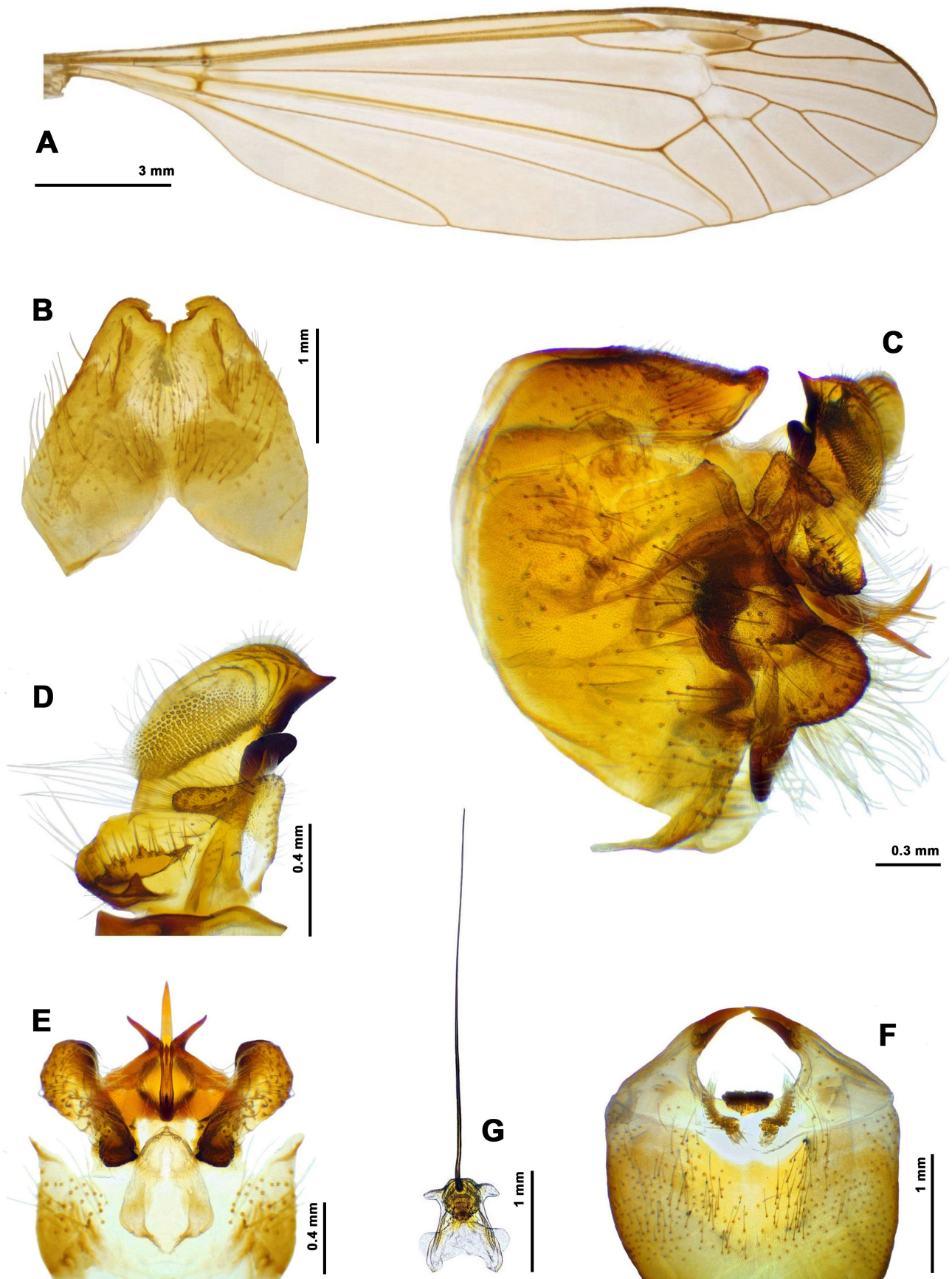
#### *Tipula (Platytipula) melanoceros* Schummel, 1833

[Fig. 24]

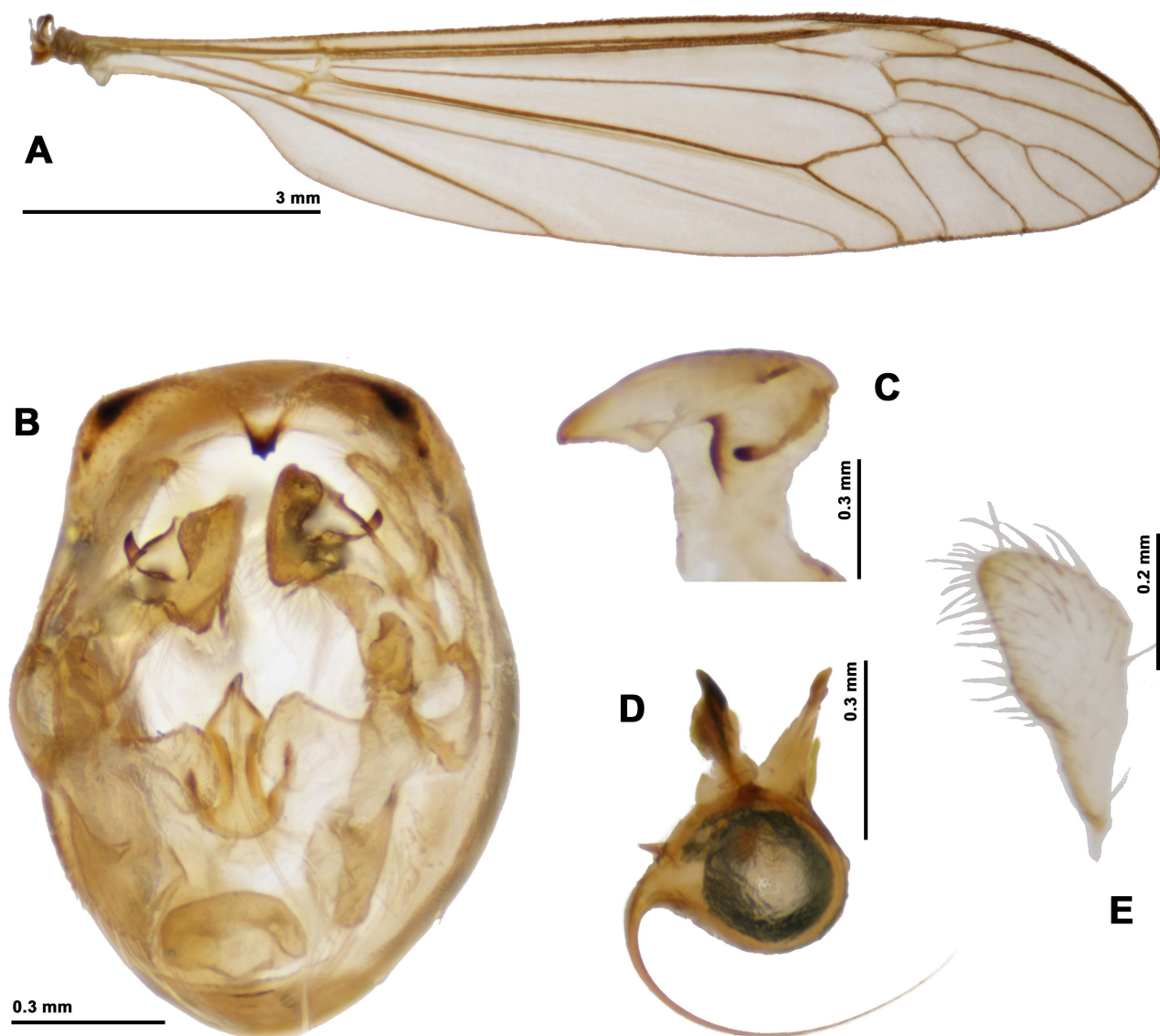
**Material examined.** 5 ♂♂, BULGARIA: Yakoruda, Rila Mts., Trestenik hut toward Ribno glacial lake, 2150 m, 42°6'9.76"N, 23°35'32.78"E (Fig. 1, S31), 24.VIII.2013, leg.: Kolcsar L. P., Torok E., Keresztes L.

**Taxonomic remarks.** Wing membrane clear, stigma pale yellow (Fig. 24A). The most important discriminative character in males is the 9<sup>th</sup> tergite, with strongly extended hind corners, and a middle lobe with tripartite chitinous tip (Fig. 24B – E) (Stubbs 2021).

**Distribution.** It is a typical late summer/early autumn species distributed in most parts of Europe to Asia (Oosterbroek 2026). This is the first record of the species from the Balkan region.



**Figure 23.** Wing and male genitalia of *Tipula (L.) tergestina* Loew, 1873. **A.** Right wing, **B.** Male 9<sup>th</sup> tergite; **C.** Male genitalia, lateral view; **D.** Outer and inner dististyle, lateral view; **E.** 8<sup>th</sup> sternite of males with chitinous processes; **F.** 9<sup>th</sup> sternite with lateral arms; **G.** Adminiculum and vesica.



**Figure 24.** Wing and male genitalia of *Tipula (P.) melanoceros* Schummel, 1833. **A.** Right wing; **B.** Male genitalia, caudal view; **C.** Inner dististyle, lateral view; **D.** Aedeagus with sperm pump; **E.** Outer dististyle.

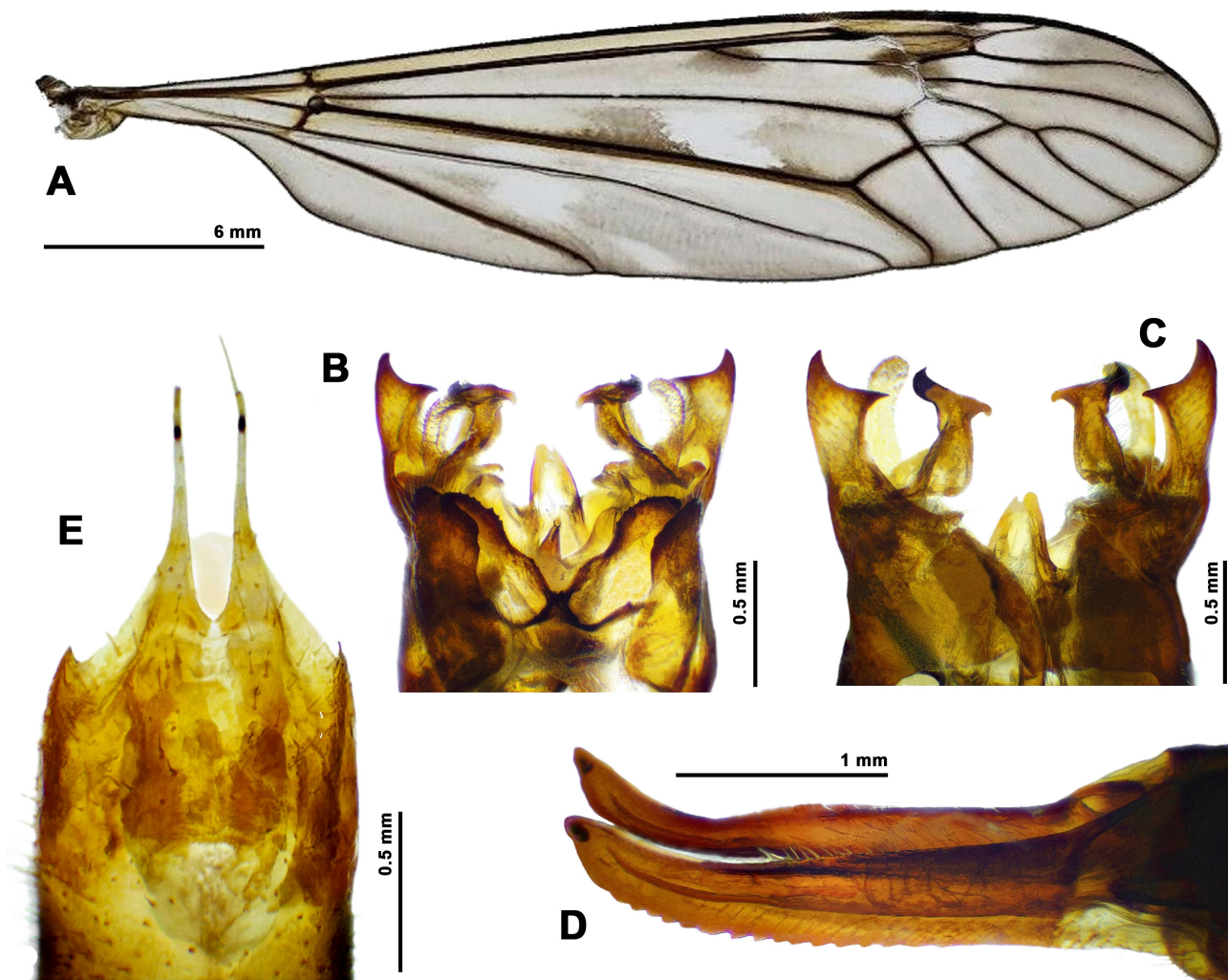
### *Tipula (Vestiplex) hortorum* Linnaeus, 1758

[Fig. 25]

**Material examined.** 1 ♀, MONTENEGRO: Grebaje, Prokletje NP., 1169 m, 42°30'46.41"N, 19°46'48.66"E (Fig. 1, S32), 28.VI.2024., leg.: Jancsó B., Kárpáti M.; 1 ♂, Karamfil, Volusnica, 42°31'23.39"N, 19°46'53.65"E (Fig. 1, S33), 1262 m, 28.IV.2024., leg.: Keresztes L.

**Taxonomic remarks.** Patterned winged species with basal cells usually lacking a dark spot at base in females (Fig. 25A), and with distinctive male and female genitalia (Stubbs 2021). Male genitalia have short lateral lobes in 9<sup>th</sup> tergite, the 10<sup>th</sup> sternite has a long conspicuous apical process turned upward, obliquely truncate and almost twin-sined at the apex (Fig. 25B, C) (Stubbs 2021). The female 8<sup>th</sup> sternum in ventral view bears two parallel tail-like processes, which are broad to triangular at the base, there is a small spike-like protrusion on each side of the 8<sup>th</sup> sternite, the cerci are thicker at the base, curved upward and rapidly taper apically (Fig. 25D, E) (Stubbs 2021).

**Distribution.** It is a widespread species in the Palaearctic region (Oosterbroek 2026). The species is recorded for the first time from Montenegro.



**Figure 25.** Wing and genitalia of *Tipula (V.) hortorum* Linnaeus, 1758. **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view; **D.** Female genitalia with cerci; **E.** Female 8<sup>th</sup> sternite, ventral view.

### *Tipula (Yamatotipula) submontium* Theowald & Oosterbroek, 1981

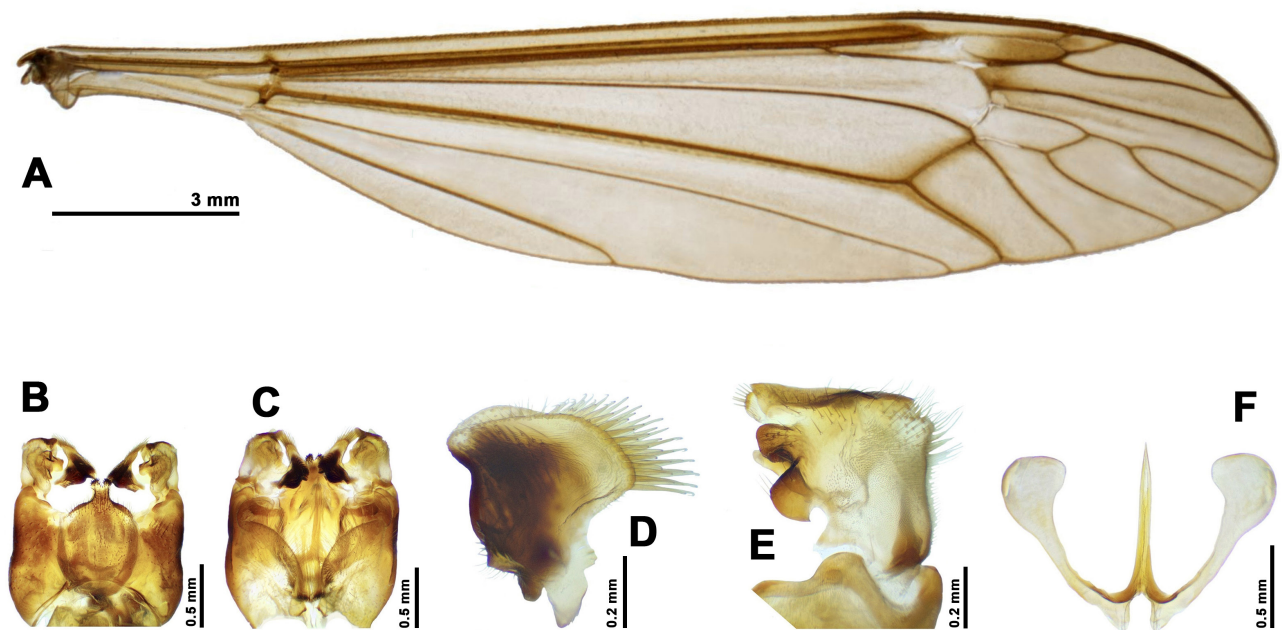
[Fig. 26]

**Material examined.** 1 ♂, BULGARIA: Kazanluk, Stara Planina, Tazha hut, 42°43'48.16"N, 25°24'7.54"E (Fig. 1, S34), 4.VIII.2006, leg.: Neu, P.

**Taxonomic remarks.** The species was described by Theowald and Oosterbroek in 1981 and later discussed in Oosterbroek (1994), with the most important distinguishing features as follows: the wing is uniformly brownish, but darkens close to the anterior margin and along some veins (Fig. 26A).

The outer dististyle small, is somehow intermediate between *T. (Y.) lateralis* Meigen, 1804 and *T. (Y.) montium* Egger, 1863 (Theowald & Oosterbroek 1981). The inner dististyle is divided in two parts, highly similar to *T. (Y.) guentheri* Oosterbroek, 1994. The anterior half is short and provided with long erect setae that are strongly curved at their tips (Fig. 26B–D). The posterior half of inner dististyle consists of four, distinctly developed parts in its anterior margin, the second lobe short and rounded at tip, the third lobe triangular, narrowed at tip, and no ribbed surface on lobe 4 (Fig. 26E). The gonapophyses process slender, elongate stem with a conspicuously expanded apical blade, and are positioned in the same plane as the aedeagal guide (Fig. 26F).

**Distribution.** The species was sporadically recorded all over Europe, most likely because of its confusion with *T. (Y.) lateralis* (Theowald & Oosterbroek, 1981). The species is recorded for the first time from Bulgaria.



**Figure 26.** Wing and male genitalia of *Tipula* (*Y.*) *submontium* Theowald & Oosterbroek, 1981. **A.** Right wing; **B.** Male genitalia, dorsal view; **C.** Male genitalia, ventral view; **D.** Inner dististyle, anterior part, lateral view; **E.** Inner dististyle, posterior part, lateral view; **F.** Gonapophyses with adminiculum.

## DISCUSSION

Although the Balkans are considered a hotspot of European biodiversity, our knowledge on the composition and distribution of many insect groups from this region is highly limited (Kovačević et al. 2025; Kryštufek & Reed 2004; Popov & Fet 2007; Theowald & Oosterbroek 1986). The two Diptera families treated here have been intensively studied in the last century, adding important new species to science and expanding our knowledge of the regional biodiversity of the Limoniidae and Tipulidae fauna. Faunistic data for the Balkan region have been increasing mainly since the 2000s, taking advantage of the new possibilities of the open-access resource of the Catalogues of the Craneflies of the World (<https://ccw.naturalis.nl/>) (Bilalli et al. 2021; Graf et al. 2023; Hubenov 2018, 2021, 2025; Keresztes et al. 2018; Kolcsár et al. 2013, 2015, 2017a, 2017b, 2018a, 2018b, 2023a, 2023b; Ivković et al. 2020; Oosterbroek 2026; Starý 2012; Vogtenhuber 2012, and others). Nevertheless, a recent work dealing with the faunistics of Tipuloidea (including Limoniidae and Tipulidae) of some European countries showed that the data from Balkan countries are extremely different and mostly reflect the collecting attempts of individual collectors and not the faunal characteristics of each country (Kolcsár et al. 2023a, 2023b).

Our data on the Balkan Limoniidae and Tipulidae species show similar patterns as suggested by the literature data (Kolcsár et al. 2023a, 2023b; Oosterbroek 2026), with the 25 new faunal records being unevenly distributed across different countries, reflecting mostly the possibilities and efforts of individual collectors who contributed to the present paper. Two species of Tipulidae, *Tipula* (*P.*) *melanoceros* and *Tipula* (*Y.*) *submontium* were added to Bulgaria, a relatively well-investigated country, presently numbering 100 Tipulidae and 221 Limoniidae species (Oosterbroek 2026). Most species (10) were added to a less investigated country, Albania, which currently has only 57 Tipulidae and 72 Limoniidae species (Oosterbroek 2026). The species new to Albania are among Limoniidae: *Austrolimnophila* (*A.*) *ochracea*, *Molophilus* (*M.*) *brevihammatus*; *M.* (*M.*) *nodicornis*, *Pilaria discicollis*; *Rhipidia uniseriata* and Tipulidae: *Tipula* (*A.*) *tenuicornis*; *T.* (*A.*) *vittata*; *T.* (*L.*) *animula*, *T.* (*L.*) *gaeca*; *T.* (*L.*) *tergestina*. Eight new records were added to Montenegro (Limoniidae: *Dicranophragma* (*B.*) *separatum*; *Idioptera mundata*, *Lipsothrix ecucullata*, *Phylidorea* (*M.*) *alexanderi*, *Tasiocera* (*D.*) *murina* and Tipulidae:

*Nephrotoma guesfalica*; *N. quadrifaria*; *Tipula* (*V.*) *hortorum*). While the remaining five species are distributed among the following countries, in alphabetic order: Bosnia and Herzegovina (Limoniidae: *Afrolimmophila abludens*), Greece (Limoniidae: *Ellipteroides* (*P.*) *alboscuteatus*), Kosovo (Limoniidae: *Idiocera* (*E.*) *jucunda*), *Ormosia* (*O.*) *hederae*) and North Macedonia (Limoniidae: *Erioptera* (*E.*) *lutea*).

A significant faunistic finding is the first record of *Afrolimmophila abludens* from the Balkan peninsula, a species previously reported only from the Caucasus (Savchenko 1971), but clearly distinct from the other European species by its transparent, unspotted wing, and shows that the Limoniidae fauna of the Balkans, especially in certain areas, like Bosnia and Herzegovina, is still highly underexplored. Among Tipulidae, three species are endemics, with restricted distribution to the Balkan Peninsula, like *Tipula* (*L.*) *animula*, *T. (L.) graeca*, and *T. (L.) tergestina*; thus, our data significantly increases the distribution area of these species in the Balkans. A single Limoniidae species, *Phylidorea* (*M.*) *alexanderi*, previously known only from Bulgaria, but later recorded from Romania and Serbia (Kolcsár et al. 2021; Oosterbroek 2026; Starý 1974), is a subendemic species from the Balkan Peninsula, with new distribution data from Montenegro. The remaining 21 species have a much wider distribution, covering Central Europe or even beyond, and show that many new faunistic additions are still to be expected from the Balkans, especially for the spring-early summer or early autumn collections, as was the case for most of the species first recorded from Albania.

#### AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: B.-Z. Jancsó contributed to fieldwork sampling of specimens, identification, writing, and photography; A. Bilalli carried out fieldwork sampling of specimens, writing, and is the corresponding author; H. Ibrahim performed fieldwork, writing, and reviewing; M. Musliu contributed to fieldwork sampling of specimens; D. Geci carried out fieldwork sampling of specimens; L. Grapci-Kotori performed fieldwork and reviewing; L. Keresztes contributed to fieldwork, identification of specimens, writing, and reviewing. All authors approved the final version of the manuscript.

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#### AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in the Babeş-Bolyai University, Faculty of Biology and Geology, Center of Systems Biology, Biodiversity and Bioresources, and are available upon request.

#### ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

#### CONSENT FOR PUBLICATION

Not applicable.

#### CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

#### GENERATIVE AI STATEMENT

No generative AI tools were used in the preparation of this manuscript.

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## REFERENCES

- Bezzi, M. (1911) Biospeologica. XX. Dipteres (premiere serie) suivi d'un appendice sur les dipteres cavernicoles recueillis par le Dr Absolon dans les Balcans. *Archives de Zoologie Experimentale et Generale*, 5 (8), 1–87.
- Bezzi, M. (1914) Ditteri cavernicoli dei Balcani raccolti dal dott K. Absolon (Brunn). *Atti della Societa Italiana di Scienze Naturali e del Museo Civico di Storia Naturale in Milano*. 53, 207–230.
- Bilalli, A., Ibrahim, H., Musliu, M., Grapci-Kotori, L., Geci, D., Slavevska-Stamenkovic, V., Hinic, J., Mitic-Kopanja, D. & Keresztes, L. (2021) New records of the Craneflies (Diptera: Limoniidae, Tipulidae) from the Western Balkans. *Journal of the Entomological Research Society*, 23 (2), 141–152. <https://doi.org/10.51963/jers.v23i2.1929>
- Graf, W., Bauernfeind, E., Ivković, M. & Kolcsár, L.-P. (2023) Aquatic insects (Ephemeroptera, Plecoptera, Trichoptera and Diptera: Tipuloidea) from the upper Neretva in Bosnia-Herzegovina. *Natura Sloveniae*, 25 (3), 29–42. <https://doi.org/10.14720/ns.25.3.29-42>
- Hancock, E.G., Hewitt, S.M., Horsfield, D., Lyszkowski, R.M., Macgowan, I., Ricarte, A., Rotheray, G.E. & Watt, K. (2015) Nematocera flies recorded in Serra do Courel, northwest Spain, May 2012 (Diptera: Anisopodidae, Blepharoceridae, Cylindrotomidae, Limoniidae, Pediciidae, Tipulidae and Trichoceridae) including descriptions of two new species of Limoniidae. *Zootaxa*, 3911 (2), 231–244. <https://doi.org/10.11646/zootaxa.3911.2.5>
- Hubenov, Z. (2018) The Dipterans (Insecta: Diptera) of the Vitosha Mountain. *Historia Naturalis Bulgarica*, 26, 1–66.
- Hubenov, Z. (2021) Review of the families of the suborder Nematocera (Insecta: Diptera) of Bulgaria. *Acta Zoologica Bulgarica*, 74 (1), 9–26.
- Hubenov, Z. (2025) Fauna, distribution and areographical structure of the dipterans (Insecta: Diptera) from the high Bulgarian mountains. *Acta Zoologica Bulgarica*, 77 (2), 149–172. <https://doi.org/10.71424/azb77.1.002830>
- Ivković, M., Dorić, V., Baranov, V., Mihaljević, Z., Kolcsár, L.-P., Kvište, G.M., Nerudova, J. & Pont, A.C. (2020) Checklist of aquatic Diptera (Insecta) of Plitvice Lakes National Park, Croatia, a UNESCO world heritage site. *ZooKeys*, 918, 99–142. <https://doi.org/10.3897/zookeys.918.49648>
- Kappert, J. (2026) spessart-fliegen. Available from: <https://www.spessart-fliegen.de/methods.html> [Accessed February 22, 2026]
- Keresztes, L., Martínez Menéndez, J., Martín, L., Török, E. & Kolcsár, L.-P. (2018) Description of a new species of *Mediotipula* from Albania, with consideration of the eastern Mediterranean as a diversity hotspot (Diptera, Tipulidae). *ZooKeys*, 792, 99–115. <https://doi.org/10.3897/zookeys.792.25683>
- Kolcsár, L.-P., Török, E. & Keresztes, L. (2013) Craneflies (Diptera: Tipuloidea) and phantom craneflies (Diptera: Ptychopteridae) fauna around a metropolis (Cluj-Napoca, Romania). *Acta Scientiarum Transylvanica*, 21 (1), 66–78.
- Kolcsár, L.-P., Török, E. & Keresztes, L. (2015) A new species and new records of *Molophilus* Curtis, 1833 (Diptera: Limoniidae) from the Western Palaearctic Region. *Biodiversity Data Journal*, 3 (e5466), 1–10. <https://doi.org/10.3897/BDJ.3.e5466>
- Kolcsár, L.-P., Oláh, T., Veres, R., Török, E. & Keresztes, L. (2017a) New faunistic records of the genus *Limonia* Meigen (Limoniidae, Diptera, Insecta) from the Balkan region. *Entomologica Romanica*, 21, 45–59. <https://doi.org/10.24193/entomolrom.21.5>
- Kolcsár, L.-P., Soos, Á., Török, E., Graf, W., Rákósy, L. & Keresztes, L. (2017b) New faunistic records of the genus *Erioptera* Meigen (Limoniidae, Diptera, Insecta) from Europe. *Entomologica Romanica*, 21, 23–44. <https://doi.org/10.24193/entomolrom.21.4>
- Kolcsár, L.-P., Török, E. & Keresztes, L. (2018a) First record of *Cylindrotoma distinctissima* (Meigen, 1818) from Serbia and new data on the occurrence of Cylindrotomidae (Diptera) in Bulgaria and Romania. *Fragmenta Faunistica*, 60 (2), 107–112. <https://doi.org/10.3161/00159301FF2017.60.2.107>
- Kolcsár, L.-P., Török, E. & Keresztes, L. (2018b) New faunistic records of Pediciidae (Diptera, Insecta) from Europe. *Entomologica Romanica*, 22, 5–9. <https://doi.org/10.24193/entomolrom.22.1>
- Kolcsár, L.-P., Oosterbroek, P., Gavryushin, D., Olsen, K.M., Paramonov, N., Pilipenko, V., Starý, J., Polevoi, A., Lantsov, V., Eiroa, E., Andersson, M., Salmela, J., Quindroit, C., d'Oliveira, M., Hancock, E.G., Mederos, J., Boardman, P., Viitanen, E. & Watanabe, K. (2021) Contribution to the knowledge of Limoniidae (Diptera: Tipuloidea): first records of 244 species from various European countries. *Biodiversity Data Journal*, 9 (e67085), 1–247. <https://doi.org/10.3897/BDJ.9.e67085>
- Kolcsár, L.-P., d'Oliveira, M.C., Graf, W., Quindroit, C., Watanabe, K. & Ivković, M. (2023a) New records for the Western Balkans crane fly fauna (Diptera, Tipuloidea) with the description of a new *Baeoura* Alexander (Diptera, Limoniidae). *ZooKeys*, 1157, 1–42. <https://doi.org/10.3897/zookeys.1157.98997>
- Kolcsár, L.-P., Oosterbroek, P., Olsen, K.M., Paramonov, N.M., Gavryushin, D.I., Pilipenko, V.E., Polevoi, A.V., Eiroa, E., Andersson, M., Dufour, C., Syratt, M., Kurina, O., Lindström, M., Starý, J., Lantsov, V.I., Wiedeńska, J., Pape, T., Friman, M., Peeters, K., Gritsch, W., Salmela, J., Viitanen, E., Aristophanous, M., Janević, D. & Watanabe, K. (2023b) Contribution to the Knowledge of Cylindrotomidae, Pediciidae and Tipulidae (Diptera: Tipuloidea): First Records of 86 Species from Various European Countries. *Diversity*, 15 (336), 1–31. <https://doi.org/10.3390/d15030336>
- Kovačević, J., Kuzmanović, N., Djordjević, V., Vukojičić, S., Stevanoski, I., Tomović, G., Niketić, M., Kabaš, E., Lazarević, P., Đurović, S., Novaković, J., Buzurović, U., Zbiljić, M. & Lakušić, D. (2025) Vascular plant nano-hotspots in the central Balkan Peninsula – A novel GIS-based approach for identifying centres of species richness. *Global Ecology and Conservation*, 60 (e03630). <https://doi.org/10.1016/j.gecco.2025.e03630>

- Kryštufek, B. & Reed, J.M. (2004) Pattern and process in Balkan biodiversity – An overview. In: Griffiths, H.I., Kryštufek, B. & Reed, J.M. (eds) *Balkan Biodiversity*. Springer Netherlands, Dordrecht, pp. 1–8. [https://doi.org/10.1007/978-1-4020-2854-0\\_1](https://doi.org/10.1007/978-1-4020-2854-0_1)
- Krzeminski, W. & Starý, J. (1989) Limoniidae of Bulgaria, II (Diptera, Nematocera). *Polskie Pismo Entomologiczne*, 59, 253–279.
- Krzeminski, W. & Starý, J. (1993) Additions to the list of Bulgarian Limoniidae and Pediciidae (Diptera). *Acta Zoologica Cracoviensia*, 35 (3), 569–572.
- Lackschewitz, P. (1940a) Die palaarktischen Rhamphidiinen und Eriopterinen des Wiener Naturhistorischen Museums. *Annalen des Naturhistorischen Museums Wien*, 50, 1–67.
- Lackschewitz, P. (1940b) Die palaarktischen Limnophilinen, Anisomerinen und Pediciinen des Wiener Naturhistorischen Museums. *Annalen des Naturhistorischen Museums Wien*, 50, 68–122.
- Lackschewitz, P. & Pagast, F. (1940) 16. Limoniidae. in: Lindner, E. (ed.) *Die Fliegen der Palaearktischen Region*, 3(5)2, Lief. Vol. 135, Stuttgart, pp. 1–16.
- Lackschewitz, P. & Pagast, F. (1941) 16. Limoniidae. In: Lindner, E. (ed.) *Die Fliegen der Palaearktischen Region*, 3(5)2, Lief. Vol. 139, Stuttgart, pp. 17–32.
- Lackschewitz, P. & Pagast, F. (1942) 16. Limoniidae. In: Lindner, E. (ed.) *Die Fliegen der Palaearktischen Region*, 3(5)2, Lief. Vol. 145, Stuttgart, pp. 33–64.
- Mannheims, B. (1966) Ergebnisse der Albanien-Expedition 1961 des Deutschen Entomologischen Institutes. 56. Beitrag, Diptera: Tipulidae. *Beitrage zur Entomologie*, 16, 489–502.
- Mannheims, B. (1967) 15. Tipulidae. In: Lindner, E. (ed.) *Die Fliegen der Palaearktischen Region*, 3(5)1, Lief. Vol. 270, Stuttgart, pp. 257–288.
- Mederos, J., Gago, S., Brañas, N., Fadrique, F., Caballero-López, B. & Masó, G. (2020) A new Dicranophagma (Diptera: Limoniidae) from a hypogeous environment in Catalonia (Iberian Peninsula). *European Journal of Taxonomy*, 724, 109–121. <https://doi.org/10.5852/ejt.2020.724.1163>
- Oosterbroek, P. (1975) Zwei neue Nephrotoma-Arten aus der cornicina-Gruppe (Diptera, Tipulidae), aus Spanien und der Türkei. *Bulletin Zoologisch Museum*, 4 (15), 119–124.
- Oosterbroek, P. (1976) Nephrotoma lamellata (Riedel, 1910) (Diptera, Tipulidae), nieuw voor de Nederlandse fauna. *Entomologische Berichten*, 36 (6), p. 81.
- Oosterbroek, P. (1978) The western Palaearctic species of *Nephrotoma* Meigen, 1803 (Diptera, Tipulidae), part 1. *Beaufortia*, 27 (337), 1–137.
- Oosterbroek, P. (1979a) The western Palaearctic species of *Nephrotoma* Meigen, 1803 (Diptera, Tipulidae), part 2. *Beaufortia*, 28 (346), 57–111.
- Oosterbroek, P. (1979b) The western Palaearctic species of *Nephrotoma* Meigen, 1803 (Diptera, Tipulidae), part 3. *Beaufortia*, 28 (350), 157–203.
- Oosterbroek, P. (1979c) The western Palaearctic species of *Nephrotoma* Meigen, 1803 (Diptera, Tipulidae), part 4, including a key to the species. *Beaufortia*, 29 (354), 129–197.
- Oosterbroek, P. (1980) The western Palaearctic species of *Nephrotoma* Meigen, 1803 (Diptera, Tipulidae), part 5, Phylogeny and Biogeography. *Beaufortia*, 29 (358), 311–393.
- Oosterbroek, P. (1994) Notes on western Palaearctic species of the *Tipula* (*Yamatotipula*) *lateralis* group, with the description of a new species from Turkey (Diptera: Tipulidae). *European Journal of Entomology*, 91, 429–435.
- Oosterbroek, P. (2009) New distributional records for Palaearctic Limoniidae and Tipulidae (Diptera: Craneflies), mainly from the collection of the Zoological Museum, Amsterdam. *Zoosymposia*, 3, 179–197. <https://doi.org/10.11646/zoosymposia.3.1.15>
- Oosterbroek, P. (2026) Catalogue of the Craneflies of the World. *Catalogue of the Craneflies of the World*. Available from: <https://ccw.naturalis.nl/index.php> [Accessed February 22, 2026]
- Oosterbroek, P. & Simova-Tošić, D. (2004) An annotated list of the species of Pediciidae, Limoniidae and Cylindrotomidae of Slovenia, Croatia, Bosnia-Herzegovina, Serbia, Montenegro and Macedonia, with additions for the Tipulidae (Insecta, Diptera). *Studia Dipterologica*, 10 (2), 441–452.
- Oosterbroek, P. & Vukovic, M. (1989) *Tipula* (*Lunatipula*) *graeca* n.sp. and other species related to *T. (L.) heros* (Diptera: Tipulidae). *Entomologische Berichten*, 49 (7), 96–100.
- Petersen, M. (2015) The evolutionary history of *Lipsothrix* Loew (Diptera: Tipuloidea) inferred through systematic revision and historical biogeographical analysis. *Invertebrate Systematics*, 29 (3), 239–286. <https://doi.org/10.1071/IS14044>
- Pilipenko, V.E. (2022) A new species of the genus *Afrolimnophila* Alexander, 1956 (Diptera, Limoniidae) from Krasnodar Territory. *Entomological Review*, 102 (7), 1218–1223. <https://doi.org/10.1134/S0013873822080152>
- Podenas, S. (2023) *Eloeophila of the World* (Diptera, Limoniidae). National Institute of Biological Resources, Incheon. 245 pp.
- Podenas, S., Geiger, W., Haenni, J.-P. & Gonseth, Y. (2006) Limoniidae & Pediciidae de Suisse. In: *Fauna Helvetica*, 14, 1–375.
- Podenas, S., Park, S.J. & Byun, H.W. (2022) *Phylidorea* crane flies (Diptera: Limoniidae) of Korea. *Journal of Species Research*, 11 (1), 47–60. <https://doi.org/https://doi.org/10.12651/JSR.2022.11.1.047>
- Popov, A. & Fet, V. (2007) *Biogeography and Ecology of Bulgaria*. Springer Netherlands, Dordrecht. 687 pp.
- Santos, D. & Ribeiro, G.C. (2024) The *Idioptera-Eloeophila* complex (Diptera: Limoniidae): a phylogenetic solution to an old taxonomic misunderstanding. *Arthropod Systematics & Phylogeny*, 82, 1–16. <https://doi.org/10.3897/asp.82.e109995>

- Savchenko, E.N. (1957) New Palaearctic *Pales* Mg. (Diptera, Tipulidae). *Entomologicheskoe Obozrenie*, 36 (1), 211–223.
- Savchenko, E.N. (1971) *Afrolimnophila* Al. A subgenus of Limoniid-flies (Diptera, Limoniidae) new for the Palaearctic fauna. *Vestnik Zoologii*, 6, 10–16.
- Savchenko, E.N. (1982) Komari-limoniijidi [limoniid-flies]. Subfamily Eriopterinae. *Fauna Ukrajiny*, 14 (3), 1–335.
- Simova-Tošić, D. (1977) Tipulidae. *Fauna of Macedonia*, 3, 1–198.
- Simova-Tošić, D. & Oosterbroek, P. (2003) The Tipulidae (Diptera) of Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Monte Negro, and Macedonia. *Acta Entomologica Slovenica*, 11 (1), 41–60.
- Starý, J. (1971a) Einige neue oder wenig bekannte Arten der Gattung *Molophilus* Curt. (Diptera, Tipulidae). *Annotationes Zoologicae et Botanicae, Bratislava*, 70, 1–12.
- Starý, J. (1971b) Revision der Arten der Unterfamilie Limoniinae (Tipulidae, Diptera) aus den Sammlungen des Mährischen Museums in Brno mit besonderer Berücksichtigung der Fauna Mährens. Teil 2: Tribus Hexatomini und Eriopterini. *Casopis Moravského Museo v Brne*, 55, 133–194.
- Starý, J. (1974) Beitrag zur Kenntnis der Limoniinen Bulgariens (Diptera, Tipulidae). *Casopis Moravského Museo v Brne*, 58, 113–119.
- Starý, J. (1977) Zwei neue Austrolimnophila-Arten aus dem Mittelmeerraum (Diptera, Limoniidae). *Entomologica, Bari*, 13, 63–70.
- Starý, J. (2012) The identity of *Geranomyia bezzii* and a description of *G. fuscior* sp. nov. (Diptera: Limoniidae). *Acta Entomologica Musei Nationalis Pragae*, 52 (1), 273–279.
- Starý, J. & Kolcsár, L.-P. (2021) A new *Afrolimnophila* Alexander from Europe (Diptera: Limoniidae). *Zootaxa*, 5072 (1), 95–100. <https://doi.org/10.11646/zootaxa.5072.1.11>
- Starý, J. & Krzeminski, W. (1993) A new *Dicranota* from Bulgaria (Diptera, Pediciidae). *Acta Zoologica Cracoviensia*, 35 (3), 565–567.
- Starý, J. & Reusch, H. (2009) European species of the subgenus *Brachylimnophila* (Diptera: Limoniidae). *Entomologica Fennica*, 19, 207–217. <https://doi.org/10.33338/ef.84437>
- Starý, J. & Ujvárosi, L. (2005) A new species of *Idiocera* (Euptilostena) (Diptera, Limoniidae) from Slovakia and Romania. *Biologia, Bratislava*, 60 (5), 513–518.
- Strobl, P.G. (1902) Neue Beiträge zur Dipterenfauna der Balkanhalbinsel. *Glasnik Zemaljskog Muzeja u Bosni i Hercegovini*, 14, 461–517.
- Strobl, P.G. (1904) Neue Beiträge zur Dipterenfauna der Balkanhalbinsel. *Wissenschaftliche Mitteilungen aus Bosnien und Herzegovina*, 9, 519–581.
- Stubbs, A.E. (2021) *British Craneflies*. First published. British Entomological and Natural History Society, Hurst, Reading, 434 pp.
- Theischinger, G. (1987) Neue taxa von *Lunatipula* Edwards aus der mediterranen subregion der Palaearktis (Diptera, Tipulidae, *Tipula* Linnaeus) V. Fortsetzung. *Beaufortia*, 37 (6), 99–120.
- Theowald, B. (1978) 15. Tipulidae. In: Lindner, E. (ed.) *Die Fliegen der Palaearktischen Region*, 3(5)1, Lief. Vol. 318, Stuttgart, pp. 405–436.
- Theowald, B. & Oosterbroek, P. (1981) Zur Zoogeographie der westpalaearktischen Tipuliden, II. Die Tipuliden der iberischen Halbinsel. *Beaufortia*, 31 (2), 31–50.
- Theowald, B. & Oosterbroek, P. (1986) Zur Zoogeographie der westpalaearktischen Tipulidae, VII. Die Tipuliden der Balkan Halbinsel (Diptera, Tipulidae). *Tijdschrift voor Entomologie*, 129 (1), 1–13.
- Vogtenhuber, P. (2012) Zwei neue *Tipula* (*Lunatipula*) aus Griechenland (Insecta: Diptera: Tipulidae). *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Österreich*, 148/149, 237–243.

## یافته‌های فونستیک جدید از درنا پشه‌ها (Diptera: Tipuloidea) در شبه جزیره بالکان

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**چکیده:** گونه‌های دوبالان بالاخانواده Tipuloidea از پالئوکنیک غربی، از جمله منطقه بالکان، در طول یک قرن گذشته به طور گسترده‌ای مورد مطالعه قرار گرفته‌اند. با این حال، تحقیقات در سال‌های اخیر نشان می‌دهد که مناطق مختلف بالکان به طور نابرابر بررسی شده‌اند و گونه‌های جدید یا داده‌های جدید به طور مداوم کشف می‌شوند. هدف این مطالعه ارایه داده‌های جدید در مورد انتشار گونه‌های این بالاخانواده در شبه جزیره بالکان برای دو خانواده، Tipulidae و Limoniidae است. در مطالعه، حضور ۲۵ گونه برای اولین بار در آلبانی، بوسنی و هرزگوین، بلغارستان، یونان، کوزوو، مونته‌نگرو و مقدونیه شمالی مستند شده است. یافته‌ها فونستیک جدید به درک بهتر ابعاد واقعی تنوع زیستی Tipuloidea در منطقه بالکان، یکی از غنی‌ترین مناطق گونه‌ای در اروپا کمک می‌کند.

**واژگان کلیدی:** فونستیک، Limoniidae، مستندسازی تصویری، Tipulidae