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Article

Biodiversity of selected Diptera families in riparian and mountain habitats of northern Montenegro, including new national records (Insecta: Diptera)

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Abstract
The Balkan Peninsula represents one of Europe's primary biodiversity hotspots, yet knowledge of its dipteran fauna remains unevenly documented and fragmented. This study provides updated faunistic data and new distributional records for selected Diptera families in Montenegro. Field sampling was conducted between 18 and 21 May 2026 across nine localities in northern Montenegro, focusing on riparian, semi-riparian, and terrestrial habitats in the Durmitor and Prokletije mountain ranges (elevation 650–1524 m a.s.l.). In total, 98 dipteran taxa (96 identified to species level and 2 retained at genus level) belonging to 26 families were recorded. Furthermore,

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34 species represent new national records, providing the first verified field data for Montenegro for several poorly documented families, including Trichoceridae, Lonchopteridae, Sciomyzidae, and Heleomyzidae. To the best of current knowledge, these findings resolve long-standing uncertainties caused by historical, non-specific regional literature. Where relevant, historical distributional data published under former geopolitical designations (e.g., "Yugoslavia") were reassessed, most notably providing a fully contextualized historical checklist of 31 Drosophilidae species for present-day Montenegro. These findings demonstrate that even short-term sampling in high-altitude habitats substantially expands the documented species richness of the Western Balkans.

Key words Balkan Peninsula, Dinaric Alps, dipterofauna, new national records, species richness, Western Balkans.

Introduction

The Balkan Peninsula is widely recognized as one of Europe's primary biodiversity hotspots and key evolutionary refugia, characterized by complex topography, distinct microclimatic zones, and rich endemic fauna and flora (Griffiths *et al*. 2004; Španiel & Rešetnik 2022). Situated within the Dinaric Alps, Montenegro possesses an exceptional diversity of habitats ranging from Mediterranean coastal zones to high-alpine ecosystems, rivers, and glacial lakes. However, despite this ecological richness, the Balkan insect fauna (and Diptera in particular) remains unevenly documented and relatively understudied compared to Central and Western Europe (Franeta 2018). In recent decades, targeted faunistic surveys and regional checklists have steadily uncovered new national records for various dipteran families, underscoring that the true species richness of Montenegro's dipterofauna is far from fully cataloged (e.g., Simova-Tošić & Skuhravá 2001; Chvála 2002; Langourov 2004; Płóciennik & Pešić 2012; Ivković *et al.* 2013; Van Steenis 2015; Kolcsár & Salmela 2017; Pudar *et al.* 2018; Kechev *et al*. 2020; Kolcsár *et al.* 2021, 2026; Jancsó *et al*. 2026).

Historically, entomological data for Montenegro have been fragmented across family-level taxonomical treatments, scattered faunistic notes, and broader geographical synopses dealing with the Balkans or former political entities (e.g., Oosterbroek & Simova-Tošić 2004; Kolcsár & Salmela 2017; Kechev *et al.* 2020). A major obstacle in evaluating historical records is the frequent attribution of species distributions to vague historical or geopolitical units (such as "Yugoslavia" or "former Yugoslavia") without precise geographical coordinates or verified locality details. Consequently, re-evaluating the historical literature alongside well-documented, georeferenced field records is essential for establishing reliable national biodiversity baselines.

To address these knowledge gaps, the present study provides updated faunistic data and new national distributional records for selected Diptera families in Montenegro. Field sampling conducted in May 2026 across a range of freshwater, riparian, and terrestrial habitats, primarily in the northern mountain systems of the Durmitor and Prokletije regions, yielded a diverse assemblage of Diptera representing 26 families. This paper provides annotated records for these groups, as well as numerous species records new to Montenegro. In doing so, this work refines the national checklist and contributes to a more accurate understanding of dipteran biodiversity in the Western Balkans.

The primary objective of this study was to conduct a targeted spring rapid assessment of dipteran diversity in poorly documented mountain and riparian habitats of northern Montenegro. Specifically, the sampling aimed to: (1) characterize the early-season (spring-aspect) dipteran communities associated with high-altitude freshwater and wetland ecosystems, (2) provide georeferenced, species-level data for ecologically vulnerable families, and (3) update the national baseline by identifying first country records through a collaborative taxonomic network.

Material and methods

Study area and sampling methods

Sampling localities were selected to represent a diverse altitudinal gradient (650–1524 m a.s.l.) and a spectrum of freshwater-influenced microhabitats across the Durmitor and Prokletije mountain ranges, including glacial lake margins, fast-flowing mountain streams, river banks, and adjacent wet meadows.

Fieldwork was restricted to a short phenological window in mid-May (18–21 May 2026) specifically to target the early-spring dipteran fauna, which is typically underrepresented in summer-focused surveys. Sweep netting was selected as the primary sampling technique because it allowed standardized, active, and non-destructive sampling of adult Diptera perching on riparian vegetation across diverse microhabitats in a short time frame. To maximize data accuracy, taxonomic resolution was restricted to families for which regional or international specialists were available within our collaborative team. The surveyed localities encompassed adjacent riparian vegetation along lakes and their outflows (Pošćensko Jezero, Plavsko Jezero), rivers and streams (Komarnica, Šavnik, Vrbnica, Ljuča), wetlands, ponds, a waterfall in the Tara Canyon, and adjacent riparian vegetation. Additional collecting was conducted along roadsides and near accommodation facilities in the vicinity of Žabljak. The sampled localities ranged in elevation from 650 to 1524 m a.s.l.

Adult Diptera were primarily collected by sweep netting across various microhabitats, including lakeshores, wetlands, riverbanks, stream margins, riparian vegetation, and surrounding grasslands. It should be noted that the primary reliance on sweep netting introduces inherent methodological sampling biases. While sweep netting is highly effective for sampling small- to medium-sized Diptera perching within low riparian and wetland vegetation (e.g., Limoniidae, Mycetophilidae, Dolichopodidae, Sciomyzidae), it inherently underrepresents larger, fast-flying, or visually agile Diptera. Groups such as larger hoverflies (Syrphidae), robber flies (Asilidae), horse flies (Tabanidae), and larger Calyptratae (e.g., Calliphoridae, Tachinidae) easily evade active sweep netting and require complementary capture techniques, such as Malaise traps, yellow pan traps, or canopy sampling. Furthermore, the short, early-season sampling duration (mid-May) precedes the mid-summer flight peaks of many higher Brachycera. Consequently, the recorded species list reflects these sampling constraints and primarily represents the early-spring, vegetation-dwelling dipteran community of the surveyed freshwater habitats. To supplement sweep-netting, a single ferment-baited trap (beer bait) was deployed qualitatively in a garden habitat in Žabljak (43°09'07.6"N, 19°07'36.0"E; Site 9) to capture ferment-attracted taxa. Field sampling across all sites was carried out by the co-authors [J.O., A.C., J.F., P.M., L.M., and B.T.].

Specimen preservation and voucher deposition

Collected specimens were preserved in 70% ethanol in the field. To achieve precise species-level determinations, the material was first sorted to family level and subsequently distributed among a collaborative network of seven taxonomic specialists (co-authors of this study), selected for their established expertise in specific Palaearctic Diptera families. Selected material was mounted or dissected (e.g., male terminalia) for detailed morphological examination using diagnostic literature listed below. All voucher specimens are deposited in the institutional or personal collections of the respective specialists at their home institutions (for full institutional addresses and locations, see the authors' affiliation list; e.g., Department of Ecology, University of Prešov, Slovakia; Estonian University of Life Sciences, Tartu, Estonia; Forest Research Institute, Sofia, Bulgaria).

Taxonomic identification and literature

Specimens were sorted to family level and subsequently determined to species level using diagnostic taxonomic keys and specialized literature. Family concepts and species nomenclature follow currently accepted standards for Palaearctic Diptera. Identifications were carried out by the following specialists (keys and reference works used are listed in parentheses):

Kateřina Dvořáková: Heleomyzidae (Gorodkov 1970; Papp 1981), Lauxaniidae (Shatalkin 2000), Sciomyzidae (Rozkošný 1987, 1991).

Libor Dvořák: Anisopodidae (Haenni 1997; Søli & Rindal 2014), Bibionidae (Krivosheina 1969; Haenni 1982), Opomyzidae (Carles-Tolrá 1993; Drake 1993), Platystomatidae (Hennig 1945), Rhagionidae (Nartshuk 1969; Rozkošný & Spitzer 1965; Zeegers & Schulten 2022), Stratiomyidae (Rozkošný 1982–1983), Ulidiidae (Merz 1996).

Bernd Grundmann: Phoridae (Schmitz 1940, 1958; Disney 1983, 1989, 2003; Mostovski & Mikhailovskaya 2003; Welch 2025), Sphaeroceridae (Pitkin 1988).

Mihail Kechev: Dolichopodidae (Parent 1938; Negrobov & Stackelberg 1969; d'Assis Fonseca 1978; Grichanov 2007).

Olavi Kurina: Keroplatidae (Hutson *et al.* 1980; Zaitzev 1994), Mycetophilidae (Hutson *et al.* 1980; Zaitzev 1994, 2003; Chandler 2022).

Jan Máca: Chloropidae (Delyné Draskovits & Papp 1978), Diastatidae (Chandler 1987), Drosophilidae (Bächli *et al*. 2004; Bächli 2025).

Jozef Oboňa: Blephariceridae (Zwick 1978, 1991), Chaoboridae (Salmela *et al.* 2021), Dixidae (Disney 1999), Limoniidae and Pediciidae (Podenas *et al.* 2006; Oosterbroek 2026), Lonchopteridae (Bährmann & Bellstedt 1988; Whittington & Beuk 2022), Tipulidae (Oosterbroek 2026), Trichoceridae (Krzemińska 2021).

Data presentation and abbreviations

Faunistic records are presented as an annotated species list arranged alphabetically by family. For each species, examined material is detailed with the locality code, total specimen count, and sex. The abbreviations "m" and "f" denote male and female specimens, respectively. Because historical recordkeeping varies significantly across dipteran families, criteria of evaluation of new record status were determined by the respective family specialists and are explicitly detailed under each family commentary if needed. Complete sampling locality details (including site codes, site names, dates of collection, geographic coordinates, and elevations) are summarized in Table 1 and Fig. 1.

Table 1. List of collecting sites in Montenegro with sample code, site name, collection date, GPS coordinates, and elevation.

Sample code	Site name	Date	GPS	Elevation
Site 1	Pošćensko Jezero (lake and lake outflow), Žabljak Municipality	19.5.2026	43°05'30.1"N 19°06'35.8"E	1524 m a.s.l.
Site 2	Komarnica river, river and ponds below the farm	19.5.2026	42°59'24.0"N 19°04'08.1"E	969 m a.s.l.
Site 3	Veliko Pošćensko Jezero, ponds under the river Komarnica	19.5.2026	42°58'55.8"N 19°04'06.0"E	1016 m a.s.l.
Site 4	Šavnik river	19.5.2026	42°57'22.5"N 19°05'34.4"E	820 m a.s.l.
Site 5	Camp Vrbnica, Vrbnica river, tributary of Piva lake	19.5.2026	43°09'42.1"N 18°46'47.1"E	701 m a.s.l.
Site 6	Tara Canyon, stream with waterfall	20.5.2026	43°07'40.8"N 19°18'36.3"E	650 m a.s.l.
Site 7	Plavsko jezero, Malo blato, Ljuča river, lake and wetland, riverside farm	20.5.2026	42°35'27.8"N 19°54'56.3"E	912 m a.s.l.
Site 8	Etno Selo Vrelo, river	20.5.2026	42°54'02.5"N 20°00'33.3"E	866 m a.s.l.
Site 9 / beer trap	Apartmani i sobe Slobo Šljivančanin, Žabljak	21.5.2026	43°09'07.6"N 19°07'36.0"E	1453 m a.s.l.

Results and Discussion

Field sampling across nine localities in northern Montenegro yielded a diverse assemblage of Diptera representing 26 families. In total, 98 taxa belonging to 26 families were identified, providing valuable updated distributional data for the region. Notably, 34 species (distributed across 16 families) represent first national records for Montenegro. Furthermore, several of these findings (specifically within Keroplatidae and Mycetophilidae) also constitute the first records for the joint Montenegro–Serbia faunal checklist.

In the following annotated species list, families and species are arranged alphabetically. For each family, a brief taxonomic and biogeographical commentary is provided where relevant, summarizing known historical data alongside our new findings. Species marked with an asterisk (*) represent new national records for Montenegro or first records for the broader regional checklists (as detailed in the respective family headings). For each recorded taxon, the species account gives the

sampling locality or localities, specimen numbers, and sexes, with localities indicated by the site codes defined in Table 1.

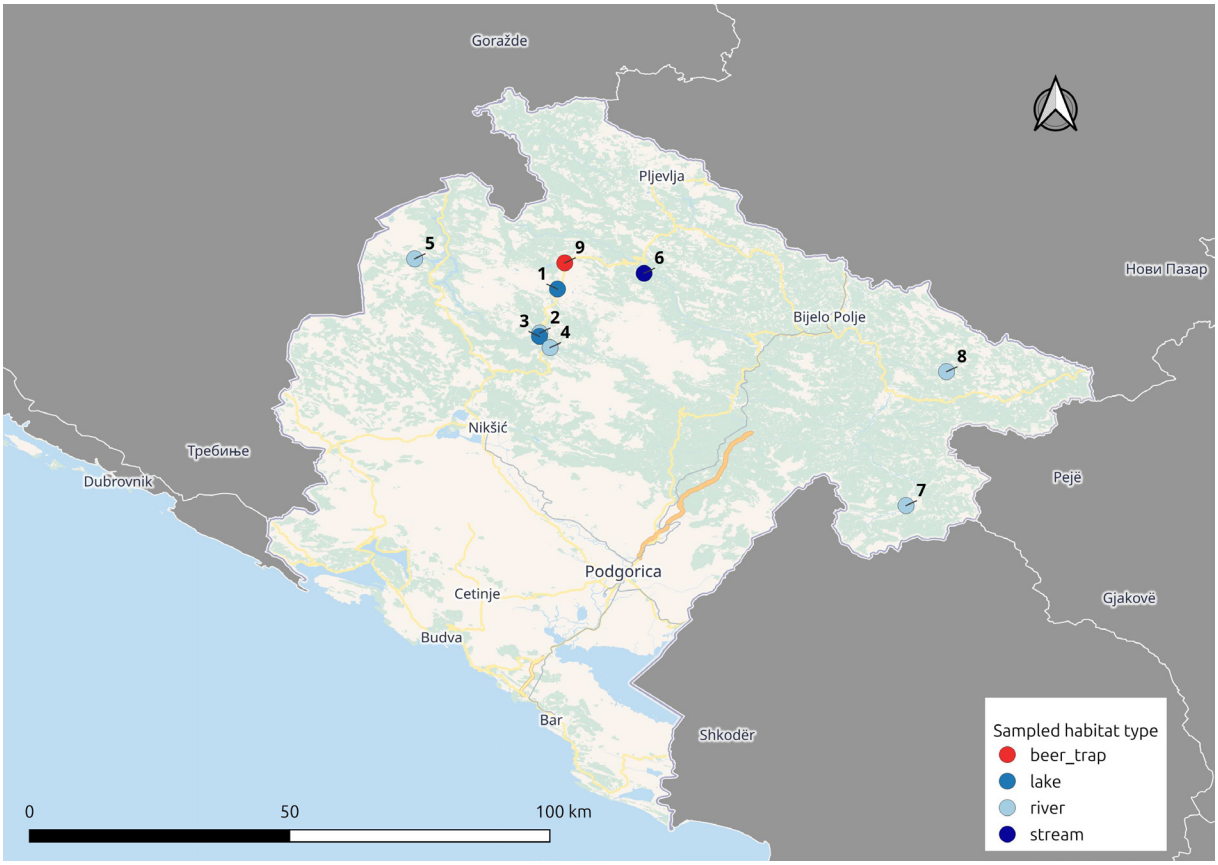


Figure 1. Map of collecting sites (for more detail see Tab. 1).

Anisopodidae

Published faunistic data on Anisopodidae in Montenegro remain limited. While *Sylvicola cinctus* (Fabricius, 1787) was previously recorded from the country by Haenni (2006) and other widespread taxa (e.g., *Sylvicola fenestralis* (Scopoli, 1763)) were previously known from the broader region of the former Yugoslavia, detailed locality data for Montenegro are sparse.

Sylvicola cinctus (Fabricius, 1787)
Site 5, 1m; Site 8, 1f; Site 9, 1f

Bibionidae

For Bibionidae, specific historical collection data from Montenegro cannot be verified with certainty from baseline catalogs.

Dilophus febrilis (Linnaeus, 1758)
Site 3, 2m, 1f

Examined material from Serbia

Bibio varipes Meigen, 1830
Serbia, Bačka Topola, Gas station, 45°47′41.6"N, 19°41′39.0"E, 1f

Blephariceridae

Four taxa of Blephariceridae have been documented from Montenegro: *Liponeura bilobata* Loew, 1869, *Dioptopsis djordjevici* (Komárek, 1932), *Hapalothrix lugubris* Loew, 1876, and *Liponeura cinerascens jugoslavica* Komárek & Vimmer, 1934. Records originate primarily from the Morača River basin and its tributaries, as well as the Zeta River and streams near Virpazar (Zwick 1978). Although *Liponeura cordata* Vimmer, 1916 and *Blepharicera fasciata* (Westwood, 1842) were previously known from the wider Balkan region, the cited sources do not provide specific records from Montenegro (Mannheims 1954; Zwick 1991).

Liponeura bilobata Loew, 1869
Site 4, 1m; Site 5, 1m

Chaoboridae

The species *Chaoborus crystallinus* (De Geer, 1776) has been recorded from Montenegro, where its larvae occur in Lake Skadar. In addition, *Chaoborus flavicans* (Meigen, 1830) has been documented from Montenegro based on DNA barcoding data (Pešić *et al.* 2018).

Chaoborus flavicans (Meigen, 1830)
Site 7, 3m

Chloropidae

The family Chloropidae is represented in our material by a single species, *Camarota curvipennis* (Latreille, 1805). Although this species is known from several European countries, its occurrence in Montenegro could not be verified based on the literature available to us.

**Camarota curvipennis* (Latreille, 1805)
Site 4, 1m

Diastatidae

To the best of the authors' knowledge, no published records of Diastatidae explicitly assigned to Montenegro were found in the available literature. Therefore, the following record represents the first national record of this family for Montenegro.

**Campichoeta obscuripennis* (Meigen, 1830)
Site 7, 1f

Dixidae

According to Ivković and Ivanković (2019), only *Dixa nebulosa* Meigen, 1830 was previously known from Montenegro.

**Dixella aestivalis* (Meigen, 1818)
Site 7, 4m

Dolichopodidae

According to Kechev *et al*. (2020), 17 species were previously known from Montenegro.

Oncopygius distans (Loew, 1857)
Site 6, 1m

**Oncopygius formosus* Parent, 1927
Site 8, 2m

**Sympycnus pulicarius* (Fallén, 1823)
Site 8, 2m, 1f

Syntormon pallipes (Fabricius, 1794)
Site 2, 4m, 6f; Site 3, 1m; Site 4, 2f; Site 5, 2f; Site 8, 1m, 1f; Site 9, 1m

Drosophilidae

Drosophila (*Drosophila*) *hydei* Sturtevant, 1921
Site 9, 1f

Drosophila (*Sophophora*) *subobscura* Collin, 1936
Site 9, 1m, 5f

Hirtodrosophila cameraria (Haliday, 1833)
Site 2, 1m; Site 4, 2m; Site 5, 2f; Site 7, 1m

Scaptomyza (s. str.) *graminum* (Fallén, 1823)
Site 8, 1f

**Scaptomyza* (*Parascaptomyza*) *pallida* (Zetterstedt, 1847)
Site 3, 1f; Site 4, 1m; Site 5, 1m

Unlike several other dipteran families for which modern national checklists already exist, historical records for Drosophilidae in the region remain aggregated under the broader geopolitical heading of former Yugoslavia in global databases (e.g., TaxoDros; Bächli 2025). To establish a clear national baseline, a comprehensive reassessment of historical literature was conducted specifically for this family. By verifying collection localities and geographic coordinates from published sources (e.g., Kekić & Bächli 1981, 1991; Máca & Bächli 1994), 31 species were explicitly confirmed for the present-day territory of Montenegro, as summarized below.

Chymomyza amoena (Loew, 1862)
Durmitor (Kekić & Bächli 1991; Kekić 1999; Máca & Bächli 1994)

Chymomyza caudatula Oldenberg, 1914
Durmitor (Kekić & Bächli 1991)

Chymomyza costata (Zetterstedt, 1838)
Durmitor (Kekić & Bächli 1991)

Chymomyza distincta (Egger, 1863)
Durmitor (Kekić & Bächli 1991)

Chymomyza fuscimana (Zetterstedt, 1838)
Durmitor (Kekić & Bächli 1991)

Drosophila (*Dorsilopha*) *busckii* Cocquillett, 1901
Biograd Lake (Biogradsko jezero) (Kekić & Bächli 1981; Bächli & Kekić 1983), Durmitor (Kekić & Bächli 1991), Kotor (Máca 1987)

Drosophila (*Drosophila*) *buzzatii* Patterson & Wheeler, 1942
Herceg Novi (Ruiz *et al*. 1984)

Drosophila (*Drosophila*) *funebris* (Fabricius, 1787)
Biograd Lake (Biogradsko jezero) (Bächli & Kekić 1983; Kekić & Bächli 1981), Durmitor (Kekić & Bächli 1991), Grab (Strobl 1898, 1900)

Drosophila (*Drosophila*) *histrio* Meigen, 1830
Biograd Lake (Biogradsko jezero) (Bächli & Kekić 1983; Kekić & Bächli 1981), Durmitor (Bächli *et al.* 2004)

Drosophila (*Drosophila*) *hydei* Sturtevant, 1921
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (s. str.) *immigrans* Sturtevant, 1921
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (s. str.) *kuntzei* Duda, 1924
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (s. str.) *littoralis* Meigen, 1830
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (s. str.) *phalerata* Meigen, 1830
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (s. str.) *testacea* von Roser, 1840
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (s. str.) *transversa* Fallén, 1823
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (s. str.) *unimaculata* Strobl, 1893
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (*Sophophora*) *melanogaster* Meigen, 1830
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (*Sophophora*) *obscura* Fallén, 1823
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (*Sophophora*) *silvestris* Basden, 1954
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (*Sophophora*) *simulans* Sturtevant, 1919
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (*Sophophora*) *alpina* Burla, 1948
Durmitor (Kekić & Bächli 1991)

Drosophila (*Sophophora*) *bifasciata* Pomini, 1940
Durmitor (Kekić & Bächli 1991)

Drosophila (*Sophophora*) *helvetica* Burla, 1948
Durmitor (Kekić & Bächli 1991)

Drosophila (*Sophophora*) *subobscura* Collin, 1936
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Drosophila (*Sophophora*) *suzukii* (Matsumura, 1931)
Agricultural areas: the coastal zone around the Bay of Kotor, the area around Lake Skadar, and the city of Podgorica (Radonjić & Hrnčić 2015); citizen science records: Budva and Bijela (Oboňa *et al.* 2026).

Hirtodrosophila cameraria (Haliday, 1833)
Biograd Lake (Biogradsko jezero) (Bächli & Kekić 1983; Kekić & Bächli 1981), Durmitor (Kekić & Bächli 1991), Kolašin (Coe 1960)

Hirtodrosophila confusa (Staeger, 1844)
Biograd Lake (Biogradsko jezero) (Bächli & Kekić 1983; Kekić & Bächli 1981), Durmitor (Kekić & Bächli 1991)

Leucophenga maculata (Dufour, 1839)
Biograd Lake (Kekić & Bächli 1981; Bächli & Kekić 1983)

Lordiphosa fenestrarum (Fallén, 1823)
Durmitor (Kekić & Bächli 1991)

Scaptomyza (s. str.) *graminum* (Fallén, 1823)
Durmitor (Kekić & Bächli 1991), Kolašin (Coe 1960)

Heleomyzidae

Historical records of Heleomyzidae from Montenegro are virtually lacking and impossible to trace with precision. In the Catalogue of Palaearctic Diptera, Gorodkov (1984) listed *Suillia notata* (Meigen, 1830) for former Yugoslavia without providing specific collection sites, and no subsequent faunistic data have been published.

**Suillia atricornis* (Meigen, 1830)
Site 5, 1m

**Suillia bicolor* (Zetterstedt, 1838)
Site 5, 1f

**Suillia notata* (Meigen, 1830)
Site 5, 1f

Keroplatidae

Kolcsár & Salmela (2017) provided a joint checklist of the fungus gnats of Montenegro and Serbia, comprising 12 species of Keroplatidae. In the following list of examined species, an asterisk (*) indicates a species not included in that checklist and therefore newly recorded from the combined fauna of Montenegro and Serbia.

Macrocera centralis Meigen, 1818
Site 5, 1m

**Macrocera stigma* Curtis, 1837
Site 5, 2m (Fig. 2A), 1f

Lauxaniidae

Precise historical data on the Lauxaniidae of Montenegro remain scarce. The Palaearctic catalogue (Papp 1984) lists *Calliopum simillimum* (Collin, 1933) from Yugoslavia without specifying individual republics, whereas the distributions of other taxa are given only in broad geographical terms that may implicitly include Montenegro. Merz (2004) explicitly recorded *Minettia fasciata* (Fallén, 1826) from Montenegro. To our knowledge, no additional faunistic records have been published since then.

**Calliopum simillimum* (Collin, 1933)
Site 5, 1f

**Meiosimyza decempunctata* (Fallén, 1820)
Site 5, 1m

**Meiosimyza platycephala* (Loew, 1847)
Site 5, 1f; Site 6, 1f

**Meiosimyza rorida* (Fallén, 1820)
Site 5, 4f

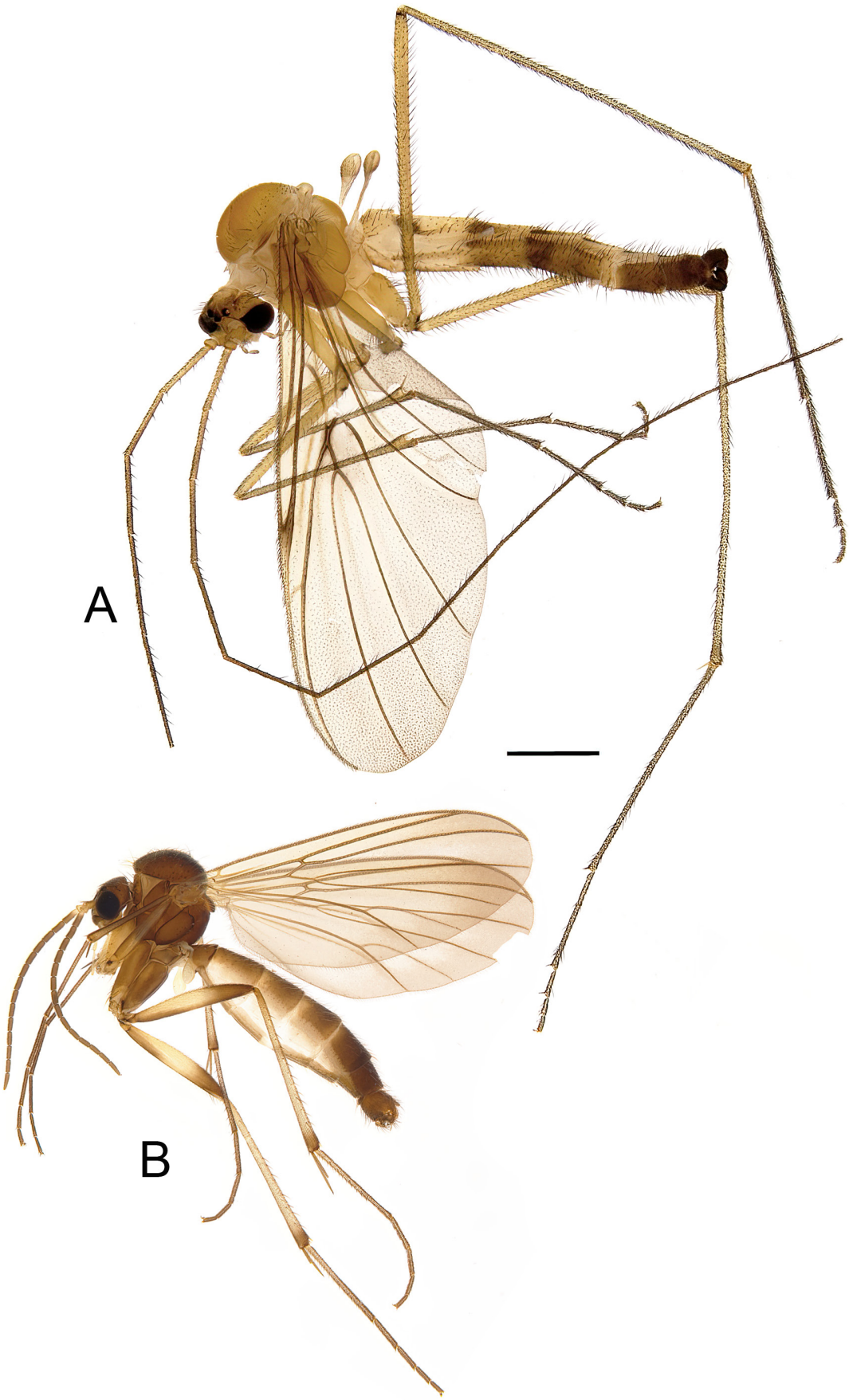


Figure 2. Two species newly recorded from Montenegro. A – *Macrocera stigma* Curtis, 1837 (Keroplatidae); B – *Phronia cinerascens* Winnertz, 1864 (Mycetophilidae). Scale bar: 1 mm.

Limoniidae

The Catalogue of the Craneflies of the World (Oosterbroek 2026) lists 77 taxa of Limoniidae from Montenegro.

Dactylolabis (*Dactylolabis*) *sexmaculata* (Macquart, 1826)
Site 6, 1m

Dicranomyia (*Dicranomyia*) *chorea* (Meigen, 1818)
Site 5, 1m

Dicranomyia (*Dicranomyia*) *mitis* (Meigen, 1830)
Site 1, 2m; Site 6, 2m

Dicranomyia (*Dicranomyia*) *modesta* (Meigen, 1818)
Site 7, 1m

Dicranophragma (*Brachylimnophila*) *nemorale* (Meigen, 1818)
Site 8, 1m

Elliptera hungarica Madarassy, 1881
Site 6, 2m; Site 8, 2m

*Epiphragm*a (*Epiphragma*) *ocellare* (Linnaeus, 1760)
Site 6, 1m

Erioptera (*Erioptera*) *fusculenta* Edwards, 1938
Site 2, 1m

Erioptera (*Erioptera*) *griseipennis* Meigen, 1838
Site 2, 1m; Site 8, 1m

Hexatoma (*Coreozelia*) *cimicoides* (Scopoli, 1763)
Site 5, 3m

**Idioptera miliaria* (Egger, 1863)
Site 2, 1m, 1f

Limnophila (*Limnophila*) *pictipennis* (Meigen, 1818)
Site 7, 1m

Limonia hercegovinae (Strobl, 1898)
Site 7, 1m; Site 8, 3m, 1f

Limonia nubeculosa Meigen, 1804
Site 5, 3f

Limonia phragmitidis (Schrank, 1781)
Site 6, 1f

Limonia splendens Kuntze, 1920
Site 2, 2m; Site 5, 1m

**Molophilus* (*Molophilus*) *bifidus* Goetghebuer, 1920
Site 4, 1m

**Molophilus* (*Molophilus*) *curvatus* Tonnoir, 1920
Site 8, 1m

Molophilus (*Molophilus*) *griseus* (Meigen, 1804)
Site 7, 1m

Molophilus (*Molophilus*) *obscurus* (Meigen, 1818)
Site 8, 1m

**Molophilus* (*Molophilus*) *propinquus* (Egger, 1863)
Site 2, 2m

**Molophilus* (*Molophilus*) *repentinus* Starý, 1971
Site 5, 1m

Phylidorea (*Phylidorea*) *ferruginea* (Meigen, 1818)
Site 7, 4m, 1f

Symplecta (*Symplecta*) *hybrida* (Meigen, 1804)
Site 2, 1m

Tasiocera (*Dasymolophilus*) *murina* (Meigen, 1818)
Site 6, 1m; Site 8, 3m

Lonchopteridae

To the best of the authors' knowledge, no published records of Lonchopteridae from Montenegro are currently available.

**Lonchoptera bifurcata* (Fallén, 1810)
Site 7, 2f

**Lonchoptera lutea* Panzer, 1809
Site 1, 3m, 2f; Site 3, 1f; Site 4, 1m; Site 5, 3m, 1f; Site 7, 1f; Site 8, 1m

Mycetophilidae

For Mycetophilidae, the species list follows Kolcsár and Salmela (2017), who recorded 151 species from the combined fauna of Montenegro and Serbia. Species marked with an asterisk (*) were not included in their checklist and are therefore regarded as additional records for the combined fauna of the two countries.

Boletina gripha Dziedzicki, 1885
Site 1, 3m

Ectrepesthoneura colyeri Chandler, 1980
Site 2, 1f
The female terminalia of the examined specimen agree with those of *E. colyeri* as figured by Martinsen & Søli (2000). This is the only species of *Ectrepesthoneura* previously recorded from Montenegro and Serbia (Kolcsár & Salmela 2017).

Brevicornu intermedium Santos Abreu, 1920
Site 1, 1m; Site 5, 5m

Brevicornu proximum (Staeger, 1840)
Site 5, 2m

Brevicornu sericoma (Meigen, 1830)
Site 5, 1m

Exechia sp.
Site 1, 1m
The specimen is evidently closely allied to *E. confinis* Winnertz, 1864 and *E. fusca* (Meigen, 1804), but the morphology of the male terminalia indicates that it is not conspecific with either species. Further details on this specimen will be published elsewhere.

Rymosia fasciata (Meigen, 1804)
Site 6, 1m

Mycetophila sp.
Site 5, 1f

The examined female specimen belongs either to *M. fungorum* (De Geer, 1776) or *M. perpallida* Chandler, 1999. Both species have previously been recorded from Montenegro and Serbia (Kolcsár & Salmela 2017), but their females are morphologically indistinguishable.

Mycetophila ocellus Walker, 1848
Site 1, 2m

**Phronia cinerascens* Winnertz, 1864
Site 1, 1m (Fig. 2B)

Phronia signata Winnertz, 1864
Site 5, 7m

Phronia tenuis Winnertz, 1864
Site 1, 1m

Opomyzidae

For Opomyzidae, specific published historical records from Montenegro are virtually lacking in the available literature. In the Catalogue of Palaearctic Diptera, Soós (1984) listed *Geomyza tripunctata* Fallén, 1823 for Yugoslavia only in broad geographic terms. Here, we present localized field data for this species from northern Montenegro.

Geomyza tripunctata Fallén, 1823
Site 8, 1m

Pediciidae

According to the Catalogue of the Craneflies of the World (Oosterbroek 2026), the family Pediciidae is currently represented in Montenegro by 10 recorded taxa.

Dicranota (*Paradicranota*) *candelisequa* Starý, 1981
Site 2, 3m

Pedicia (*Amalopis*) *occulta* (Meigen, 1830)
Site 6, 1m

Tricyphona (*Tricyphona*) *immaculata* (Meigen, 1804)
Site 4, 1m

Phoridae

Distributional data for the 50 species recorded from Montenegro to date are provided by Langourov (2026).

**Phora edentata* Schmitz, 1920
Site 8, 3m, 1f

Megaselia angusta (Wood, 1909)
Site 8, 1m

Megaselia ciliata (Zetterstedt, 1848)
Site 7, 1m
Megaselia costalis (von Roser, 1840)
Site 8, 1f

**Megaselia limpachensis* Disney & Prescher, 2015
Site 5, 1m; Site 7, 1m

Megaselia pleuralis (Wood, 1909)
Site 7, 1m

**Megaselia pseudogiraudii* (Schmitz, 1920)
Site 8, 1f

**Megaselia pusilla* (Meigen, 1830)
Site 8, 1m

**Megaselia trichorrhoea* (Schmitz, 1921)
Site 5, 1m

Platystomatidae
For Platystomatidae, precise historical locality data for Montenegro remain scarce in the published literature.

Platystoma seminationis (Fabricius, 1775)
Site 7, 1f

Rhagionidae

For Rhagionidae, specific historical collection data from Montenegro could not be verified with certainty from the available literature. In the Catalogue of Palaearctic Diptera (Majer 1988), *Rhagio scolopaceus* (Linnaeus, 1758) is cited for former Yugoslavia without precise locality details.

Rhagio scolopaceus (Linnaeus, 1758)
Site 4, 1m; Site 5, 1f

Sciomyzidae

Historical records of Sciomyzidae in Montenegro cannot be verified with certainty from older literature. In the Catalogue of Palaearctic Diptera (Rozkošný & Elberg 1984), European distributions are outlined only in broad geographic terms that potentially include Montenegro, but no explicit national records or more recent studies are available.

**Hydromya dorsalis* (Fabricius, 1775)
Site 4, 1m, 1f

**Pherbellia cinerella* (Fallén, 1820)
Site 3, 1m; Site 7, 1m, 1f

**Pherbellia ventralis* (Fallén, 1820)
Site 8, 1m

**Renocera pallida* (Fallén, 1820)
Site 1, 1f

Sphaeroceridae

According to Marshall *et al*. (2011), 25 species are currently known from Montenegro.

**Leptocera oldenbergi* (Duda, 1918)
Site 1, 1m

Opacifrons coxata (Stenhammar, 1855)
Site 1, 1m

Phthitia plumosula (Rondani, 1880)
Site 5, 9m, 1f

Sphaerocera curvipes Latreille, 1805
Site 3, 1m; Site 7, 1m

Stratiomyidae

In the Catalogue of Palaearctic Diptera (Rozkošný & Nartshuk 1988), distributional data for Stratiomyidae are listed mainly under broad historical entities (such as former Yugoslavia) without specific localities for Montenegro.

Actina chalybaea Meigen, 1804
Site 6, 1f

Microchrysa flavicornis (Meigen, 1822)
Site 7, 1f

Tipulidae

According to the Catalogue of the Craneflies of the World (Oosterbroek 2026), the family Tipulidae is currently represented in Montenegro by 80 recorded taxa.

Nephrotoma appendiculata appendiculata (Pierre, 1920)
Site 3, 1m; Site 8, 1m

Nephrotoma croceiventris lindneri (Mannheims, 1951)
Site 2, 1m; Site 3, 1m

Nephrotoma cornicina cornicina (Linnaeus, 1758)
Site 5, 3m

**Tipula* (*Lunatipula*) *lunata* Linnaeus, 1758
Site 5, 1m; Site 6, 1m

Tipula (*Acutipula*) *luna* Westhoff, 1879
Site 3, 2m

Tipula (*Yamatotipula*) *submontium* Theowald and Oosterbroek, 1981
Site 4, 2m

Trichoceridae

Given that Krzemińska (2021) did not include any records of Trichoceridae from Montenegro in her comprehensive atlas of European *Trichocera*, the present record is the first published record of Trichoceridae from Montenegro currently known to the authors.

**Trichocera* (*Saltrichocera*) *regelationis* (Linnaeus, 1758)
Site 1, 1m

Ulidiidae

Historical distributional data for Ulidiidae in Montenegro could not be verified with certainty from the literature, as older records generally list species under broad regional headings.

Otites centralis (Fabricius, 1805)
Site 2, 4f

Otites lamed (Schrank, 1781)
Site 2, 1f

Summary and Conclusions

The present study provides new faunistic data on Diptera from northern Montenegro, based on material collected at nine localities in the regions of Durmitor and Prokletije in May 2026. The survey yielded 96 species belonging to 26 families collected at elevations from 650 to 1524 m a.s.l.

The collected material includes numerous species that, based on the literature and distributional information consulted by the authors, have not previously been reported from Montenegro. These records extend the currently documented distribution of several Diptera taxa in the country and provide additional information for families for which available distributional data are limited. Where historical data were obscured by broad political entities (such as former Yugoslavia), literature records were evaluated on a family-by-family basis; notably, a comprehensive historical revision was compiled for Drosophilidae to establish an explicit national baseline for Montenegro.

Particularly noteworthy are records from several families for which available distributional data from Montenegro have hitherto been scarce or completely lacking. Given the exceptional topographic and ecological heterogeneity of the Western Balkans, the dipteran fauna of Montenegro is expected to encompass thousands of species. The recording of 98 taxa during this relatively short survey, together with persistent geographic and taxonomic knowledge gaps, underscores how understudied the national fauna remains and highlights the need for sustained, long-term inventory efforts.

Adding 34 national records from a single four-day survey underscores the magnitude of undocumented dipteran diversity remaining in the Western Balkans. To systematically bridge these baseline gaps, future inventorying in the region should prioritize multi-seasonal coverage and complementary passive trapping techniques across high-altitude Dinaric habitats.

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References

Bächli, G. (2025) *TaxoDros, the database on taxonomy of Drosophilidae*. Version 5. Available from: http://taxodros.uzh.ch [Accessed 15 November 2025].

Bächli, G. & Kekić, V. (1983) Studies of Drosophilidae (Diptera) in Yugoslavia. II. Collections from Mt. Goč, Mt. Jastrebac and Priština. *Drugi simpozijum o fauni SR Srbije. Zbornik radova*, Beograd, pp. 107–110.

Bächli, G., Vilela, C.R., Escher, S.A. & Saura, A. (2004) The Drosophilidae (Diptera) of Fennoscandia and Denmark. *Fauna Entomologica Scandinavica*, 39. Brill, Leiden & Boston, 362 pp.

Bährmann, R. & Bellstedt, R. (1988) Beobachtungen und Untersuchungen zum Vorkommen der Lonchopteriden auf dem Gebiet der DDR, mit einer Bestimmungstabelle der Arten (Dipt., Lonchopteridae). *Deutsche entomologische Zeitschrift, N.F.,* 35 (4–6), 265–279.

https://doi.org/10.1002/mmnd.19880350411
Carles-Tolrá, M. (1993) Three new species of the fam. Opomyzidae (Diptera) from Spain. *Entomologicheskoe Obozrenie*, 72 (2), 410–413. [In Russian].
Chandler, P. (1987) The families Diastatidae and Campichoetidae (Diptera, Drosophiloidea) with a revision of Palaearctic and Nepalese species of Diastata Meigen. *Entomologica Scandinavica,* 18, 1–50.
Chandler, P. (2022) Fungus Gnats (Diptera: Mycetophilidae: Mycetophilinae). *Handbooks for the Identification of British Insects,* 9 (8), 1–398.
Chvála, M. (2002) Tabanidae (Diptera) of Western and Central Balkans – Bosnia and Herzegovina, Serbia, Montenegro, Vojvodina, Kosovo and Macedonia. *Biologia*, 57 (3), 305–320.
Coe, R.L. (1960) A further collection of Diptera from Yugoslavia. *Bulletin of the British Museum (Natural History), Entomology*, 7 (2), 1–50.
d'Assis Fonseca, E.C.M. (1978) Diptera, Orthorrhapha, Brachycera, Dolichopodidae. *Handbooks for the Identification of British Insects,* 9 (5), 1–90.
Delyné Draskovits, Á. & Papp, L. (1978) Taplólégyek - Gabonalégyek (Odiniidae - Chloropidae). *Fauna Hungariae* 133 (Diptera 9). Akadémiai Kiadó, Budapest, 202 pp.
Disney, R.H.L. (1983) Scuttle flies. Diptera, Phoridae (except Megaselia). *Handbooks for the Identification of British Insects,* 10 (6), 1–81.
Disney, R.H.L. (1989) Scuttle flies. Diptera, Phoridae. Genus Megaselia. *Handbooks for the Identification of British Insects,* 10 (8), 1–155.
Disney, R.H.L. (1999) British Dixidae (meniscus midges) and Thaumaleidae (trickle midges): keys with ecological notes. *Freshwater Biological Association Scientific Publication,* No. 56, 129 pp.
Disney, R.H.L. (2003) Revisionary notes on European Phoridae (Diptera). *Bonner zoologische Beiträge*, 50 (4), 293–304.
Drake, C.M. (1993) A review of the British Opomyzidae (Diptera). *British Journal of Entomology and Natural History*, 6 (4), 159–176.
Franeta, F. (2018) Checklist of the butterflies (Lepidoptera: Papilionoidea) of Montenegro. *Zootaxa,* 4392 (1), 128–148. https://doi.org/10.11646/zootaxa.4392.1.6
Gorodkov, K.B. (1970) Family Heleomyzidae. In: Bei-Bienko, G.Y. (Ed.): *Key to the insects of the European part of the USSR. Diptera, Siphonaptera*. Vol. 5, Part 2. Nauka, Leningrad, pp. 306–325. [In Russian].
Gorodkov, K.B. (1984) Family Heleomyzidae. In: Soós, A. & Papp, L. (eds.), *Catalogue of Palaearctic Diptera*. Vol. 10. Akadémiai Kiadó, Budapest, pp. 15–45.
Grichanov, I.Y. (2007) *A checklist and keys to Dolichopodidae (Diptera) of the Caucasus and East Mediterranean*. VIZR RAAS (Plant Protection News Supplement), St. Petersburg, 160 pp.
Griffiths, H.I., Kryštufek, B. & Reed, J.M. (Eds) (2004) *Balkan Biodiversity: Pattern and Process in the European Hotspo*t. Springer, Dordrecht, 357 pp. https://doi.org/10.1007/978-1-4020-2854-0
Haenni, J.-P. (1982) Révision des espèces européennes du groupe de *Dilophus febrilis* (L.), avec description d'une espèce nouvelle (Diptera, Bibionidae). *Revue suisse de Zoologie,* 89 (2), 337–354. https://doi.org/10.5962/bhl.part.82447
Haenni, J.-P. (1997) Anisopodidae (Diptera) de la faune de Suisse, avec la description d'une espèce nouvelle. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft,* 70, 177–186.
Haenni, J.-P. (2006) Faunistic and taxonomic notes on European Anisopodidae (Diptera). *Studia Dipterologica*, 13 (1), 27–28, 43–44.
Hennig, W. (1945) Platystomatidae. In: Lindner, E. (Ed): *Die Fliegen der palaearktischen Region*. Vol. 5(1). Stuttgart: Schweizerbart, pp. 1–56.
Hutson, A.M., Ackland, D.M. & Kidd, L.N. (1980) Mycetophilidae (Bolitophilinae, Ditomyiinae, Diadocidiinae, Keroplatinae, Sciophilinae and Manotinae) Diptera, Nematocera. *Handbooks for the Identification of British Insects*, 9 (3), 1–111.
Ivković, M. & Ivanković, L. (2019) The genus *Dixa* (Diptera, Dixidae) in Croatian lotic habitats, with a checklist of species and relationships with the fauna of neighbouring countries. *ZooKeys*, 867, 45–54. https://doi.org/10.3897/zookeys.867.36613
Ivković, M., Mihaljević, Z., Miliša, M. & Previšić, A. (2013) Aquatic dance flies fauna (Diptera, Empididae: Clinocerinae and Hemerodromiinae) of Montenegro. *Natura Croatica*, 22 (2), 243–252.

Jancsó, B.-Z., Bilalli, A., Ibrahimi, H., Musliu, M., Geci, D., Grapci-Kotori, L. & Keresztes, L. (2026) New faunistic records of crane flies (Diptera: Tipuloidea) from the Balkan Peninsula. *Journal of Insect Biodiversity and Systematics,* 12 (3), 503–535. https://doi.org/10.48311/jibs.12.03.503

Kechev, M., Naglis, S., Tonguç, A. & Pollet, M. (2020) Checklist of the Dolichopodidae (Diptera, Empidoidea) of the Balkan Peninsula, with first records for Bulgaria, Montenegro, North Macedonia, and for the European part of Turkey. *Zootaxa*, 4819, (3), 436–472. https://doi.org/10.11646/zootaxa.4819.3.2

Kekić, V. (1999) *Chymomyza amoena* Loew (Drosophilidae Diptera), nova vrsta u fauni Jugoslavije. *Zaštita bilja*, 49 (1998), 329–334.

Kekić, V. & Bächli, G. (1981) Studies of Drosophilidae (Diptera) in Yugoslavia. I. Collection from Biograd Lake. *Glasnik Republičkog zavoda za zaštitu prirode – Prirodnjačkog muzeja Titograd*, 14, 85–88.

Kekić, V. & Bächli, G. (1991) Drosophilidae (Insecta, Diptera) of Durmitor. *Glasnik Republičkog zavoda za zaštitu prirode – Prirodnjačkog muzeja u Titogradu*, 24, 85–93.

Kolcsár, L.-P., d'Oliveira, M.C., Graf, W., Kovács, T., Murányi, D. & Ivković, M. (2026) A new subspecies of *Dactylolabis* (*Coenolabis*) *posthabita* (Bergroth, 1888) from Hungary and new faunistic records of crane flies (Diptera, Tipuloidea) from the Balkans. *ZooKeys*, 1291, 303–324. https://doi.org/10.3897/zookeys.1291.199961

Kolcsár, L.-P., Oosterbroek, P., Gavryushin, D.I., Olsen, K.M., Paramonov, N.M., Pilipenko, V.E., Starý, J., Polevoi, A., Lantsov, V.I., Eiroa, E., Andersson, M., Salmela, J., Quindroit, C., d'Oliveira, M.C., 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. https://doi.org/10.3897/BDJ.9.e67085

Kolcsár, L.-P. & Salmela, J. (2017) New taxonomic and faunistic records of fungus gnats (Insecta: Diptera) from Montenegro, Romania and Serbia. *Check List*, 13 (5), 533–559. https://doi.org/10.15560/13.5.533

Krivosheina, N.P. (1969) Family Bibionidae. In: Bei-Bienko G.Y. (Ed.): *Key to the insects of the European part of the USSR*. Vol. 5, Part 1. Nauka, Leningrad, pp. 433–442. [In Russian].

Krzemińska, E. (2021) Key and atlas to the genus *Trichocera* Meigen in Europe (Diptera, Trichoceridae). *Acta zoologica cracoviensia*, 64 (1), 1–157. https://doi.org/10.3409/azc.64.01

Langourov, M. (2004) Scuttle flies (Diptera: Phoridae) from Biogradska Gora National Park – Montenegro. In: Pešić, V. (Ed.): *The Biodiversity of the Biogradska Gora National Park*. Monographies I. Department of Biology, University of Montenegro & Centre for Biodiversity of Montenegro, Podgorica, pp. 104–112.

Langourov, M. (2026) Checklist of the Phoridae (Diptera, Aschiza) of the Balkan Peninsula countries. *Historia naturalis bulgarica,* 48 (1), 15–37. https://doi.org/10.48027/hnb.48.013

Máca, J. (1987) *Amiota* (*Phortica*) *goetzi* sp. n. (Diptera, Drosophilidae) with faunistic notes to Drosophilidae, Odiniidae and Periscelididae from southeastern Europe and Turkey. *Acta Entomologica Musei Nationalis Pragae,* 42, 311–320.

Máca, J. & Bächli, G. (1994) On the distribution of *Chymomyza amoena* (Loew) (Diptera, Drosophilidae) in Europe. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft*, 67, 183–188.

Majer, J. (1988) Family Rhagionidae. In: Soós, Á. & Papp, L. (Eds): *Catalogue of Palaearctic Diptera*. Vol. 5. Athericidae – Asilidae. Akadémiai Kiadó, Budapest, pp. 14–29.

Mannheims, B.J. (1954) Die Blepharoceriden Griechenlands und Mitteleuropas (Dipt.). *Bonner zoologische Beiträge, Sonderband*, 1954 (1), 87–110.

Marshall, S.A., Roháček, J., Dong, H. & Buck, M. (2011) The state of Sphaeroceridae (Diptera: Acalyptratae): a world catalog update covering the years 2000–2010, with new generic synonymy, new combinations, and new distributions. *Acta Entomologica Musei Nationalis Pragae*, 51 (1), 217–298.

Martinsen, L. & Søli, G.E.E. (2000) Description of females of three species of *Ectrepesthoneura* Enderlein (Diptera, Mycetophilidae). *Norwegian Journal of Entomology*, 47, 137–147.

Merz, B. (1996) Zur Faunistik der Pyrgotidae, Platystomatidae und Ulidiidae (= Otitidae) (Diptera, Tephritoidea) der Schweiz mit spezieller Berucksichtigung von *Otites* Latreille. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft,* 69, 405–416.

Merz, B. (2004) Revision of the *Minettia fasciata* species-group (Diptera, Lauxaniidae). *Revue suisse de Zoologie*, 111, 183–211. https://doi.org/10.5962/bhl.part.80234

Mostovski, M.B. & Mikhailovskaya, M.V. (2003) A review of Palearctic *Gymnophora* Macquart (Diptera: Phoridae), with description of new species. *European Journal of Entomology*, 100 (1), 153–165. https://doi.org/10.14411/eje.2003.025

Nartshuk, E.P. (1969) Family Rhagionidae. In: Bei-Bienko, G.Y. (Ed.): *Key to the insects of the European part of the USSR*. Vol. 5, Part 1. Nauka, Leningrad, pp. 443–453. [In Russian].

Negrobov, O.P. & Stackelberg, A.A. (1969) Family Dolichopodidae. In: Bei-Bienko, G.Y. (Ed.): *Key to the insects of the European part of the USSR*. Vol. 5, Part 1. Nauka, Leningrad, pp. 670–752. [In Russian].

Oboňa, J., Csanády, A., Fedorčák, J., Jovanović, M., Lazarević, N., Manko, P., Mlynárová, L., Tej, B. & Pešić, V. (2026) Citizen science reveals invasive animal species in Montenegro. *Biologica Nyssana*, 17, in press.

Oosterbroek, P. (2026) *Catalogue of the Craneflies of the World.* Available from: https://ccw.naturalis.nl/index.php [Accessed 22 February 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.

Papp, L. (1981) Tüskésszárnyú – Heleomyzidae. *Fauna Hungariae*, 149. Akadémiai Kiadó, Budapest, 78 pp.

Papp, L. (1984) Family Lauxaniidae. In: Soós, A. & Papp, L. (eds.): *Catalogue of Palaearctic Diptera*. Vol. 10. Akadémiai Kiadó, Budapest, pp. 193–215.

Parent, O. (1938) Diptères Dolichopodidés. *Faune de France*, 35. Paul Lechevalier, Paris, 720 pp.

Pešić, V., Gadawski, P., Gligorović, B., Glöer, P., Grabowski, M., Kovács, T. & Šundić, D. (2018) The diversity of the Zoobenthos communities of the Lake Skadar/Shkodra basin. In: Pešić, V., Karaman, G. & Kostianoy, A.G. (Eds): The Skadar/Shkodra Lake Environment. *The Handbook of Environmental Chemistry*, Vol. 80. Springer, Cham, pp. 255–293. https://doi.org/10.1007/698_2018_240

Pitkin, B.R. (1988) Lesser dung flies. Diptera: Sphaeroceridae. *Handbooks for the Identification of British Insects* 10, part 5e, 1–175.

Płóciennik, M. & Pešić, V. (2012) New records and list of non-biting midges (Chironomidae) from Montenegro. *Biologia Serbica*, 34 (1–2), 112–117.

Podenas, S., Geiger, W., Haenni, J.-P. & Gonseth, Y. (2006) Limoniidae & Pediciidae. *Fauna Helvetica*, 14. Centre Suisse de Cartographie de la Faune & Schweizerische Entomologische Gesellschaft, Neuchâtel, 375 pp.

Pudar, D., Petrić, D., Vrbaški, L. & Ignjatović Ćupina, A. (2018) An update of the *Culicoides* (Diptera: Ceratopogonidae) checklist for the Balkans. *Parasites & Vectors,* 11 (1), 462. https://doi.org/10.1186/s13071-018-3037-3

Radonjić, S. & Hrnčić, S. (2015) First record of spotted wing drosophila *Drosophila suzukii* (Diptera: Drosophilidae) in Montenegro. *Pesticidi i Fitomedicina (Pestic. Phytomed. Belgrade),* 30(1), 35–40. https://doi.org/10.2298/PIF1501035R

Rozkošný, R. (1982–1983) *A biosystematic study of the European Stratiomyidae (Diptera)*. Vols 1–2. W. Junk Publishers, The Hague, Boston, London, 401 + 431 pp.

Rozkošný, R. (1987) A review of the Palaearctic Sciomyzidae (Diptera). *Folia Facultatis Scientiarum Naturalium Universitatis Masarykianae Brunensis, Biologia*, 86, 1–100.

Rozkošný, R. (1991) A key to the Palaearctic species of *Pherbellia* Robineau-Desvoidy, with description of three new species (Diptera, Sciomyzidae). *Acta Entomologica Bohemoslovaca*, 88 (6), 391–406.

Rozkošný, R. & Elberg, K. (1984) Family Sciomyzidae. In: Soós, A. & Papp, L. (eds.): *Catalogue of Palaearctic Diptera*. Vol. 10. Akadémiai Kiadó, Budapest, pp. 167–193.

Rozkošný, R. & Nartshuk, E.P. (1988) Family Stratiomyidae. In: Soós, Á. & Papp, L. (Eds): *Catalogue of Palaearctic Diptera*. Vol. 5. Athericidae – Asilidae. Akadémiai Kiadó, Budapest, pp. 42–96.
Rozkošný, R. & Spitzer, K. (1965) Schnepfenfliegen (Diptera, Rhagionidae) in der Tschechoslowakei. *Acta Entomologica Bohemoslovaca*, 62 (5), 340–368.
Ruiz, A., Fontdevila, A., Santos, M. & Seoane, M. (1984) La historia evolutiva de *Drosophila buzzatii*. *Investigación y Ciencia*, 92, 44–53.
Salmela, J., Härmä, O. & Taylor, D.J. (2021) *Chaoborus flavicans* Meigen (Diptera, Chaoboridae) is a complex of lake and pond dwelling species: a revision. *Zootaxa*, 4927 (2), 151–196. https://doi.org/10.11646/zootaxa.4927.2.1
Schmitz, H. (1940) Die ersten hundert Phoriden von Portugal (concl.). Brotéria, *Série Ciências Naturais*, 36, 49–74.
Schmitz, H. (1958) 33 Phoridae (1. Teilband). Lieferung 202. In: Lindner, E. (Ed.): *Die Fliegen der paläarktischen Region*, Band IV/3. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, pp. 465–512.
Shatalkin, A.I. (2000) Key to the Palearctic flies of the family Lauxaniidae (Diptera). *Zoologicheskie Issledovania*, 5, 1–102. [In Russian].
Simova-Tošić, D. & Skuhravá, M. (2001) Gall midges (Diptera: Cecidomyiidae) of Montenegro. *Acta Entomologica Serbica*, 6 (1–2), 65–82.
Soós, Á. (1984) Family Opomyzidae. In: Soós, Á. & Papp, L. (Eds): *Catalogue of Palaearctic Diptera*. Vol. 10. Clusiidae – Chloropidae. Akadémiai Kiadó, Budapest, pp. 186–193.
Søli, G. & Rindal, E. (2014) The genus *Sylvicola* Harris, 1780 (Diptera, Anisopodidae) in Norway – with a key to the North European species. *Norwegian Journal of Entomology*, 61 (2), 190–200.
Španiel, S. & Rešetnik, I. (2022) Plant phylogeography of the Balkan Peninsula: spatiotemporal patterns and processes. *Plant Systematics and Evolution*, 308 (5), 38. https://doi.org/10.1007/s00606-022-01828-5
Strobl, G. (1898) Fauna Diptera Bosne, Hercegovine i Dalmacije. *Glasnik Zemaljskog muzeja u Bosni i Hercegovini,* 10, 387–466.
Strobl, G. (1900) Dipterenfauna von Bosnien, Herzegowina und Dalmatien. *Wissenschaftliche Mitteilungen aus Bosnien und der Hercegovina*, 7, 552–670.
Van Steenis, J. (2015) New data on the hoverflies (Diptera: Syrphidae) of Serbia and Montenegro. *Acta Entomologica Serbica*, 20, 67–98. https://doi.org/10.5281/zenodo.45394
Welch, M.D. (2025) *Megaselia painterae* sp. nov. (Diptera, Phoridae) from an allotment in London, U.K. *Dipterists Digest*, 32, 115–132.
Whittington, A.E. & Beuk, P.L.Th. (2022) A description of a new species of Western Palaearctic *Lonchoptera* Meigen (Diptera, Lonchopteridae) from Georgia. *ZooNova*, 20, 1–18. https://doi.org/10.5281/zenodo.7133478
Zaitzev, A.I. (1994) *Fungus gnats of the fauna of Russia and adjacent regions*. Part 1. Nauka, Moscow, 288 pp. [In Russian].
Zaitzev, A.I. (2003) Fungus gnats (Diptera, Sciaroidea) of the fauna of Russia and adjacent regions. Part II. *International Journal of Dipterological Research*, 14 (2–4), 77–386.
Zeegers, T. & Schulten, A. (2022) *Families of Flies with Three Pulvilli – Field Guide Northwest Europe*. Jeugdbondsuitgeverij, 's-Graveland, 256 pp.
Zwick, P. (1978) Beitrag zur Kenntnis europäischer Blephariceridae (Diptera). *Bonner zoologische Beiträge*, 29 (1–3), 242–266.
Zwick, P. (1991) Notes on the Spanish Net-Winged Midges (Diptera, Blephariceridae), with description of two new species. *Miscel·lània Zoològica*, 15, 147–163.