



Contribution to the knowledge of the caddisfly fauna of Kosovo with first record of the genus *Orthotrichia* Eaton, 1873 (Trichoptera, Hydroptilidae)

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ABSTRACT. Adult caddisflies were collected from the spring area located in the Blinajë Hunting Reserve in Kosovo between May and September 2022. In this study, we identified 21 species belonging to 9 families of caddisflies (Goeridae, Hydropsychidae, Hydroptilidae, Limnephilidae, Philopotamidae, Polycentropodidae, Psychomyiidae, Rhyacophilidae, and Sericostomatidae). The genus *Orthotrichia* Eaton, 1873 and species *Orthotrichia tragetti* Mosely, 1930 are reported for the first time from Kosovo. *Agraylea sexmaculata* Curtis, 1834 is reported from Kosovo again after more than one century. Several other narrowly distributed endemic species were also identified, including *Rhyacophila macedonica* Karaouzas, Valladolid & Ibrahim, 2022 and *Tinodes janssenseni* Jacquemart, 1957. This study contributes to the knowledge of the caddisfly fauna of the Blinajë Hunting Reserve in Kosovo and highlights this area for its interesting composition of caddisfly species.

Key words: Aquatic biodiversity, Balkan Peninsula, microcaddisflies, new records

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INTRODUCTION

Hydroptilidae family, commonly known as microcaddisflies, has a worldwide distribution and is found in various freshwater habitats, including streams, rivers, lakes, and ponds. This family comprises over 1,300 species in 106 genera (Morse, 2023). They are significant components of freshwater ecosystems, serving as an important part of the food chain. The adults are small, with a body length

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ranging from 1 to 7 mm and are characterized by two pairs of hairy wings. The larvae of this family are well adapted to life in flowing water. Their cases are made of silk and various materials such as sand, plant debris, and mineral grains. These cases provide the larvae with a shelter and a means of locomotion. Species of this family are frequently used as bioindicators. According to Morse (2023), the genus *Orthotrichia* is present in all biogeographic regions except Antarctica and is considered one of the most diverse hydroptilid genera, with nearly 300 known species currently. Graf et al. (2008) provided information for the larvae of this genus inhabiting both standing and flowing waters. The genus *Agraylea* Curtis, 1834 is widely distributed across the world, with species found in North and South America, Europe, Asia, and Africa. Within these regions, species of this genus inhabit a variety of freshwater habitats, including streams, rivers, lakes, and ponds. Despite the numerous investigations of caddisflies in the Balkan Peninsula during the past years (e.g., Bilalli et al., 2018, 2019; Cerjanec et al., 2020; Hinić et al., 2020; Ibrahimović & Bilalli, 2021; Ibrahimović & Kućinić, 2018; Ibrahimović et al., 2017, 2019d, 2022; Musliu et al., 2020; Previšić et al., 2014; Slavevska–Stamenković et al., 2020), the number of species of the Hydroptilidae family reported in these investigations is very low or absent from most of them.

The caddisfly investigations have increased greatly during the past years in Kosovo as well (e.g., Bilalli et al., 2018, 2019; Gashi et al., 2015; Ibrahimović & Sejdiu, 2018; Ibrahimović & Vehapi, 2017; Ibrahimović et al., 2012b, 2013, 2014a, 2014b, 2015a, 2015b, 2016a, 2016b, 2019a, 2019b, 2019c, 2021, 2023; Karaouzas et al., 2018; Oláh, 2010; Oláh & Kovács, 2012, 2013; Oláh et al., 2013a, 2013b, 2017, 2018, 2019). Despite previous research efforts, there are still areas which are not completely investigated and new records or even species can still be expected. In all these previous studies, there are only scarce data about the presence, distribution and ecology of the Hydroptilidae family. The limited data on species of the Hydroptilidae family in the Balkans may be attributed to inadequate sampling techniques for this group and the fact that most previous studies have focused on the upstream and midstream sections of rivers, whereas these species mainly inhabit low reaches.

In this paper, we give an overview of the caddisfly fauna collected recently at one of the springs in the Blinajë Hunting Reserve in Kosovo and provide data on some rare species, including a new record of the Hydroptilidae family.

MATERIAL AND METHODS

Sampling area. In the central part of Kosovo, 15 km west of Lipjan town, lies the Blinajë Hunting Reserve, which has been designated as a special reserve zone. The reserve covers a total area of 5,500 hectares and extends into the territories of three municipalities: Lipjan, Shtime, and Drenas (Çadraku, 2016). The altitude of the reserve ranges from 670 to 860 m above sea level. The area is characterized by the presence of 33 artificial lakes. The study site (Fig. 1) is situated in the spring area at the entrance to the Blinajë Hunting Reserve, nearby a forested area. The high, nearby riparian vegetation is composed by a combination of various deciduous and longleaf pine species (Çadraku, 2016). This spring water forms a lake, located nearby the Administrative Offices of the Blinajë Hunting Reserve and from the lake it flows as a stream which ultimately discharges into the Sitnicë River near Lipjan town. The substrate of the streambed is composed of gravel, cobbles and boulders, surrounded by fine particles, and is shaded all year-round by vegetation growing in the vicinity. During the summer, the level of spring water is low and thus the lake it feeds has low level as well.

Fieldwork, identification and taxonomic work. We collected adult caddisflies with ultraviolet light traps. Nocturnal light trapping followed Malicky (2004). Specimens were stored directly in 90% ethanol. The collected material is deposited at the Department of Biology, Faculty of Mathematics and Natural Sciences, University of Prishtina “Hasan Prishtina”, Prishtinë, Kosovo. For identification of adult caddisflies, we used the following keys: Malicky (2004), Kumanski (1985, 1988). The photographs were taken by an Olympus® SC50 camera attached to the Olympus® SZX16 Stereomicroscope and were consequently processed using Adobe® Photoshop CC software.



Figure 1. Sampling site at the Blinajë Hunting Reserve.

RESULTS

During this investigation, we found 21 species belonging to 9 families of caddisflies (Table 1). Families Polycentropodidae and Limnephilidae are represented with the highest number of species (4 species each). Three families (Hydroptilidae, Psychomyiidae and Hydropsychidae) are represented with 3 species each. The remaining families are represented with a single species each. Species *Rhyacophila macedonica*, *Hydroptila forcipata*, *Polycentropus flavomaculatus*, *Polycentropus irroratus* and *Oecismus monedula* are represented with the highest number of specimens. Six species (*Agraylea sexmaculata*, *Orthotrichia tragetti*, *Cyrnus trimaculatus*, *Plectrocnemia conspersa*, *Lype reducta* and *Potamophylax pallidus*) are represented with a single collected specimen each during the whole period of investigation. The highest number of specimens (53 and 77, respectively) were collected in June and July, while the lowest number (2 specimens) was collected in August. The recorded taxa are listed below, with families sorted alphabetically and species sorted alphabetically within each family.

Taxonomic hierarchy

Class Insecta Linnaeus, 1758

Order Trichoptera Linnaeus, 1758

Family Goeridae Ulmer, 1903

Genus *Goera* Stephens 1829

***Goera pilosa* (Fabricius, 1775)**

Material examined. 1 ♂, 9 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 16.VII.2022, leg. F. Salihu & D. Shala.

Remarks. The species is widespread in Europe and Kosovo (Neu et al., 2018).

Table 1. The composition of the caddisfly fauna in the sampling station in the Blinajë Hunting Reserve during the period May – September 2022.

Species/Months	May			June			July			August			September			Total		
	♂	♀	Σ	♂	♀	Σ	♂	♀	Σ	♂	♀	Σ	♂	♀	Σ	♂	♀	Σ
Goeridae																		
<i>Goera pilosa</i> (Fabricius, 1775)	0	0	0	0	0	0	1	9	10	0	0	0	0	0	0	1	9	10
Hydropsychidae																		
<i>Hydropsyche emarginata</i> Navás, 1923	1	0	1	5	0	5	0	0	0	0	0	0	1	0	1	7	0	7
<i>Hydropsyche modesta</i> Navás, 1925	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	2	0	2
<i>Hydropsyche saxonica</i> McLachlan, 1884	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	4	0	4
Hydroptilidae																		
<i>Agraylea sexmaculata</i> Curtis, 1834	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1
<i>Hydroptila forcipata</i> (Eaton, 1873)	0	0	0	0	0	0	1	29	30	0	0	0	0	0	0	1	29	30
<i>Orthotrichia tragetti</i> Mosely, 1930	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1
Limnephilidae																		
<i>Glyphotaelius pellucidus</i> (Retzius, 1783)	0	0	0	0	0	0	0	0	0	2	0	2	1	1	2	3	1	4
<i>Potamophylax pallidus</i> (Klapálek 1899)	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
<i>Potamophylax rotundipennis</i> (Brauer, 1857)	0	0	0	0	0	0	0	0	0	0	0	0	6	3	9	6	3	9
<i>Stenophylax meridionalis</i> Malicky 1982	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
Philopotamidae																		
<i>Wormaldia subnigra</i> McLachlan, 1865	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	3	0	3
Polycentropodidae																		
<i>Cyrnus trimaculatus</i> (Curtis, 1834)	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1
<i>Plectrocnemia conspersa</i> (Curtis, 1834)	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
<i>Polycentropus flavomaculatus</i> (Pictet, 1834)	0	0	0	0	12	12	3	0	3	0	0	0	0	0	0	3	12	15
<i>Polycentropus irroratus</i> (Curtis, 1835)	0	0	0	0	0	0	7	4	11	0	0	0	0	0	0	7	4	11
Psychomyiidae																		
<i>Lype reducta</i> (Hagen, 1868)	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1
<i>Psychomyia pusilla</i> (Fabricius, 1781)	0	0	0	0	0	0	1	9	10	0	0	0	0	0	0	1	9	10
<i>Tinodes janssensi</i> Jacquemart 1957	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Rhyacophilidae																		
<i>Rhyacophila macedonica</i> Karaouzas, Valladolid & Ibrahim, 2022	0	0	0	8	9	17	0	0	0	0	0	0	0	1	1	8	10	18
Sericostomatidae																		
<i>Oecismus monedula</i> (Hagen, 1859)	0	0	0	3	9	12	2	6	8	0	0	0	0	0	0	5	15	20

Family Hydropsychidae Curtis, 1835**Genus *Hydropsyche* Pictet 1834*****Hydropsyche emarginata* Navás, 1923**

Material examined. 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 02.V. 2022, leg. F. Salihu & D. Shala; 5 ♂♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 21.VI. 2022, leg. F. Salihu & D. Shala; 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 02.IX. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo and Southeastern Europe (Neu et al., 2018).

***Hydropsyche modesta* Navás, 1925**

Material examined. 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 02.V. 2022, leg. F. Salihu & D. Shala; 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 08.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo, but widespread in several regions in Europe (Neu et al., 2018).

***Hydropsyche saxonica* McLachlan, 1884**

Material examined. 4 ♂♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 12.VI. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo, but quite frequent in Europe (Neu et al., 2018).

Family Hydroptilidae Stephens, 1836**Genus *Agraylea* Curtis, 1834*****Agraylea sexmaculata* Curtis, 1834**

Material examined. 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 23.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is known from many European countries (Neu et al., 2018).

Diagnosis. Specimen collected in Kosovo (Fig. 2) corresponds well to the described species: the apical margins of inferior appendages are convex and dark-brown-edged; the subgenital plate is without asymmetrical processes.

Genus *Hydroptila* Dalman 1819***Hydroptila forcipata* (Eaton, 1873)**

Material examined. 1 ♂, 29 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 23.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo, but quite frequent in Europe (Neu et al., 2018).

Genus *Orthotrichia* Eaton, 1873***Orthotrichia tragetti* Mosely, 1930**

Material examined. 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 23.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is known from many European countries (Neu et al., 2018).

Diagnosis. Specimen collected in Kosovo (Fig. 3) corresponds well to the described species: the lateral process of segment IX is absent or not clearly visible; inferior appendages small, heart-shaped, tergite X is relatively wide.

Family Limnephilidae Kolenati, 1848**Genus *Glyphotaelius* Stephens, 1833*****Glyphotaelius pellucidus* (Retzius, 1783)**

Material examined. 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 13.VIII. 2022, leg. F. Salihu & D. Shala; 1 ♂, 1 ♀ KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 13.VIII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo, but quite frequent in Europe (Neu et al., 2018).

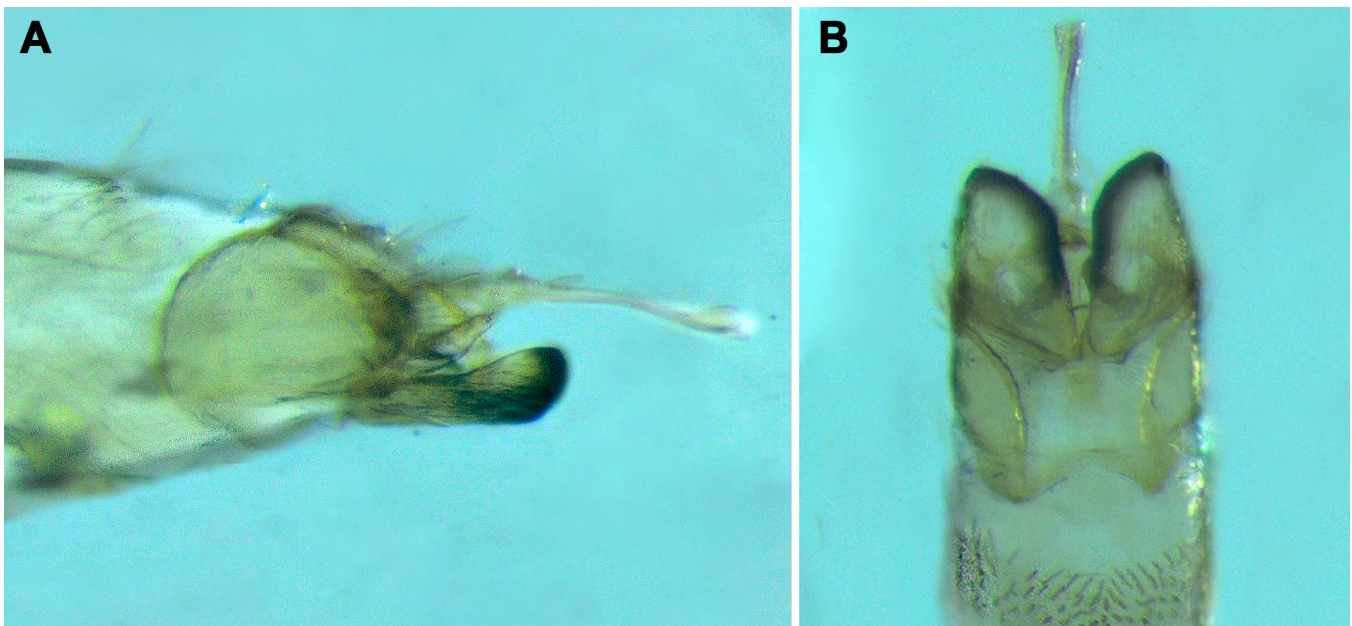


Figure 2. *Agraylea sexmaculata* Curtis, 1834 sampled at the Blinajë Hunting Reserve: **A.** Left lateral view of the male genitalia; **B.** Ventral view of male genitalia.



Figure 3. *Orthotrichia tragetti* Mosely, 1930 sampled at the Blinajë Hunting Reserve: **A.** Habitus of the species; **B.** Ventral view of male genitalia.

Genus *Potamophylax* Wallengren, 1891

Potamophylax pallidus (Klapálek 1899)

Material examined. 1 ♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 03.V. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is widespread in Kosovo. It is also known from several regions in the Balkans and Southeastern Carpathians (Neu et al., 2018).

***Potamophylax rotundipennis* (Brauer, 1857)**

Material examined. 6 ♂♂, 3 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 01.IX. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo, but quite frequent in Europe (Neu et al., 2018).

Genus *Stenophylax* Stein, 1874***Stenophylax meridionalis* Malicky 1982**

Material examined. 4 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 03.V. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo, relatively frequent in some parts of Europe such as the Balkans, Central Europe and Carpathians (Neu et al., 2018).

Family Philopotamidae Stephens, 1829**Genus *Wormaldia* McLachlan, 1865*****Wormaldia subnigra* McLachlan, 1865**

Material examined. 3 ♂♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 11.VI. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo and Europe (Neu et al., 2018).

Family Polycentropodidae Ulmer, 1903**Genus *Cyrnus* Stephens, 1836*****Cyrnus trimaculatus* (Curtis, 1834)**

Material examined. 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 21.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo and widespread in Europe (Neu et al., 2018).

Genus *Plectrocnemia* Stephens, 1836***Plectrocnemia conspersa* (Curtis, 1834)**

Material examined. 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 02.V. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is widespread in Europe (Neu et al., 2018).

Genus *Polycentropus* Curtis, 1835***Polycentropus flavomaculatus* (Pictet, 1834)**

Material examined. 12 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 21.VI. 2022, leg. F. Salihu & D. Shala; 3 ♂♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 11.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is widespread in Europe (Neu et al., 2018).

***Polycentropus irroratus* (Curtis, 1835)**

Material examined. 7 ♂♂, 4 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 05.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively rare in Kosovo, but quite common in many regions of Europe (Neu et al., 2018).

Family Psychomyiidae Walker, 1852**Genus *Lype* McLachlan, 1878*****Lype reducta* (Hagen, 1868)**

Material examined. 1 ♂, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 17.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is relatively widespread in Europe (Neu et al., 2018).

Genus *Psychomyia* Latreille, 1829***Psychomyia pusilla* (Fabricius, 1781)**

Material examined. 1 ♂, 9 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 15.VII. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is widespread in Europe (Neu et al., 2018).

Genus *Tinodes* Leach, 1815***Tinodes janssensi* Jacquemart 1957**

Material examined. 1 ♂, 1 ♀ KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 07.V. 2022, leg. F. Salihu & D. Shala.

Remarks. The species is endemic to the Balkans and is relatively rare in Kosovo and the Balkans (Neu et al., 2018).

Family Rhyacophilidae Stephens, 1836**Genus *Rhyacophila* Pictet, 1834*****Rhyacophila macedonica* Karaouzas, Valladolid & Ibrahim, 2022**

Material examined. 8 ♂♂, 9 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 11.VI. 2022, leg. F. Salihu & D. Shala; 1 ♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 11.IX 2022, leg. F. Salihu & D. Shala.

Remarks. The species was recently described from the Balkans and has a relatively narrow distribution in Kosovo, Macedonia, Greece, and Serbia (Valladolid et al., 2022).

Family Sericostomatidae Stephens, 1836**Genus *Oecismus* McLachlan, 1876*****Oecismus monedula* (Hagen, 1859)**

Material examined. 3 ♂♂, 9 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 11.VI. 2022, leg. F. Salihu & D. Shala; 2 ♂♂, 6 ♀♀, KOSOVO, Blinajë (42°30'46"N, 20°59'12"E, 630 m), 26.VII 2022, leg. F. Salihu & D. Shala.

Remarks. The species occurs in several localities in Kosovo and is widespread in several other regions of Europe (Neu et al., 2018).

DISCUSSION

This investigation contributes to the knowledge of the caddisfly fauna of Kosovo, increasing the number to 171, together with the current new record. Furthermore, this study contributes significantly to the knowledge of the Hydroptilidae family, which is one of the least investigated families of caddisflies in Kosovo and the Western Balkans as well.

Orthotrichia tragetti was firstly described from England and was later reported from several countries in Central and Northern Europe. During the past years, the species was found in some other

parts of Europe as well. In Europe the species is known from the following countries: Austria, Belgium, Bulgaria, Croatia, Czech Republic, England, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Netherlands, Poland, Romania, Russia, Slovakia, Slovenia, Sweden, Switzerland and Ukraine (Thomson, 2023). Even though the species seems to be present in many countries, its distribution within these countries is rather scarce. This could be the reason why the species was only found in some of these countries, such as Poland and Croatia (Vrućina et al., 2016), in recent years. The rarity and small populations of *Orthotrichia tragetti* are also documented by our investigation. We found a single specimen during the whole period of investigation. It should also be noted, that the area where the new record was found, was previously investigated few times and the species was never recorded before (Ibrahimi et al., 2012a, 2015c, 2018). The area where *Orthotrichia tragetti* was found during this investigation was previously known for an interesting composition of the caddisfly fauna, including the first records for Kosovo. *Orthotrichia tragetti* was not found in any of the neighboring countries of Kosovo and the locality in Kosovo where it was recorded is one of the fewest in South–Eastern Europe. The species is also known from several countries outside Europe such as China, Japan, Korea, Turkey, and Vietnam (Thomson, 2023). This species is rare and is listed on the red lists of several countries. According to the Finnish Red List, it is Near Threatened in Finland (Hyvärinen et al., 2019), while in Germany it is listed as Critically Endangered in the Red List of Trichoptera (Gruttke et al., 2016). *Orthotrichia tragetti* was first recorded in Croatia during 2016 and this was the first record for the Hungarian Plain Ecoregion (Vrućina et al., 2016). Due to its rarity and lack of studies, further recordings of this species are expected from Europe and probably from elsewhere too.

During this investigation, we found again the species *Agraylea sexmaculata*, which was reported one century ago (Pongrácz, 1923) from Pejë town, without any specific area given. The species seems to be very rare in Kosovo with small populations as it was not found in any of the previous intensive studies of caddisflies during the past decade. During our investigation, we found a single male specimen of this species. Similarly, the species was reported with a single male specimen at its first record (Pongrácz, 1923). The species is reported from Austria, Belarus, Belgium, Bosnia–Herzegovina, Bulgaria, Czech Republic, Denmark, England, Estonia, Finland, France, Germany, Greece, Hungary, Iran, Ireland, Italy, Kazakhstan, Latvia, Luxembourg, Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Turkey, and Ukraine (Thomson, 2023). During this investigation we found several other low scale endemic species such as *Rhyacophila macedonica* and *Tinodes janssenssi*, which are known for their very rare distribution in the Balkan Peninsula and thus, this investigation contributes to the expansion of the known distribution of these species. This study is a contribution to the knowledge of the ecology, faunistics and distribution of caddisflies in Kosovo and the Balkan Peninsula and shows that despite the increasing studies on this group of aquatic insects, there are still unrecorded genera and species in this part of Europe.

AUTHOR'S CONTRIBUTION

The authors confirm contribution to the paper as follows: F.S. and D.SH.: Field work and sampling of specimens. A.B. and D.G.: Fieldwork, photography and writing. H.I.: 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 Department of Biology, Faculty of Mathematics and Natural Sciences, University of Prishtina “Hasan Prishtina”, Prishtinë, Kosovo under the name ‘Blinajë collection, 2022’ and are available, upon request.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

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

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مطالعه فونستیک حشرات راسته بال‌موداران کوزوو با اولین گزارش جنس *Orthotrichia* Eaton, 1873 (Trichoptera, Hydroptilidae)

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چکیده: نمونه‌های حشرات کامل بال‌موداران طی ماه‌های مه تا سپتامبر از آبگیرهای منطقه محافظت شده بلیناژ جمع‌آوری شدند. در این تحقیق ۲۱ گونه متعلق به ۹ خانواده از بال‌موداران شامل Goeridae، Hydroptilidae، Psychomyiidae، Polycentropodidae، Philopotamidae، Limnephilidae، Sericostomatidae، Rhyacophilidae و *Orthotrichia* Eaton, 1873 شناسایی شدند. جنس *Orthotrichia* و *Orthotrichia* Eaton, 1873 و *Agraylea tragetti* Mosely, 1930 گونه‌های جدیدی برای اولین بار از کوزوو گزارش می‌شوند. حضور گونه‌های دیگر به نام *Agraylea sexmaculata* Curtis, 1834 نیز پس از یک قرن برای بار دوم از این منطقه ثبت شد. گونه‌های متعدد دیگر با پراکش محلی مانند *Tinodes janssensi* Jacquemart, 1957 و *Rhyacophila macedonica* Karaouzas, Valladolid & Ibrahimi, 2022 نیز شناسایی شدند. این تحقیق با هدف شناسایی فون بال‌موداران منطقه محافظت‌شده بلیناژ کوزوو انجام شد و طی آن ترکیب جالب توجهی از گونه‌ها معرفی شدند.

واژگان کلیدی: تنوع‌زیستی آبی، بالکان، ریزبال‌موداران، گزارش جدید.