

Ephemeroptera and Plecoptera from glacial waters in the Rila Mountains

Yanka Vidinova, Ivanka Janeva, Violeta Tyufekchieva

Abstract: Data about finding and distribution of 23 species rang taxons from the Ephemeroptera order (5 families and 7 genera) and 38 species rang taxons from Plecoptera order (7 families and 14 genera) in glacial basins in the Rila Mountains are reported. Among them a mayfly subspecies and 8 stonefly species and subspecies are Balkan endemits.

Keywords: Ephemeroptera, Plecoptera, Insecta, Glacial Waters, Rila Mountains, Bulgaria

Complete investigations on the mayfly and stonefly fauna from the glacial basins in the Rila Mountains have not been done, therefore knowledge about these orders is imperfect. The known localities are a result of fragmentary taxonomic, faunistical and ecological studies.

Russev (1960) and Braasch & Russev (1986) reported mayfly species which are new for the Bulgarian fauna (*Siphonurus lacustris* Eaton, 1870 and *Rhithrogena iridina* (Kolenati, 1859). Russev & Vidinova (1994) and Vidinova & Russev (1997) in the generalization upon the distribution and the available ecological data of representatives from the Ephemeroptera order included 4 species from glacial waters in the Rila Mnts.

Braasch & Joost (1971) reported 7 species and Braasch (1972) - 13 species from the Plecoptera order.

The rest of the taxons included in the present report were established during the faunistical research by Alexander Valkanov and later on by Boris Russev (in 1954), as well as a result of episodal studies of these basins during the last several years (authors' data).

Ephemeroptera

The total number of taxons from the species- and subspecies level registered in glacial waters in Rila are 23, belonging to 7 genera and 5 families (Table 2). Thirteen species were established in the outflows of glacial lakes or brooks, originated by them (Table 1).

The relative part of the representing families is different. The Heptageniidae family is best presented - 10 species, followed by the Baetidae family - 9 species, Ephemerellidae - 2, Siphonuridae and Leptophlebiidae - by one species. Most established species are typical rheobionts - inhabitants of the rithral. The species *Siphonunis lacustris*, which prefers slightly running waters and calm river bays, high-mountain and plain lakes, is an exception. The species *Baetis alpinus*, *B. rhodani*, *B. muticus* and *Epeorus sylvicola* are the most common, followed by *Ephemerella mucronata* and *Habroleptoides confusa*.

The species *Baetis macani*, *B. suhalpinus*, *Rhithrogena iridina* and *Ecdyonurus suhalpinus* are referred to the category "rare" taxons, in which the species known by isolated locations and with populations that are not numerous are included. Even though with a few localities (2), the establishment of *Ephemerella ignita* in glacial waters confirms the eurobiontity of the species.

The subspecies *Ecdyonurus carpathicus vitoshensis* Jacob & Braasch, 1984 belongs to the Balkan endemics.

Table 1.

No	LOCALITY	Altitude
1	Sulzata - outflow	2535 m
2	Okoto - outflow	2440 m
3	Bubreka - outflow	2282 m
4	brooklet near Bubreka lake	
5	Bliznaka - outflow (conform to '4)	2243 m
6	Detelinata - outflow (conform to '5)	2216 m
7	Ribno - outflow (conform to '6)	2184 m
8	Dolnoto - inflow (conform to '7)	2095 m
9	Dolnoto - outflow (conform to '7)	2095 m
10	Dolno Chanakgyolsko - outflow (conform to '9)	2205 m
11	Skakavitsa - outflow (conform to '10)	2162 m
12	Nalbantsko - inflow (conform to '22)	2498 m
13	Musalensko ('7) - outflow (conform to '29)	2300 m
14	Grunchar (conform to '36)	2242 m
15	Grunchar - outflow (conform to '36)	2242 m
16	Sinyoto - outflow (conform to '39)	2353 m
17	Murtvo Yakorudsko (conform to '40)	2292 m
18	Ribno Yakorudsko - inflow (conform to '41)	2191 m
19	Banensko - outflow (Banenska r.) (conform to '44)	2240 m
20	Souho Lopatishko (conform to '47)	2040 m
21	Souho Lopatishko - outflow (conform to '47)	2040 m
22	Gomo Vapsko (conform to '48)	2268 m
23	Gomo Vapsko - outflow (conform to '48)	2268 m
24	Gomo Ribno (conform to '50)	2227 m
25	Dolno Ribno (conform to '51)	2200 m
26	Ribni lakes-brook (conform to '51)	2200 m
27	Souhoto - outflow (conform to '62)	1892 m
28	Pliktoto - brook (conform to '70)	1800 m
29	brook below German peak ('1)	2250 m
30	brook below German peak ('2)	2250 m
31	Ousoeto r. - Germanitsa	1830 m
32	Pazar-dere (Bistritsa) - below Ivan Vazov Hut	2200 m
33	Malyovitsa r. - Alpine camp	1840 m
34	Beli Iskur r.	2200 m
35	Dzhaka - brook	2320 m
36	brook below Belmeken peak	2000 m
37	brook below Slavov peak	2000 m
38	Belmeken Reservoir - inflow	1950 m
39	Lya va Maritsa r.	1900 m
40	Prava Maritsa r.	1900 m
41	Maluk Ibur r.	1900 m
42	Ruzhavitsa r.	1900 m
43	Daoutitsa r.	1900 m
44	Leeve r.	1900 m

Plecoptera

In total 38 taxons from the species and subspecies level belonging to 14 genera and 7 families are established (Table 3). Most of them were found in the outflows of the glacial lakes, most taxons were established in the Prava Maritsa river (25). The Perlidae family is most presented - 9 taxons, followed by the Nemouridae fam. - 8, the Perlodidae

Table 2.

Species	Localities
Siphonuridae	
<i>Siphonurus lacustris</i> Eaton, 1870	18, 22
Baetidae	
<i>Baetis alpinus</i> (Pictet, 1843)	2,4,8,13,18,26,29,30,32,36,38, 39,40,41,42,43,44
<i>B. fuscatus</i> (Linne, 1761)	42
<i>B. lutheri</i> Müller-Liebenau, 1967	43
<i>B. macani</i> Kimmins, 1957	20
<i>B. melanonyx</i> (Pictet, 1843)	18,38
<i>B. muticus</i> (Linne, 1758)	7,18,23,28,36,38,42,43,44
<i>B. rhodani</i> (Pictet, 1843)	6,7,9,18,23,28,31,32,36,38,39, 40,41,42,43,44
<i>B. subalpinus</i> Bengtsson, 1917	23
<i>B. vernus</i> Curtis, 1834	18,20,26,42
Heptageniidae	
<i>Epeorus sylvicola</i> (Pictet, 1865)	1,15,17,18,19,39,40,41,42,44
<i>Rhithrogena buresi</i> Sowa, 1973	40
<i>Rh. iridina</i> (Kolenati, 1859)	19
<i>Rh. sp. cf. nuragica</i>	41,42
<i>Rh. sp. gr. hybrida</i>	41
<i>Rh. sp.</i>	39,40,41,42,43
<i>Ecdyonurus carpathicus vitoshensis</i> Jacob & Braasch, 1984	18,28,36,37
<i>E. subalpinus</i> (Klapalek, 1907)	12,14,21
<i>E. sp. gr. helveticus</i>	20,22
<i>E. sp.</i>	1,2,3,5,6,8,9,14,15,16,17,18,19,21,26, 32,39,40,41,42,43,44
Ephemerellidae	
<i>Ephemerella ignita</i> (Poda, 1761)	18,26
<i>E. mucronata</i> (Bengtsson, 1909)	33,40,41,42,44
Leptophlebiidae	
<i>Habroleptoides confusa</i> Sartori & Jacob, 1986	5,6,7,23,28,33,38

fam. - 7. The Taeniopterygidae and the Capniidae fam. are represented by 2 and 1 taxons respectively. The species *Perla pallida*, *Perlodes intricata* and *Dinocras megacephala* are more frequent in the outflows observed. Sixteen of the taxons were found only once.

According to Braasch & Joost (1971) the following species: *Nemoura bulgarica*, *N. pirinensis*, *Leuctra marani*, *Isoperta bureschi*, *Chloroperla brachyptera*, *Ch. kosarovi* and *Ch. russevi* and the subspecies *Perla pallida dacica* are Balkan endemics.

Table 3.

<u>Species</u>	<u>Localities</u>
Taeniopterygidae	
<i>Taeniopteryx schoenemundi</i> (Mertens, 1923)	44
<i>Brachyptera seticornis</i> (Klapalek, 1902)	42
Nemouridae	
<i>Amphinemura triangularis</i> Ris, 1902	14,
<i>A. sp.</i>	25, 42
<i>Nemoura bulgarica</i> Rauser, 1962	40
<i>N. cinerea</i> (Retzius, 1783)	7
<i>N. pirinensis</i> Rauser, 1962	33, 35, 40
<i>N. sp.</i>	5, 6, 40, 42, 43, 44
<i>Protonemura montana</i> Kimmins, 1941	40
<i>Pr. sp.</i>	11, 18, 27, 39, 40, 41, 42, 43, 44
Leuctridae	
<i>Leuctra inermis</i> Kempny, 1899	40
<i>L. hippopus</i> Kempny, 1899	33
<i>L. marani</i> Rauser, 1965	14, 40
<i>L. mortoni</i> Kempny, 1899	41
<i>L. sp.</i>	19, 24, 40, 41, 42, 43, 44
Capniidae	
<i>Capnia sp.</i>	11, 39, 40, 41, 42, 44
Perlodidae	
<i>Arcynopteryx compacta</i> (McLachlan, 1872)	1, 40, 41
<i>A. sp.</i>	1, 2, 10
<i>Isoperla bureschi</i> Rauser, 1971	34, 40
<i>I. tripartita</i> lilies, 1954	34, 40
<i>I. sp.</i>	2, 3, 4, 39, 42, 43
<i>Perlodes intricata</i> (Pictet, 1842)	39, 40, 41, 43, 44
<i>P. sp.</i>	41, 43, 44
Perlidae	
<i>Dinocras cephalotes</i> (Curtis, 1827)	40
<i>D. megacephala</i> (Klapalek, 1907)	27, 39, 42, 43, 44
<i>D. sp.</i>	39, 41, 42, 44
<i>Perla bipunctata</i> Pictet, 1833	40,
<i>P. burmesteriana</i> Classen, 1936	40, 42
<i>P. marginata</i> (Panzer, 1799)	42
<i>P. pallida</i> Guerin, 1838	1, 2, 7, 34, 40, 42
<i>P. pallida dacica</i> Kis, 1964	40
<i>P. sp.</i>	3, 25, 39, 40, 42, 43, 44
Chloroperlidae	
<i>Chloroperla brachyptera</i> Schoenemund, 1927	40
<i>Ch. kosarovi</i> Braasch, 1969	40
<i>Ch. neglecta</i> (Rostock, 1881)	34, 40
<i>Ch. russevi</i> Braasch, 1969	40
<i>Siphonoperla neglecta</i> (Rostock, 1881)	40

References

- Braasch, D. 1972. Neue Funde von Plecopteren in Bulgarien. - Entomologische Nachrichten, 16, 7/8, 81-90.
- Braasch, D., W. Joost. 1971. Zur Plecopterenfauna Bulgariens. - Limnologica, 8, 2, Berlin, 264-294.
- Braasch, D., B. Russev. 1986. Zur Kenntnis der Heptageniidae - Fauna (Ephemeroptera) Bulgariens. I.- Hydrobiology, 32, 48-51.
- Russev, B. 1960. Neue Eintagsfliegen für die Fauna Bulgariens.- Beitr. zur Ent., 10, 7/8, 697-705.
- Russev, B., Y. Vidinova. 1994. Verbreitung und Ökologie der Vertreter einiger Familien der Ordnung Ephemeroptera (Insecta) in Bulgarien. - Lauterbornia, 19, Dinkelscherben, 107-113.
- Vidinova, Y., B. Russev. 1997. Distribution and ecology of the representatives of some Ephemeropteran families in Bulgaria. - In: Ephemeroptera & Plecoptera: Biology - Ecology - Systematics (P. Landolt & M. Sartori - Eds.), MTL, Fribourg, 139-146.

Received on November 4, 1999

Authors' address:

Institute of Zoology, BAS,
1 Tsar Osvoboditel,
BG- 1000 Sofia.

Ephemeroptera u Plecoptera от глациални водоеми в Рила планина

Я. Видинова, И. Янева, В. Тюфекчиева

(Резюме)

Обобщени са данни за намирането и разпространението на 23 таксона от видовете ранг от разред Ephemeroptera (5 сем. и 7 рода) и 38 таксона от видовете ранг от разред Plecoptera (7 сем. и 14 рода) в глациални водоеми в Рила. От тях 1 едnodневка и 8 перли са Балкански ендемити. По-голямата част от таксоните се установяват в оттоците на езерата или в потоците, изтичащи от тях.

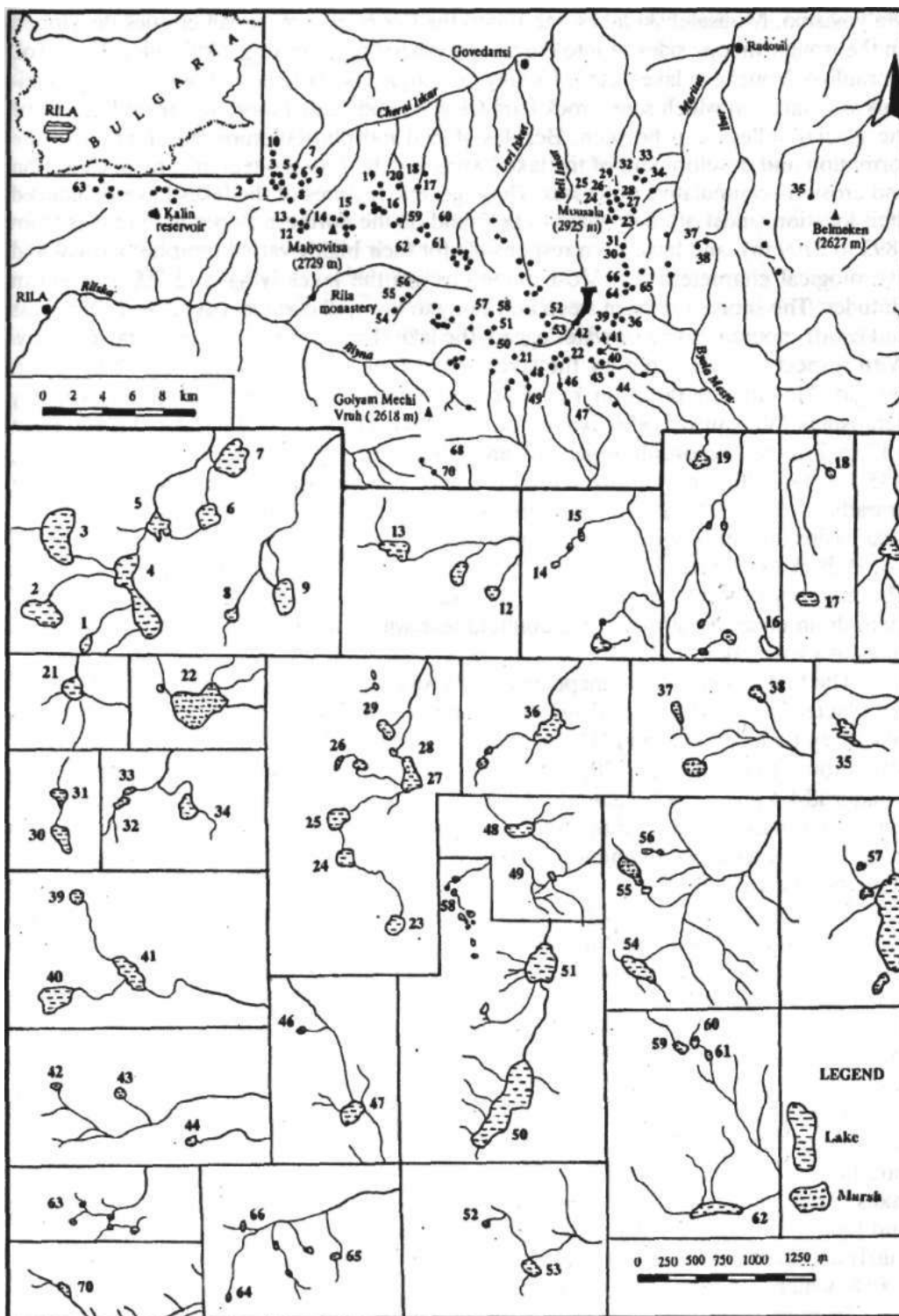


Fig. 1. Map of the glacial lakes and main lake groups in the Rila Mountains