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Review of literature and established mayfly species (Ephemeroptera, Insecta) from Bulgaria

[Übersicht über die Literatur und die festgestellten Eintagsfliegenarten
(Ephemeroptera, Insecta) in Bulgarien]

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With 1 Table

Schlagwörter: Pseudocentropilum, Ephemeroptera, Insecta, Bulgarien, Faunistik, Bibliographie

A review of the 102 species of Ephemeroptera so far recorded for the Bulgarian fauna and the references is provided. The larva of *Pseudocentropilum pulchrum* is reported for Bulgaria for the first time.

Es wird eine Übersicht über die bisher festgestellten 102 Ephemeroptera-Arten der bulgarischen Fauna und die zugehörige Literatur gegeben. Die Larve der Art *Pseudocentropilum pulchrum* wird zum ersten Mal für Bulgarien gemeldet.

The earliest reports of larvae of Ephemeroptera came from the German specialist SCHOENEMUND (1926) who determined 7 genera through material sent to him by W. Arndt. So far 102 taxa of the order of the Bulgarian fauna have been published, 26 of them as larvae and imago, 12 as imago and 63 as larvae, comprising 32 genera and 15 families. 99 of them were determined to species and 2 to variety (Table 1).

The report of the find of a larva of *Thraulius* sp. by P. Beron in a pond near Karaach river near the Black Sea Coast (RUSSEV 1971) probably refers to the species *Thraulius thraker* (reported by JACOB 1988 for the Ropotamo, a tributary to the Black Sea). However the larva of this species has not yet been described.

Pseudocentropilum pulchrum reported in this paper for the first time was found by students in April 1987 in the Harmanliiska river at the village of Malevo.

Enormous material of larvae of *Ecdyonurus* and *Rhithrogena* have been gathered in the course of hydrobiological and saprobiological expeditions along all Bulgarian water catchments awaits processing. The published results from this expedition provides faunistic data on the distribution of hydrofauna and larvae of Ephemeroptera in Bulgarian water catchment while the tables of hydrochemical studies and the saprobiological state of the river, indicating the current ecological situation. These studies involved the following rivers or water catchments: the Iskar (RUSSEV 1959; JANEVA & RUSSEV 1989); the rivers of Vitosha, tributaries of the Iskar river (RUSSEV 1961); the Arda (RUSSEV 1964); Maritsa (RUSSEV 1966, 1967; RUSSEV & al. 1981; UZUNOV & al. 1984); Rhodopes mountains (RUSSEV & JANEVA 1975); Ossam (RUSSEV 1977; RUSSEV &

Tab. 1: Larvae and imagines of mayflies from Bulgarian fauna published for the first time. L = Larvae; I = Imagines

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27		
Autoren	B u r e s s c h	C a s p e r s	R u s s e v	R u s s e v	R u s s e v	R u s s e v	R u s s e v	R u s s e v	M L u i e e l b e n r a - u	R u s s e v	J a c o b	S o w a	J a c o b	R J u a s n s e v a	P u t h z	B r a a s c h	U a z l u n o v	S o l d a n	R a l s s e v	J B a r c a o a b s c h &	B S r o a l a d a s c h &	B a r l a a s c h &	B R u r u s s e v c v h &	S a l w a &	J a c o b	R a l s s e v	R p u r s s e n v t		
Publikationsjahr	1 9 3 6	1 9 5 6	1 9 5 7	1 9 6 0	1 9 6 4	1 9 6 6	1 9 6 8	1 9 6 9	1 9 7 1	1 9 7 9	1 9 7 2	1 9 7 3	1 9 7 4	& 1 9 7 5	1 9 7 7	1 9 8 0	& 1 9 8 1	1 9 8 8	1 9 8 8	& 1 9 8 4	& 1 9 8 4	1 9 8 5	1 9 8 5	1 9 8 6	1 9 8 8	1 9 8 8	1 9 9 1	p u b l .	
SIPHONURIDAE					L																								
Siphonurus aestivalis (EATON)					L																								
S. armatus EATON					L																								
S. lacustris EATON			L																										
RALLIDENTIDAE					L																								
Ameletus inopinatus EATON					L																								
Metreletus balcanicus (ULMER)					L											LI													
BAETIDAE																													
Baetis alpinus (PICTET)																													
B. atrebatinus EATON																													
B. buceratus EATON										L				L															
B. fuscatus (LINNÉ)														L															
B. gemellus EATON														L															
B. lutheri MUELLER-LIEBENAU										L				L															
B. macani KIMMINS														L															
B. melanonyx (PICTET)					L																								
B. muticus (LINNÉ)					L																								
B. niger LINNÉ														L															
B. pavidus GRANDI														L															
B. pentaplebodes UJHELYI														L						L									
B. rhodani (PICTET)																													
B. scambus EATON			LI																										
B. sinicus (BOGOSCU)					L									L															
B. tracheatus KEFFERMUELLER & MACHEL																													
B. tricolor TSCHERNOVA					L																								
B. vardarensis IKONOMOV						L																							
B. vernus CURTIS					L																								
Raptoabaetopus tenellus (ALBARDA)											L																		
Centroptilum luteolum (MUELLER)					L																								

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
<i>Pseudocentropitulum nanum</i> (BOGOESCU)																												
<i>P. pennulatum</i> (EATON)						L																					L	
<i>P. pulchrum</i> (EATON)1																												L
<i>Cloeon dipterum</i> (LINNÉ)		L	I																									
<i>Cl. simile</i> EATON			L																									
<i>Procloeon bifidum</i> (BENGTSSON)					L																							
OLIGONEURIIDAE																												
<i>Oligoneuriella pallida</i> HAGEN							L																					
<i>O. rhenana</i> (IMHOF)			L		L																							
AMETROPODIDAE																												
<i>Ametropus fragilis</i> ALBARDA					L																							
ISONYCHIIDAE																												
<i>Isonychia ignea</i> WALKER			L																									
HEPTAGENIIDAE																												
<i>Epeorus alpicola</i> (EATON)			L																									
<i>E. sylvicola</i> (PICTET)			L																									I
<i>Iron yougoslavicus</i> SAMAL																	LI											
<i>Rhithrogena braaschi</i> JACOB													I															
<i>Rh. bulgarica</i> BRAASCH, SOLDAN & SOWA																					I			L				
<i>Rh. buresi</i> SOWA																												
<i>Rh. diaphana</i> NAVAS	I											LI																
<i>Rh. hybrida</i> EATON						L																						
<i>Rh. iridina</i> KOLENATI																						I						
<i>Rh. loyolaea</i> NAVAS						L																						
<i>Rh. semicolorata</i> (CURTIS)				LI																								
<i>Rh. sowa</i> PUTHZ																						I						
<i>Rh. thracica</i> SOWA, SOLDAN & BRAASCH																									LI			
<i>Ecdyonurus affinis</i> (EATON)												L																
<i>E. aurantiacus</i> BURMEISTER											L																	
<i>E. carpaticus vitoschensis</i> JACOB & BRAASCH																					I							
<i>E. dispar</i> (CURTIS)																												
<i>E. forcipula</i> (PICTET)																												
<i>E. helveticus</i> (EATON)				I																								
<i>E. insignis</i> (EATON)				LI																								
<i>E. macani</i> THOMAS & SOWA																												
<i>E. picteti</i> MEYER-DUERR																												
<i>E. russevi</i> BRAASCH & SOLDAN																												
<i>E. subalpinus</i> KIAPALEK																												
<i>E. submontanus</i> LANDA																												
<i>E. torrentis</i> KIMMINS																												
<i>E. venosus</i> FABRICIUS																												
<i>Electrogena lateralis</i> (CURTIS)	I			LI																								
<i>E. macedonica</i> (IKONOMOV)																												
<i>E. quadrilineata</i> (LANDA)																												

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Heptagenia coerulans (ROSTOCK)			L																								
H. flava (ROSTOCK)			L																								I
H. fuscogrisea (RETZIUS)			L																								
H. longicauda (STEPHENS)						L																I					
H. sulphurea (MUELLER)				L																							
EPHEMERELLIDAE																											
Ephemerella ignita (PODA)			LI																								
Eph. maculocaudata IKONOMOV																		LI									
Eph. major (KLAPALEK)						L																					
Eph. mesoleuca (BRAUER)						L	L																				
Eph. mucronata BENGTSOON						L																					
Eph. mucronata unicolorata (IKONOMOV)																			L								
Eph. notata EATON			L																								
NEOEPHEMERIDAE																											
Neophemera maxima (JOLY)										L																	
CAENIDAE																											
Caenis horaria (LINNÉ)			L		I																						
C. luctuosa BURMEISTER			L																								
C. macrura STEPHENS			L																								
C. rivulorum EATON						L																					
C. robusta EATON				L																							
Brachycercus harrisella CURTIS1				L																							
Cercobrachis minutus (TSHERNOVA)								L																			
LEPTOPHLEBIIDAE																											
Choroterpes picteti (EATON)			L																								
Thraulius thraker JACOB																									I		
Thraulius sp.										L																	
Paraleptophlebia cincta (RETZIUS)							L																				
P. lacustris IKONOMOV																											
P. submarginata (STEPHENS)			L																								
Habroleptoides confusa SARTORI & JACOB			L																								
Habrophlebia eldae JACOB & SARTORI			L																								
H. fusca (CURTIS)						L																					
H. lauta EATON			L																								
POLYMITARCIDAE																											
Ephoron virgo (OLIVIER)				LI																							
PALINGENIIDAE																											
Palingenia longicauda (OLIVIER)			I	L																							
EPHEMERIDAE																											
Ephemera danica MUELLER				LI																							
Eph. lineata EATON																											
Eph. vulgata LINNÉ		I	L							LI																	
POTAMANTHIDAE																											
Potamanthus luteus (LINNÉ)			L		I																						

al. 1984); Tundzha (RUSSEV & al. 1984; JANEVA & RUSSEV 1985); Tsibritsa (RUSSEV & JANEVA 1985); Mesta (KOVACHEV & UZUNOV 1986); Struma (UZUNOV & KOVACHEV 1987); Russenski Lom (RUSSEV & al. 1987, 1988); Ogosta (JANEVA, 1991); Lom (RUSSEV & JANEVA 1991) and Jantra (RUSSEV & JANEVA in print).

Biological data on Ephemeroptera have been published in other studies. On migrations and compensation flights studies of RUSSEV (1959 b, 1972, 1973); on the characteristics of growth related to ecological conditions NACHEV (1979); on the significance of Ephemeroptera as bioindicators RUSSEV (1979) and JANEVA (1979); on productivity of Ephemeroptera in the stretch of the Iskar river RUSSEV & DOSHKINOVA (1985); on the ecology of the Danube and the tributaries of the Black Sea RUSSEV (1968) and RUSSEV & al. (1991); on the significance of the Maritsa river in comparison with other benthos groups RUSSEV & JANEVA (1983); on the ecology, biology and distribution of *Palingenia longicauda* RUSSEV (1987); on extinct and threatened Ephemeroptera of Bulgarian fauna RUSSEV (1992).

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