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The present stage of knowledge on the Trichoptera of the central group of the eastern Carpathians in Romania

LUJZA UJVÁROSI

Department of Zoology, Faculty of Biology and Geology, University of Babes-Bolyai, Clinicilor Street 5-7, RO-3400 Cluj, Romania

Abstract

163 Trichoptera species are listed from the Central Group of the Eastern Carpathians, based on a number of 22,760 specimens caught mainly by personal collections at light, sweeping and light trapping from 1992 to 2000 and from bibliographical data. 39 species are new records to this region, another 3 species (*Anabolia concentrica, Asynarchus lapponicus, Potamophylax carpathicus*) are new to the Romanian fauna. These data came from 142 sites of the region studied. Species with a single record are: *Rhyacophila furcifera, R. laevis, Synagapetus armatus, S. iridipennis, Hydroptila pulchricornis, H. tineoides, H. vectis, Oxyethira falcata, Agraylea multipunctata, Cyrnus crenaticoris, Phryganea bipunctata, Phryganea grandis, Brachycentrus montanus, Drusus biguttatus, D. carpathicus, D. tenellus, Limnephilus bipunctatus, L. nigriceps, L. sericeus, Anabolia concentrica, Asynarchus lapponicus, Potamophylax carpathicus, P. pallidus, P. rotundipennis, Parachiona picicornis, Isogamus aequalis, Allogamus dacicus, Chaetopteryx biloba, C. polonica, Chaetopterygopsis maclachlani, Lithax niger, Athripsodes cinereus, Ceraclea annulicornis, Oecetis ochracea, Ylodes kawraiskii, Ernodes vicinus.* New drawings of the female genitalia of *Odontocerum albicorne* and *O. hellenicum* are presented. Notes on their distribution in the central group of the eastern Carpathians are also given.

Key words: Romania, eastern Carpathians, faunistics, female genitalia, *Odontocerum hellenicum, O. albicorne,* distribution

Introduction

The check list of the entire Romanian Trichoptera fauna, published by CIUBUC in 1993, listed 114 species from this region. This list have been made using a number of 18 bibliographical citations and several unpublished data derived mainly from L. BOTOŞĂNEANU. Additionally BOTOŞĂNEANU (1993, 1995) presented imporant new informations on the Romanian fauna (among others a number of new records to this region), and corrected some mistakes of CIUBUC's paper cited above. Other previous faunistic data from this region were published by BOTOŞĂNEANU 1955, 1957, 1961, 1966, BOTOŞĂNEANU & SCHNEIDER 1978, JÁSZFALUSI 1947, KLAPÁLEK, 1898, MEY 1978, MEY & BOTOŞĂNEANU 1985, MOCSÁRY 1900, MOTAŞ & ANGHELESCU 1939, 1944, MURGOCI 1953, 1960, MURGOCI & BOTOŞĂNEANU 1954, MURGOCI & MARCOCI-STOENESCU 1955, NÓGRÁDI 1989, PONGRÁCZ 1914.

The author started to examine the Trichoptera fauna of the Central Group of the Eastern Carpathians in 1992 with help of Sára NÓGRÁDI and Ákos UHERKOVICH (Pécs,

Hungary). A part of the results of these investigations have been already published (UJVÁROSI 1994, 1996, 1998, 1999, UJVÁROSI & LACZKÓ 2000, UJVÁROSI et. al. 1995, UJVÁROSI & NÓGRÁDI 1999).

The aim of this study is to update the list of the Trichoptera fauna of the Central Group of the Eastern Carpathians based on the personal collecting data and completeted by the bibliographical citations.

The Central Group of the Eastern Carpathians (or Transilvano-Moldoveni Mountains) is the central region of the Romanian Carpathians. The total area spreads over 18.558 km^2, representing 7.81% of the entire area of Romania (Fig.1).

Its north-south longitudinal measure extends over 200 km, from the Câmpulung Depression to Braşov Depression. According to their height, the Central Group of the Eastern Carpathians are included in the category of middle mountains (the highest peak is the Pietros, Călimani Mountains, 2100 m. a.s.l).

The mountain ranges of this region consist of the following types of rocks: volcanic (Călimani, Gurghiu and Harghita Mountains), crystalline (Giumălău, Bistricioarei, Giurgeu Mountains), the others belongs to the sedimentary ones.

This region is caracterized by a moderate continental climate.

The mean anual temperature is about 6 °C at the foot of the mountains and about 0 °C in the higher altitude. The annual precipitation reaches 700-600 mm in the intramountainous depressions (560-580 mm at Miercurea Ciuc) and 1000-1200 mm in the mountainous regions. The maximum precipitation is observed in June. The number of foggy days is 66 per year in average.

The major water courses in this region belong to the following hydrographic basins: Olt, Mureş, Bistriţa and Trotuş. The most important lakes in this region are Izvorul Muntelui (33 km^2), Lacul Roşu (0.12 km^2) and Lacul Sfânta Ana (0.2 km^2).

Fig. 1. Localization of the Central Group of the Eastern Carpathians in Romania.

Sampling stations and methods

Adult of Trichoptera were sampled along various lotic and lentic waters. Three customary collecting methods were applied in our field work. Daytime sweeping resulted in unsignificant material from several points, but a few species were collected only by this way. Night personal collecting ("lamping") were usually very fruitful. We always used mercury vapour bulbs (160 or 250 Watts). These lamps were powered by a portable generator (Honda EM650 or EG550 types). In addition in 1993 and 1998 light traps were operated near by a forester's house of Valea Mare, Sâncrăieni, Harghita Mountains and along the Agris brook, Ciaracio, Ciuc Depression.

Altogether 22,760 specimens of 134 species were collected and examined.

The sampling sites, situated mostly along the tributaries of rivers Olt and Mures, were located at different altitudes (from 500 to 1500 m. a.s.l). The lentic environments were little studied, due to the less number of this ecosystems in the region investigated by us, and include natural lake, ponds and marshes. On a grid map (Fig. 2) we pointed the presently known collecting sites from the Central Group of the Eastern Carpathians. Our collecting sites are presented according to the following list:

1. Androneasa, Mureş river, 560 m.a.s. l. **2.** Bălan, Fierarului brook, 980 m, **3.** Balan, Gal Cut brook, 950 m, **4.** Bălan, Olt river, 980 m, **5.** Bălan, "Szép patak", 960 m, **6.** Băile Bálványos, 770 m, **7.** Băile Chirui, 740 m, **8.** Băile Homorod, 756 m, **9.** Călimani Mts. "Lomas" Valley, 1000 m, **10.** Călimani Mts.,"Puturoasei" Valley, 1000 m, **11.** Călimani Mts., "Voivodeasă" Valley, 1050 m, **12.** Cârta, Koves brook, 820 m, **13.** Ciaracio, Agris brook, 670 m, **14.** Ciceu, "Olt falu", 670 m, **15.** Dăneşti, Modicia brook, 750 m, **16.** Dăneşti, small brooks, 750 m, **17.** Dornişoara, 1050 m, **18.** Eghersec, Uz brook, 980 m, **19.** Estelnic, "Lassu-ag" peat bog, 720 m, **20.** Fitod, Fitod brook 700 m, **21.** Harghita Băi, near Mădăraş Chalet, 1320 m, **22.** Harghita Băi, Capolnaş brook, 985 m, **23.** Harghita Băi, Fürész brook, 985 m, **24.** Harghita Băi, Piricica forestry house, 940 m, **25.** Harghita Băi, "Tolvajos" Pass, 985 m, **26.** Iacobeni, Caşin brook, 640 m, **27.** Iavardi, Ghimeş, 990 m, **28.** Izvoare, Ivo brook, 800 m, **29.** Izvorul Mureşului, 891 m, **30.** Jigodin Băi, outflow of gravel pits, 654 m, **31.** Jigodin Băi, Olt River, 654 m, **32.** Lăpuşna, Creanga albă brook, 820 m, **33.** Malnaş Băi, Saldoboş, 590 m, **34.** Miercurea Ciuc, Olt river, 660 m, **35.** Miercurea Ciuc, Şumuleu, 670 m, **36.** Moacşa, small ponds, 550 m, **37.** Oituz, 740 m, **38.** Poiana Fagului, Rece Valley, 1020 m, **39.** Poiana Stampei, peat bog, 910 m, **40.** Pojorâta, small brooks, 780 m, **41.** Potiond, Fenioved vize brook, 980 m, **42.** Potiond, small brook, 1010 m, **43.** Praid, Târnava Mică, 580 m, **44.** Racoş, Olt defile, 495 m, **45.** Racu, Silaş brook, 680 m, **46.** Rarău-Giumălău, Slătioara forest, 1000 m, **47.** Răstolita, Valea de Mijloc Valley, 600 m, **48.** Răstoliţa, Valea Secu Valley, 800 m, **49.** Remetea, Mureş River, 730 m, **50.** Sâncrăieni, Valea Mare Valley, 740 m, **51.** Sândominic, Baboş-Loco Valley, 800 m, **52.** Sântimbru Băi, 1100 m, **53.** Sântimbru, Bánya brook, 820 m, **54.** Sântimbriu, Chendreş brook, 800 m, **55.** Sfântu Gheorghe, Băile Şugaş, 580 m, **56.** Subcetate, Târnava Mare, 620 m, **57.** Tuşnadu Nou, Mitaci Brook, 670 m, **58.** Vârghis, Vârghiş Gorge, 590 m, **59.** Voşlobeni, Senetea peat bog, 780 m, **60.** Zemeş, Tazlău Sărat Brook 470 m, **61.** Lacul Roşu, 970 m, 62. Izvorul Muntelui, Buhalniţa, 560 m.

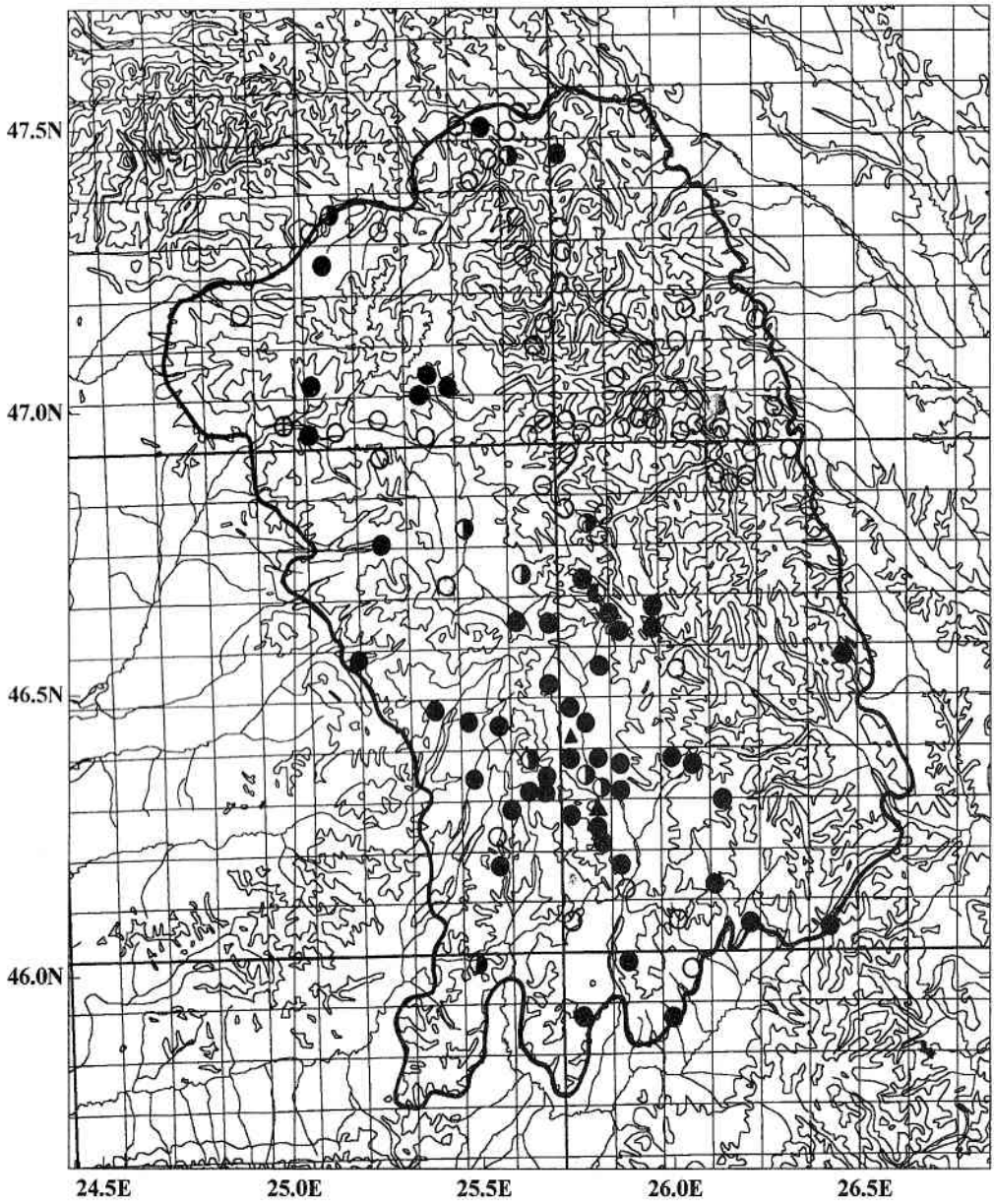

Fig. 2. Sampling sites of Trichoptera in the Central Group of the Eastern Carpathians: Full circle: our collecting sites (personally, by light trap, and material collected for us by other collectors, material deposited in the Janus Pannonius Museum, Pécs, Hungary, originating from the region investigated). Half black circles represent the bibliographical data where we also made investigations. Empty circles correspond to the bibiliographically cited sites.

Results and discusions

Todate 163 caddisfly species were identified from 142 collecting sites in the Central Group of the Eastern Carpathians. A synthesis of these data is presented in Tab. 1.

The total number of species found represent 60.6 % of the Romanian Trichoptera

Tab. 1. List of the Trichoptera species from the Central Group of the Eastern Carpathians: n Cited in bibliography and also collected by us; only literature data, * the first occurrence from the region was published by us, !!! new to the Romanian fauna.

Nr.	*Species*		*Male*	*Female*	*Total nr. of specimens*	*Number of collecting sites*
	Fam. Rhyacophilidae					
1.	*Rhyacophila aquitanica* McLACHLAN, 1879	*	6		6	3
2.	*R. doehleri* BOTOŞĂNEANU., 1957	●	3		3	3
3.	*R. fasciata* HAGEN, 1859	●	297	29	326	18
4.	*R. furcifera* KLAPALEK, 1904	•				1
5.	*R. laevis* PICTET, 1834	*	1		1	1
6.	*R. mocsaryi* KLAPALEK, 1898	●	224	22	264	27
7.	*R. nubila* ZETTERSTEDT, 1840	●	196	223	419	29
8.	*R. obliterata* McLACHLAN, 1863	●	95		95	5
9.	*R.philopotampoides* SCHMID, 1970	●	7	5	12	8
10.	*R. polonica* McLACHLAN, 1879	●	140	12	152	21
11.	*R. torrentium* PICTET, 1834	*	27	12	39	7
12.	*R. tristis* PICTET, 1834	●	66	22	88	21
	Fam. Glossosomatidae					
13.	*Glossosoma boltoni* CURTIS, 1834	●	31	45	76	15
14.	*G. conformis* NEBOISS, 1963	●	164	348	512	13
15.	*G. discophorum* KLAPALEK, 1902	●	47	5	52	3
16.	*Synaphopohora intermedia* KLAPALEK, 1892	●	3		3	4
17.	*Agapetus delicatulus* McLACHLAN, 1884	●	690	919	1609	15
18.	*A. laniger* PICTET, 1834	●	46	160	206	6
19.	*A. ochripes* CURTIS, 1834	*	205	1026	1031	9
20.	*Synagapetus armatus* McLACHLAN, 1879	*	5	1	6	1
21.	*S. iridipennis* McLACHLAN, 1979	•				1
22.	*S. moselyi* ULMER, 1938	*	4	7	12	5
	Fam.Hydroptilidae					

Tab. 1. (cont.)

Nr.	*Species*		*Male*	*Female*	*Total nr. of specimens*	*Number of collecting sites*
23.	*Stactobilella risi* FELBER, 1908	•				1
24.	*Ithytrichia lamellaris* EATON, 1873	●	16	6	22	4
25.	*Oxyethira falcata* MORTON, 1893	*		1	1	1
26.	*Hydroptila angustata* MOSELY, 1939	*		2	2	2
27.	*H. forcipata* EATON, 1873	●	305	732	1037	15
28.	*H. lotensis* MOSELY, 1930	*	6	25	31	4
29.	*H. occulta* EATON, 1873	●		1	1	2
30.	*H. pulchricornis* PICTET, 1834	•				1
31.	*H. simulans* MOSELY, 1920	●		5	5	3
32.	*H. tineoides* DALMAN, 1819	•				1
33.	*H. vectis* CURTIS, 1834	•				1
34.	*Agraylea multipunctata* CURTIS, 1834	•				1
35.	*A. sexmaculata* CURTIS, 1834	*	12	6	18	4
36.	*Allotrichia pallicornis* EATON, 1873	●	3	7	10	3
	Fam. Philopotamidae					
37.	*Philopotamus montanus* DONOVAN, 1813	●	149	166	215	19
38.	*P. variegatus* SCOPOLI, 1763	●	363	89	452	7
39.	*Wormaldia occipitalis* PICTET, 1834	●	77	23	100	5
	Fam. Hydropsychidae					
40.	*Hydropsyche angustipennis* CURTIS, 1834	●	41		41	5
41.	*H. bulbifera* McLACHLAN, 1878	*	214		214	8
42.	*H. contubernalis* McLACHLAN, 1865	*	166		166	16
43.	*H. instabilis* CURTIS, 1834	●	686		686	22
44.	*H. modesta* NAVAS, 1925	*	58		58	3
45.	*H. pellucidula* CURTIS, 1834	●	246		246	29
46.	H. *saxonica* McLACHLAN, 1884	●	79		79	10
47.	*H. tabacarui BOTOŞĂNEANU*	●	20		20	3
	Hydropsyche sp. indet.			5509	5509	
48.	*Cheumatopsyche lepida* PICTET, 1834	●	167	77	244	17

Tab. 1. (cont.)

Nr.	*Species*		*Male*	*Female*	*Total nr. of specimens*	*Number of collecting sites*
	Fam. Polycentropodidae					
49.	*Neureclipsis bimaculata* LINNEUS, 1785	●		1	1	2
50.	*Plectrocnemia brevis* McLACHLAN, 1871	●	9		9	7
51.	*P. conspersa* CURTIS, 1834	●	81	49	130	21
52.	*Polycentropus falvomaculatus* PICTET, 1834	●	16	20	36	11
53.	*P. irroratus* CURTIS, 1835	●	5	1	6	6
54.	*Cyrnus crenaticornis* KOLENATI, 1858	*		1	1	1
55.	*C. trimaculatus* CURTIS, 1834	●	11	1	1	4
	Fam. Psychomyiidae					
56.	*Psychomyia pusilla* FABRICIUS, 1781	●	261	300	561	20
57.	*Lype phaeopa* STEPHENS, 1836	●	2	2	4	3
58.	*L. reducta* HAGEN, 1868	*	9	12	21	6
59.	*Tinodes rostocki* McLACHLAN, 1878	*	1	14	15	8
	Fam. Phryganeidae					
60.	*Agrypnia varia* FABRICIUS, 1793	●	20	19	39	6
61.	*Phryganea bipunctata* RETZIUS, 1783	•				1
62.	*P. grandis* LINNE, 1758	*	2	5	7	1
63.	*Oligorticha striata* LINNE, 1758	●	2		2	3
64.	*Hagenella calthrata* KOLENATI, 1848	*	2	1	3	2
	Fam. Brachycentridae					
65.	*Brachycentrus montanus* KLAPALEK, 1892	•				1
66.	*B. subnubilus* CURTIS, 1834	●	22		22	4
67.	*Oligoplectrum maculatum* FOURCROY,1785	•				3
68.	*Micrasema minimum* McLACHLAN, 1876	•				2
	Fam. Limnephilidae					
69.	*Ironoquia dubia* STEPHENS, 1837	*	2		2	2
70.	*Apatania carpathica* SCHMID, 1954	●	100	344	444	10

Tab. 1. (cont.)

Nr.	*Species*		*Male*	*Female*	*Total nr. of specimens*	*Number of collecting sites*
71.	*Drusus biguttatus* PICTET, 1834	•				1
72.	*D. brunneus* KLAPALEK, 1834	●	64	47	111	22
73.	*D. carpathicus* DZIEDZIELEWICH, 1914	•				1
74.	*D. discolor* RAMBUR, 1842	●	5	2	7	3
75.	*D. tenellus* KLAPALEK, 1898	●	1		1	1
76.	*D. trifidus* McLACHLAN, 1868	•				1
77.	*Ecclisopteryx dalecarlica* KOLENATI, 1848	●	35	175	210	15
78.	*E. madida* McLACHLAN, 1867	●	400	299	699	21
79.	*Limnephilus affinis* CURTIS, 1834	●	7	5	12	7
80.	*L. auricularia* CURTIS, 1834	●		7	7	7
81.	*L. bipunctatus* CURTIS, 1834	*	1		1	1
82.	*L. coenosus* CURTIS, 1834	*	2		2	2
83.	*L. decipiens* KOLENATI, 1848	●	18	12	30	18
84.	*L. extricatus* McLACHLAN, 1865	*	43	111	154	19
85.	*L. flavospinosus* STEIN, 1874	●	1		1	2
86.	*L. griseus* LINNEUS, 1759	●	30	8	38	15
87.	*L. hirsutus* PICTET, 1834	*	12	2	14	7
88.	*L. ignavus* McLACHLAN, 1865	●	10	12	24	6
89.	*L. lunatus* CURTIS, 1834	*	14	15	29	5
90.	*L. nigriceps* ZETTERSTEDT, 1840	•				1
91.	L. rhombicus LINNEUS, 1758	●	14	9	23	10
92.	*L. sericeus* SAY, 1824	•				1
93.	*L. sparsus* CURTIS, 1834	●	81	85	166	16
94.	*L. stigma* CURTIS, 1834	*	4	2	6	5
95.	*L. vittatus* FABRICIUS, 1798	●	1	1	2	7
96.	*Colpotaulius incisus* CURTIS, 1834	●	2	6	8	5
97.	*Grammotaulius nigropunctatus* RETZ., 1783	●	1		1	4
98.	*Glyphotaelius pellucidus* RETZIUS, 1783	●	1	1	2	6

Tab. 1. (cont.)

Nr.	*Species*		*Male*	*Female*	*Total nr. of specimens*	*Number of collecting sites*
99.	*Anabolia concentrica* ZETTERSTEDT, 1840	!!!	2		2	1
100..	*A. furcata* BRAUER, 1857	●	64	7	71	6
101.	*A. laevis* ZETTERSTEDT, 1840	•				2
102.	*Phacopteryx brevipennis* CURTIS, 1834	●	8	8	16	7
103.	*Asynarchus lapponicus* ZETTERSTEDT, 1840	!!!	2		2	1
104.	*Rhadicoleptus alpestris* KOLENATI, 1848	●	77	105	182	2
105.	*Potamophylax carpathicus* DZIEDZIELEWICH, 1914	!!!	1		1	1
106.	*P. cingulatus* STEPHENS, 1837	●	67	7	74	8
107.	*P. jungi* MEY, 1976	*	8	7	15	5
108.	*P. latipennis* CURTIS, 1834	●	337	186	523	29
109.	*P. luctuosus* PILL. MITTERPARKER,1793	●	138	382	520	6
110.	*P. nigricornis* PICTET, 1834	●	38	35	73	15
111.	*P. pallidus* KLAPALEK, 1900	*	5		5	1
112.	*P. rotundipennis* BRAUER, 1857	*	2		2	1
113.	*Halesus digitatus* SCHRANK, 1781	●	17	52	69	6
114.	*H. tesselatus* RAMBUR, 1842	●		2	2	3
115.	*Melampophylax nepos triangulifera* BOTOŞĂNEANU, 1957	●	35		35	2
116.	*Isogamus aequalis* KLAPALEK, 1907	•				1
117.	*Parachiona picicornis* PICTET, 1834	*	1		1	1
118.	*Stenophylax lateralis* STEPHENS, 1837	*	3		3	3
119.	*S. nycterobia* McLACHLAN, 1875	●	1		1	2
120.	*S. permistus* McLACHLAN, 1875	●		1	1	2
121.	*S. sequax* McLACHLAN, 1875	●		2	2	3
122.	*S. vibex meridiorientalis* MALICKY, 1980	●	1		1	3
123.	*Allogamus dacicus* PICTET, 1834	*	7	1	8	1

Tab. 1. (cont.)

Nr.	*Species*		*Male*	*Female*	*Total nr. of specimens*	*Number of collecting sites*
124.	*Chaetopteryx biloba* BOTOŞĂNEANU, 1960	*	3		3	1
125.	*C. bosniaca cyssilvanica* BOTOŞĂNEANU, 1995	*	3	2	5	2
126.	*C. polonica* DZEDZIELEWIC, 1889	•				1
127.	*C. sahlbergi* McLACHLAN, 1876	●	1		1	2
128.	*Psilopteryx psorosa transsylvanica* MEY & BOTOŞĂNEANU, 1985	•				5
129.	*Chaetopterygopsis maclachlani* STEIN, 1874	•				1
130.	*Annitella lateroproducta* BOTOŞĂNAEANU, 1952	●	84		84	2
131.	*A. obscurata* McLACHLAN, 1876	●	243		243	2
	Fam. Goeridae					
132.	*Goera pilosa* FABRICIUS, 1775	●	2	18	20	6
133.	*Lithax niger* HAGEN, 1859	•				1
134.	*L. obscurus* HAGEN, 1859	*	8	1	9	3
135.	*Silo graellsi* PICTET, 1865	●	262	173	435	18
136.	*S. nigricornis* PICTET, 1834	•				1
137.	*S. pallipes* FABRICIUS, 1781	●		2	2	2
138.	*S. piceus* BRAUER, 1857	●	39	22	61	14
	Fam. Lepidostomatidae					
139.	*Lepidostoma hirtum* FABRICIUS, 1781	●	30	105	135	12
140.	*Lasiocephala basalis* KOLENATI, 1848	●	214	199	413	2
	Fam. Leptoceridae					
141.	*Athripsodes albifrons* LINNEUS, 1759	•				2
142.	*A. bilineantus* LINNEUS, 1758	●	18	4	22	8
143.	*A. cinereus* CURTIS, 1834	•				1
144.	*A. commutatus* ROSTOCK, 1874	●	2	1	3	2
145.	*Ceraclea annulicornis* STEPHENS, 1836	•				1

Tab. 1. (cont.)

Nr.	*Species*		*Male*	*Female*	*Total nr. of specimens*	*Number of collecting sites*
146.	*C. dissimilis* STEPHENS, 1836	*	12	5	17	7
147.	*Mystacides azurea* LINNEUS, 1761	●	3	2	5	4
148.	*M. nigra* LINNEUS, 1758	●	39	29	68	5
150.	*Ylodes kawraiskii* MARTYNOV, 1909	●	5	45	50	1
151.	*Y. simulans* TJEDER, 1929	●	3	8	11	4
152.	*Leptocerus interruptus* FABRICIUS, 1775	●		1	1	2
153.	*L. tineiformis* CURTIS, 1834	*	7	49	56	7
154.	*Oecetis ochracea* CURTIS, 1825	*	57	21	78	1
155.	*Adicella filicornis* PICTET, 1834	●		2	2	2
	Fam. Sericostomatidae					
156.	*Oecismus monedula* HAGEN, 1859	●	36	39	75	12
157.	*Sericostoma personatum* KIRBY-SPENCE, 1862		33	25	58	5
158.	*S. schneideri* KOLENATI, 1848	●	1014	954	1968	18
	Fam. Bereidae					
159.	*Beraea pullata* CURTIS, 1834	●	32	6	38	9
160.	*Ernodes articularis* PICTET, 1834	●	1		1	2
161.	*E. vicinus* McLACHLAN, 1879	•				1
	Fam. Odontoceridae					
162.	*Odontocerum albicorne* SCOPOLI, 1763	●	89	39	128	17
163.	*O. hellenicum* MALICKY, 1972	*	7	4	11	4

fauna and they belong to 16 families (of a total of 19 families recorded in Romania). Our investigations show that the second most diverse area of the Trichoptera fauna in Romania is the Central Group of the Eastern Carpathians, after the Banat Mountains having 168 Trichoptera species.

The families with high number of species are Limnephilidae (63 species), Hydroptilidae (14 species), Leptoceridae (13 species), Rhyacophilidae (12 species) and Glossosomatidae (10 species). Families with high number of collected individuals are Hydropsychidae (7263 specimens), Limnephilidae (3939 specimens), Glossosomatidae (3507 specimen) and Sericostomatidae (2101 specimens).

Altogether 39 species proved to be new for this region, while 3 others are new to the Romanian fauna. These three species are: *Anabolia concentrica*, *Asynarchus lapponicus* and *Potamophylax carpathicus*.

More than 500 adults have been collected from 9 species each during our investigations: *Glossosoma conformis, Agapetus delicatulus, A. ochripes, Hydroptila forcipata, Psychomyia pusilla, Ecclisopteryx madida, Potamophylax latipennis, P. luctuosus, Sericostoma schneideri.*

According to the number of the collecting sites, we can conclude that not a single species was found to occur in all collecting sites, due to the different collecting methods used by collectors and due to the ecological preferences of each species. Species with a relativ high number of collecting sites (between 20 and 30) are: *Rhyacophila mocsary, R. nubila, R. polonica, R. tristis, Hydropsyche instabilis, H. pellucidula, Plectrocnemia conspersa, Drusus brunneus, Ecclisopteryx madida, Potamophylax latipennis.*

In only one collecting sites 31 species were recorded. Seven species were recorded in this region based only on larval identifications. These species are: *Hydroptila vectis, Brachycentrus montanus, B. (Oligoplectrum) maculatum, Drusus biguttatus, Lithax niger, Silo nigricornis, Ceraclea annulicornis.* The presence of these species should be confirmed by adult identifications, too.

The female genitalia of *Odontocerum albicorne* and *O. hellenicum*, and their distribution in the Central Group of the Eastern Carpathians.

Though the distribution of the European *Odontocerum* species (*O. albicorne, O. hellenicum, O. lusitanicum*) was discussed by MALICKY (1996), who considered them allopatric species with a distinct distribution area, the distribution of the two species (*O. albicorne* and *O. hellenicum*) present in Romania is still very controversial. It is due to the unrevised records of the genus *Odontocerum* in Romania before 1972 and 1995, the years of the published descriptions of the closely related *O. hellenicum* and *O. lusitanicum.*

Our investigation show that in the Central Group of the Eastern Carpathians the distribution area of these two species is not separated. Both species can even occur at the same site. In Romania just a few records have been published up to now. According to CIUBUC (1993) *Odontocerum albicorne* has a sporadic distribution in the Eastern Carpathians (Bicaz river and its tributary in the gorges, Harghita mountains, without any specifications, Tibles and Gutâi Mountains). *Odontocerum hellenicum* was recorded the first time from the Eastern Carpathians (Vlahita pass, Harghita Mountains) by UJVÁROSI et al. (1995). Recent distribution data of these two species from the Central Group of the Eastern Carpathians, based on our investigations are as follows (the numbers refers to the distribution map presented in the Fig. 3):

O. albicorne.

1. Potiond, Ciuc Mountains (46°23'39,5 "N; 26 °2'29,2" E)
2. Sâncrăieni, Valea Mare brook, Harghita Mountains (46°18'14,1" N; 25°48'6,6" E)
3. Tuşnadu Nou, Mitaci brook, Harghita Mountains (46 °12' 9,4 "N; 25 °51' 47,4" E)
4. Dornişoara, Dornişoara brook, Călimani Mts. (47 °15' 10,2" N; 25 °11' 4,5" E)
5. Răstoliţa, Valea de Mijloc brook, Călimani Mts. (46 °59' 33,6" N; 25 °0' 43,3" E)
6. Lăpusna, Creanga Albă brook, Gurghiu Mts. (46 °45' 50,4" N; 25 °13' 43,2" E)
7. Lomas valley, Călimani Mts. (47 °3' 25,2" N; 25 °22' 20,7" E)

8. Oituz pass, Nemira Mts. (46 °5' 0,5" N; 26 °23' 11,4" E)
9. Voşlobeni, Senetea peat bog, Gheorgheni Depression (46° 37' 47,3" N; 25 °35' 41,3" E)
10. Praid, Târnava Mică river, Gurghiu Mts. (46° 33' 55,6" N; 25 °11' 18,2" E)
11. Băile Şugaş, Baraolt Mts. (45° 55' 38,6" N; 25 °46' 36,9" E)
12. Subcetate, Târnava Mare river, Gurghiu Mts. (46 °29' 4,8" N; 25° 23' 9,1" E)

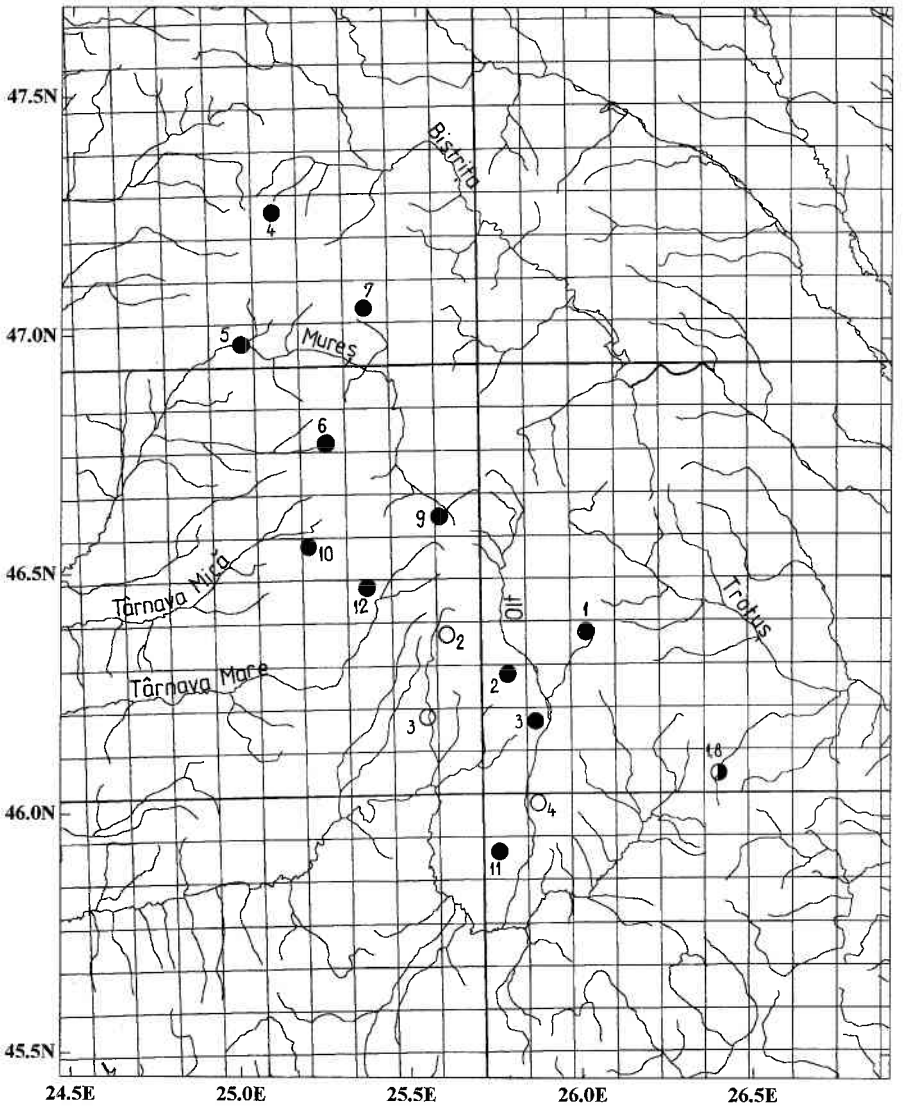

Fig. 3. Distribution of *Odontocerum albicorne* and *O. hellenicum* in the Central Group of the Eastern Carpathians: Black dots - *O. albicorne*, empty circle - *O. hellenicum*, half black circle - both species are present.

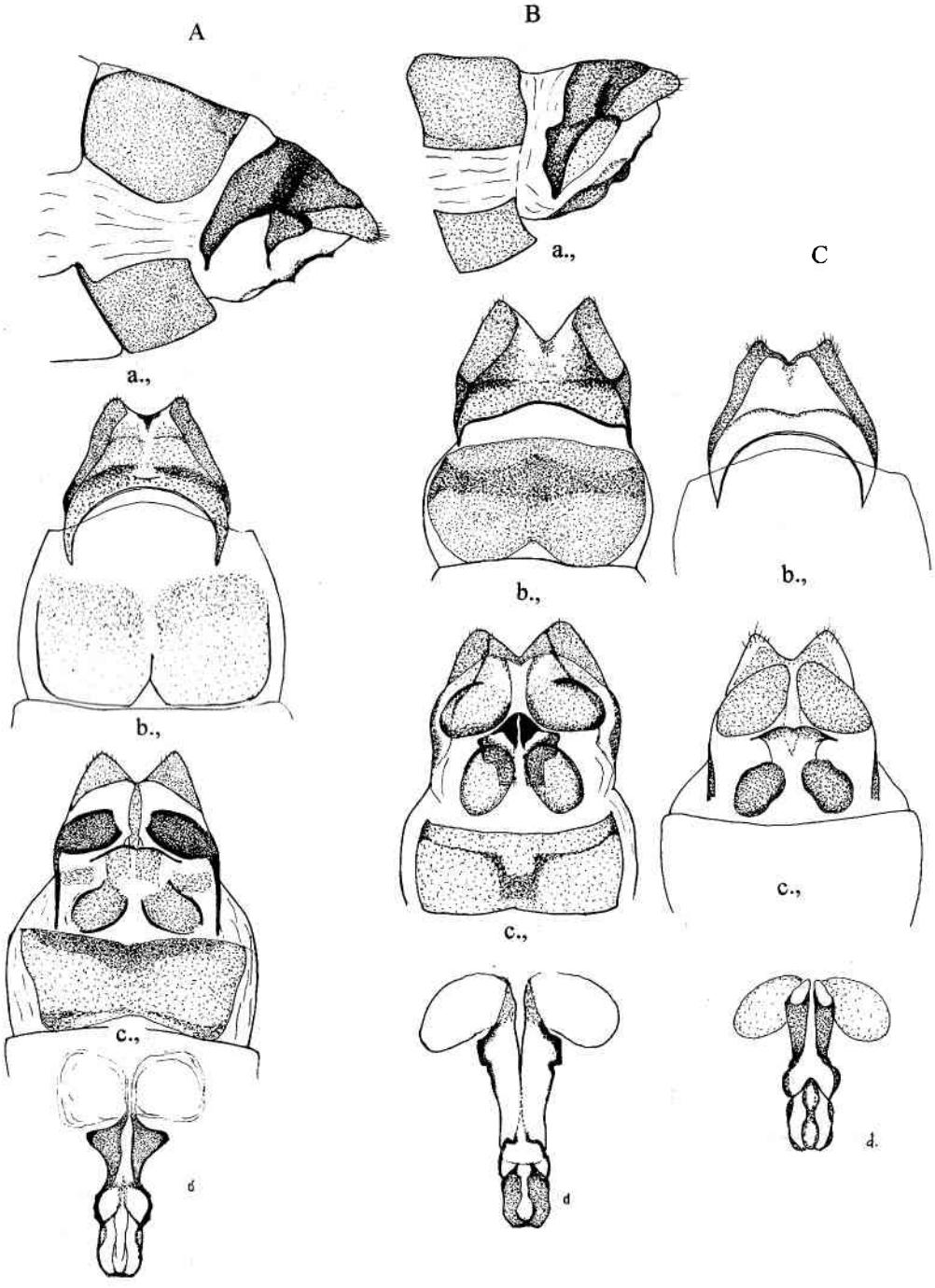

Fig. 4. Female genitalia of *Odontocerum* ssp.: *O. albicorne* (A), *O. hellenicum* (B) and *O. lusitanicum* (C): a. - lateral, b. - dorsal, c. - ventral, d. - vaginal sclerit.

O. hellenicum.

1. Oituz pass, Nemira Mts. (46 °5' 0,5" N; 26 °23' 11,4" E)
2. Vlahiţa Pass, Harghita Mts. (46 °23' 14,8" N; 25° 35' 41,3" E)
3. Mereşti, Vârghişului Gorges, Perşani Mts. (46 °12' 48,8" N; 25° 33' 16,3" E)
4. Malnaş Băi, Saldoboş, Bodoc Mts. (46° 2' 22,8" N; 25° 51' 33,6" E)

The females of the two species were sepatated for the first time by KLIMA & HODGES (1987), based on the posterior edge of the external part of the gonopod of abdominal segment VIII. This character provided to be most variable in the specimens examined by us in the Central Group of the Eastern Carpathians. The specifically sclerotized vaginal structure in the interior of the abdomen of both species proved to be morphological stable for each species, and thus, is a good taxonomic character for distinguishing the two species, and separate them from *O. lusitanicum*, present only in the Iberian Peninsula. The latter species is very similar to *O. albicorne* (Fig. 4).

Conclusions

During our investigation in the Central Group of the Eastern Carpathians 139 species were identified, mostly along running waters. These data were completed by the bibliographical citations. The present list of the Trichoptera of this region contains 163 species. 39 species were recorded for the first time for this region, another three species proved to be new to the Romanian fauna. Seven species have been identified from this region only in the larval stage up to now. Their presence in the Central Group of the Eastern Carpathians must be confirmed by collecting of adults, too.

The occurrence of the closely related *O. albicorne* and *O. hellenicum* in the same geographical region and even in the same collecting sites made it necessary to find a good distinguishing character of female specimens, and to revise the older records of these two species in the region.

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