THE PRESENT STATUS OF THREAT TO THE CADDIS FLIES (TRICHOPTERA) FROM THE RIVERS ŞOMEŞ, MUREŞ AND CRIŞURI CATCHMENT AREA IN ROMANIA

Ujvárosi Lujza

Abstract

The distribution of Trichoptera was analysed at 31 sampling sites distributed along different water courses, tributaries of the rivers Someş, Mureş and the three Crişuri, in order to determine characteristic associations of caddis flies species in the different sectors of these rivers. Beside the personal observations, the author's aim is to summarize most of the published information, as well as results of personal collecting data concerning caddis fly taxa which are vulnerable, endangered or already destroyed by human activities, with notes on altered, endangered or vulnerable habitats of Trichoptera from these catchment areas. Altogether 193 species of caddis flies have been observed since 1898 along rivers. A number of 11 species have become extinct in the area investigated, mostly from the large rivers and eutrophic or oligotrophic pools, in the catchments area. The other 184 species can be categorized into five groups on the basis of their conservation status: unknown (or insufficiently known), endangered, vulnerable, presumed vulnerable and not threatened. The unknown (or insufficiently known) are those that have been collected before the nineties, the recent studies do not confirm their presence in the area investigated, but they could be still present. Their habitat must be studied in the future. The endangered species have a few, small and isolated populations, most of the endemic and relict species also belong to this group. Most of the endangered species are living in sources, mountainous brooks and hilly streams.

The situation of the threatened caddis flies can differ from a river system to an other. The number of species dwelling in the springs and brooks in the mountainous and sub mountainous area is still very high. The caddis fly community of the lower sector of these rivers is rather poor and uniform in relation with the sectors in the mountainous and hilly areas, with species having wide ecological tolerance. Probably a certain improvement of the water quality of these rivers is responsible for this.

Keywords: Trichoptera, faunistical list, Someş, Mureş, Crişuri river systems, endangered species, extinction, conservation

Introduction

The presence or absence of organisms is related to biotic and abiotic factors. The repeatability of these relationships can be used for marking water typologies and water quality assessments. Organisms and communities, like caddis flies, function in this way as bioindicators. Mereover, human activities have their impact on streams and rivers, causing changes in the original circumstances. Under the new conditions, alterations in the composition of the community are observed, and here again organisms can act as bio-indicators of the new situation or maybe even of the alteration (HIGLER and TOLKAMP, 1982). This required a long term study of the water bodies, and a comparison of the published data with the personal observations is also necessary for underline the evolution trends of the community and the possibility of restauration of the endangered or distroyed habitats.

The main tributaries of Tisa in Romania are the rivers Someş, Mureş and the three Crişuri, with a cathcment area which covers almost the whole Transylvania, divided in mountainous, hilly and lowland sectors. These three rivers receive numerous tributaries in the catchment area (UJVARI, 1972).

The Someş river system has a total surface of the catchment area of 15 217 km, and is found in the northern part of the Transylvanian basin, the origins of the water courses wich form the spring sector are in the Apuseni, Gutâi, Ţibles, Rodnei, Bârgăului and Călimani Mountains. The largest tributaries are Someşul Mare and Someşul Mic.

The three Crişuri rivers and its tributaries come from the northern, western and southern part of the Apuseni Mountains, the whole river system has a surface of 14 880 km in Romania. The largest tributaries are the Ierul, Barcăul, Crişul Repede, Crişul Negru and Crişul Alb.

The Mureş river system spreads over on a surface of 27 919 km in Romania. The majority of the tributaries came from the Eastern and Southern Carpathians and from the Apuseni Mountains. The largest tributaries are: Târnava Mică, Târnava Mare, Luduş and Arieş.

The total number of the Romanian caddis fly species is uncertain. CIUBUC (1993) listed 267 caddis flies. In addition BOTOŞĂNEANU (1993) cited other 12 species new to the country fauna, two years later (1995) the same author published important new data and commented on the presence and absence of a number of species, previously cited from Romania. Based on the last few years' intensive investigations, made by the author mainly along the mountains brook on the Eastern Carpathians, other six new species for the country's fauna have been recorded (UJVÁROSI, 1995, 1997, 1998, UJVÁROSI, NÓGRÁDI, 1999).

Up to the present a number of 193 species of caddis flies have been recorded from the Romanian section of the rivers Someş, Mureş and Crişuri catchment area, wich represent about 65-70 % of the whole Romanian fauna.

Material and methods

Adults of trichoptera were sampled along the rivers Someş, Mureş and the three Crişuri and their tributaries. Three customary collecting methods were applied in our fieldwork, between 1994-2000. Daytime sweeping resulted in a small material, but a few species were collected only by this way. Night personal collecting ("lighting") was usually very fruitful. We always used mercury-vapor bulbs (160 or 250 Watts). These lamps were powered by a portable generator (Honda EM650 or EG550 types). In addition in 1994 and 2000 two light traps were operated, one in Floreşti, near the left side of the river Someşul Mic, tributary of Someş and another near the Valea Ierii village, in the Iara Valley, along the Iara brook, a small tributary of Mureş from the Apuseni Mountains. We did not collect and study immature stages as they are rather unsatisfactorily known, especially in the case of the rare and endemic species.

A number of 129 species were collected and examined, wich represent 66,83 % from the total number of species recorded from this area.

Sampling sites

The sampling sites, situated mostly along the tributaries of the rivers mentioned above, were located at different altitudes (from 110 to 1400 m.a.s.l). The collecting sites are presented according to the following list (Fig. 1):

River Someş catchment area:

S1. Arcalia, Şieu stream, tributary of Someşul Mare river, 330 m
S2. Cluj town, Someşul Mic, 340 m
S3. Floreşti, Someşul Mic river, 350 m
S4. Chinteni, artificial ponds and channels, 380 m
S5. Doda Pilii, Someşul Cald river, 940 m
S6. Ic Ponor, Someşul Cald river downstream to the gorge, 950 m
S7. Cheile Someşului Cald, 1070 m
S8. Cetatea Rădesii, a natural cave in the spring sector of the Someşul Cald river, 1100 m

River Mureş catchment area:

M1. Reghin town, 390 m
M2. Rimetea, Piatra Secuiului, springs in rocks, Arieş catchments area, 400 m
M3. Tureni, Tureni gorge, Turului stream, Arieş catchments area, 410 m
M4. Subcetate, Târnava Mare river, 465 m
M5. Răstolița, brooks near Mureş river, 490 m
M6. Androneasa, near Mureş, 500 m
M7. Poruț, Iara stream, 500 m

M8. Poşaga de Sus, Scărița Belioara Nature Reserve Area, Arieş catchments area, 520 m

M9. Praid, Târnava Mică river, 550 m

M10. Valea Ierii, Iara river, Arieş catchments area, 570 m

M11. Remetea, Gheorgheni Depression, 730 m

M12 Voşlobeni, Senetea, eutrophic pools and moors near Mureş, 780 m

M13 Retezat, Gura Zlata, mountainous brooks, 800 m

M14 Arieşeni, springs systems on the source of the Arieş river, 840 m

M15 Băişoara, mountainous springs at 1385 m

River Crişuri catchment area:

C1 Cefa, fischery ponds, 110 m

C2 Vadul Crişului, Crişul Repede gorge, 260 m

C3 Aciuța, Crişul Alb river catchment area, 300 m

C4 Avram Iancu, Crişul Negru river catchments area, 330 m

C5 Valea Drăganului, Drăgan stream, tributary of Crişul Repede, 400 m

C6 Valea Iadului, mountainous brooks at 420 m

C7 Blăjeni, Crişul Alb river, 470 m

C8 Vlădeasa, springs and brooks in spruce fir forest, 1400 m

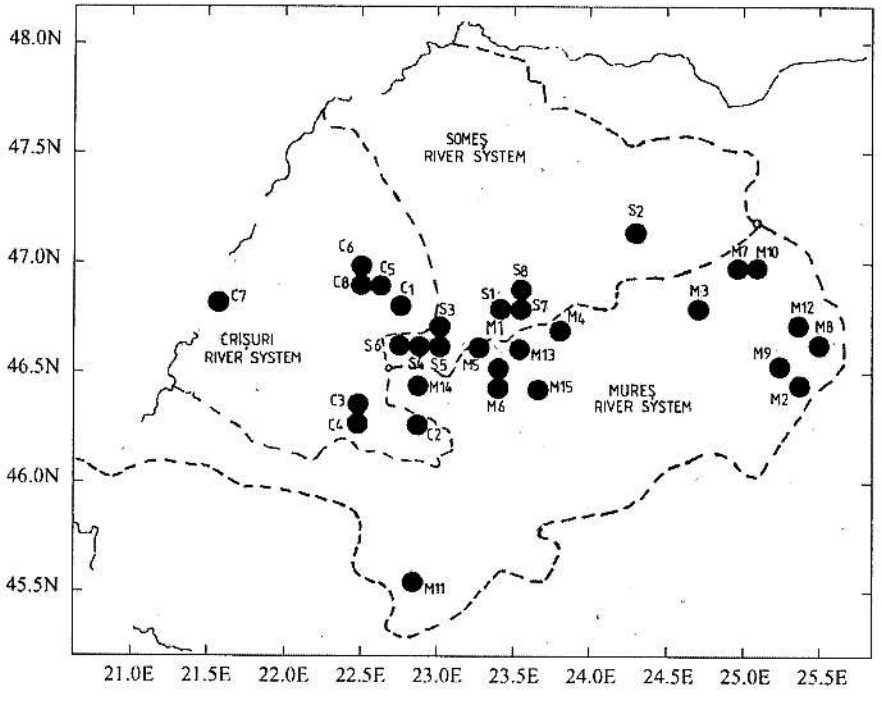

Fig. 1. **Sampling sites in the area investigated (explications see in the text).**

Results and discussion

The total number of trichoptera species is 193, from which a number of 129 species result from personal investigations. A number of 31 collecting sites was studied. A number of 9 trichoptera species are recorded for the first time from this area: *Allotrichi pallicornis, Tinodes kimminsi, Limnephilus flavospinosus, Limnephilus incisus, Anabolia furcata, Annitella obscurata, Lithax obscurus, Oecetis notata, O. testacea.* The presence of another species have not been confirmed during our investigations. These species are: *Rhyacophila furcifera, R. philopotamoides, Synagapetus armatus, S. iridipennis, Agapetus fuscipes, A. rectigonopoda, Stactobia maclachlani, Ortotrichia angustella, Hydroptila sparsa, Wormaldia subnigra, Hydropsyche botosaneanui, H. bulgaromanorum, H. ornatula, H. tabacarui, Polycentropus excisus, Holocentropus picicornis, Lipe phaeopa, Tinodes rostocki, Trichostegia minor, Phryganea bipunctata, P. grandis, Oligotricha striata, Oligostomis reticulata, Brachicentrus montanus, Oligoplectrum maculatum, Apatania carpathica, Drusus biguttatus, D. buscathensis, Drusus trifidus, Limnephilus binotatus, L. fuscicornis, Grammotaulius nitidus, Glyphotaelius pellucidus, Phacopteryx brevipennis, Potamophylax milleni, Chionophylax mindszentyi, Melampophylax polonicus gutinicus, Isogamus aequalis, Anisogamus difformis, Micropterna sequax, Chaetopteryx polonica, C. sahlbergi, Psylopteryx psorosa carpathica, P. p. gutinensis, P. p. retezatica, Chaetopetygopsis maclachlani, Lithax niger, Crunoecia monospina, Athripsodes albifrons, A. cinereus, Ceraclea annulicornis, C. fulva, C. senilis, Ylides kawraiskii, Y. simulans, Oecetis furva, O. tripunctata, Setodes viridis, Leptocerus interruptus, Adicella filicornis, Sericostoma personatum, Beraeodes minutus.* Some of these species are vanished or extinct from these river systems.

The list of caddis fly species from the Someş, Mureş and Crişuri rivers and their tributaries is presented in Table 1. The species are presented with their ecological requirement and the present status of threat in the three river systems.

The caddis flies communities of the upper and lower sectors of these rivers show considerable differences. The mountainous region is rich in species, the number varies from 71 (Someş river system) to 141 (Mureş river system), containing a large number of rare and endemic species. Some of these species are charactheristic to one or two river systems, they do not occur elsewhere, only in the spring sector or they are very rare, ex. *Rhyacophila aquitanica, R. laevis, R. orghidani, Wormaldia pulla, Hydropsyche tabacarui, Plectrocnemia brevis, P. kisbelai, Micrasema minimum, Drusus romanicus, Rhadicoleptus alpestris, Potamophylax jungi, P. pallidum, Chaetopteryx biloba, Oecetis testacea,* etc. Some of these species can be found here in high number. In the lower reaches of these rivers the diversity of the Trichoptera community is considerably reduced, it becomes rather uniform, and only a few species with wide ecological tolerance remain here. In the Mureş river system we can mention only the followings: *Hydropsyche bulgaromanorum, Grammotaulius nigropunctatus, Halesus digitatus, Setodes punctatus.* In the Someş river systems there were collected: *Hydropsyche contubernalis, Cheumatopsyche lepida, Ecnomus tenellus, Limnephilus griseus, Leptocerus tineiformis, Notidobia ciliaris.* The apparently high number of

species in the three Crişuri river systems (33) could be lower in the present, because the bulk of information came from oldest publications (MOCSARY, 1900; KERTESZ, 1902; MURGOCI, 1951,1953), and species like *Glossosoma intermedium, Hydropsyche angustipennis, Orthotrichia striata, Brachicentrsu subnubilus, Potamophylax latipennis, Parachiona picicornis, Stenophylax permistus, Silo piceus, Sericostoma flavicorne, S. personatum, Berae pullata, Beraeodes minutus* are absent in the upper sector of these rivers. Our investigations cover only the mountainous sector of these rivers; a more intensive sampling along in the lower sector it is also necessary.

The most diverse caddis fly communities were collected in the Mureş catchment area with 164 trichoptera species, with a high number of species in the mountainous sector (141 species). In the hilly region, with intensive agricultural and industrial activity, the number of species increased to 57. In the lower sector only 5 species were recorded. The aquatic communities were almost distroyed or significantly impoverished.

The situation along the Someş catchment area is similar to those of the Mureş systems, with 113 species, but in the mountainous sector there were identified up to the present only 71 species. The hilly region has still a rich fauna, with 61 species, but the lower sector contains only 7 ecological widespread species.

In the three Crişuri river systems the total number of caddis fly species was 103, most of these species being found in the mountainous region (82). Here the hilly region contains the lowest number of species, only 11, but the lowland courses have a relatively high diversity (30 species) as compared with the two previous river systems.

Categorization of the threatened species

The most important mention in species categorization must be done here. After the very intensive investigation of the caddis fly fauna of Romania, made mostly by BOTOŞĂNEANU (1952-1975) and MURGOCI (1951-1959), no futhers results have been published for almost 30 years. Only in the nineties some important contibutions were published (CIUBUC, 1993, BOTOŞĂNEANU, 1993, 1995), mostly based on older collected data. The author started to examinate the caddis fly fauna of these river systems in the year 1994. Some of these result have already been published. The intensity of our collecting activities was not uniform along the different rivers, but the quantity of the collected material helps us to draw some conclusions. In this situation, the list of the species presented in each category must be taken carefully. The author's aim was to gather all the information witch can serve in the protective and restoration activities in the river systems investigated. In the present no species are protected by law in Romania. The category used is based on works of KLIMA, 1994, 1998, UHERKOVICH and NÓGRÁDI, 1999.

0 Unknown (insufficiently known). A large number of Trichoptera species from each river systems can be introduce here, due to the very few recent publications in the last 20-30 years. Our collecting data cover only a part (mostly mountainous and hilly

sectors) of these river systems, of all these previously records should be reconsidered in the future.

We can mention here a number of 40 species from the Someş river system, 46 from the Mureş river system and 65 from Crişuri river system (see Table 1).

1. *Extinct or vanished.* Here we can mention species whose formerly known habitats have been anihilated or heavily injuried, and authentic specimens have not been collected in the last 40-50 years. A large number of river dwelling trichoptera have no recent data, even if the identification could be valid. The majority of eutrophic pools, for ex., from the suburban area near Cluj, in the Someş river system, have been already destroyed by human activities. This was the only known previously record for *Trichostegia minor* in the area investigated.

We can mention here a number of 11 species from the Someş river system, 16 from the Mureş river system and 11 from the Crişuri river system (see Table 1).

2. *Endangered.* These species have few, isolated populations, generally, with low abundance. Due to the favorable local conditions, the number of specimens in some localities investigated by us may be high. In this category enter the majority of our endemic taxa and some relict or rare species, with diminishing populations all over Europe.

We can mention here a number of 4 species from the Someş river system, 16 from the Mureş river system and 4 from the Crişuri river system (see Table 1).

3. *Vulnerable.* The recent quantity data of these species show diminished populations in comparison with the previous records, or the distribution area of ceratin species are limited because of unfavorable changes in the environment. They have been observed nowadays sporadical in some placeses.

We can mention here a number of 8 species from the Someş river system, 21 from the Mureş river system and 2 from the Crişuri river system (see Table 1).

4. *Presumably vulnerable.* At the present they have strong populations in the river systems investigated, althought these populations may decline and shrink due to degradation of their habitats.

We can mention here a number of 22 species from the Someş river system, 39 from the Mureş river system and 10 from the Crişuri river system (see Table 1).

The rest of the species are not yet threatened. These species are able to adapt themselves to degradation and pollution. Relatively few ceratin species of trichoptera belong to these (more or less discussable) group, and the reactions to the source of pollutions must be investigated for each species in the future for a correct evaluation.

We can mention here a number of 30 species from the Someş river system, 29 from the Mureş river system and 11 from the Crişuri river system (see Table 1). The majority of these species are stream dwelling species in the mountainous area, where the water quality is still good or acceptable. This situation should be changed in the

future, if we do not make efforts to keep the recent habitats of these species clear and unpolluted.

Table 1.

River systems: S – Someş river catchment area, M – Mureş river catchment area, C – Crişul river catchment area, Mo – montainous area, H – hilly region, L – lowland sector

Ecology: E, G – all types of running water, K – crenal, R – rithral, P – potamal, L – standing water, M – marches, H – hygropteric biocenosis,

Source of information: * only personal collecting data, ° only bibliographical quoted data, published before 1975, . – up to the present have no published data from that river system, + - present, - absent

The present status of treath: 0 – unknown or unsufficiently known; 1 – exticnt of vanished; 2 – endangered; 3 – vulnerable; 4 - presumed vulnerable; n - not threatened

		E	S	Mo	H	L	M	Mo	H	L	C	Mo	H	L
	RHYACOPHILIDAE													
1	*Rhyacophila aquitanica* McLACHL.,1879	R	3	+	-	-	3	+	-	-	.	.	.	.
2	*Rhyacophila fasciata* HAGEN, 1859	R,P	n	+	-	-	n	+	-	-	n	+	-	-
3	*Rhyacophila furcifera* KLAPALEK, 1904°	R	.	.	.	.	3	+	-	-	.	.	.	.
4	*Rhyacophila laevis* PICTET, 1834	K	0	+	-	-	4	+	-	-	0	+	-	-
5	*Rhyacophila mocsaryi* KLAPALEK, 1898	R	4	+	-	-	4	+	-	-	0	+	-	-
6	*Rhyacophila motasi* BOTOSANEANU, 1957	K,R	2	+	-	-	0	+	-	-	0	+	-	-
7	*Rhyacophila nubila* (ZETTERSTEDT, 1840)	R,P	n	+	+	-	n	+	+	-	n	+	+	-
8	*Rhyacophila obliterata* McLACHLAN, 1863	R	n	+	+	-	n	+	+	-	n	+	+	-
9	*Rhyacophila orghidani* BOTOSANEANU, 1952	R	3	+	-	-	3	+	-	-	0	+	-	-
10	*Rhyacophila philopotamoides* McLACHLAN, 1879°	K,R	0	+	-	-	.	.	.	.	0	+	-	-
11	***Rhyacophila polonica* McLACHLAN, 1879**	R	4	+	-	-	4	+	-	-	0	+	-	-
12	*Rhyacophila torrentium* PICTET, 1834	R	0	+	-	-	4	+	-	-	0	+	-	-
13	*Rhyacophila tristis* PICTET, 1834	R	0	+	-	-	4	+	-	-	0	+	-	-
	Glossosomatidae													
14	*Glossosoma boltoni* CURTIS, 1834	R,P	.	.	.	.	4	+	+	-	0	+	-	-
15	*Glossosoma conformis* NEBOISS, 1963	R	0	+	-	-	3	+	-	-	0	+	-	-
16	*Glossosoma discophorum* KLAPALEK, 1902	R	.	.	.	.	0	+	-	-	0	+	-	-
17	*Glossosoma intermedium* KLAPALEK, 1892	R	.	.	.	.	2	+	-	-	1	-	-	+
18	*Synagapetus armatus* (McLACHLAN, 1879) °	K	0	+	-	-	.	.	.	.	.	.	.	.
19	*Synagapetus iridipennis* (McLACHLAN, 1879) °	K,R	.	.	.	.	2	+	-	-	.	.	.	.
20	*Synagapetus mosely* (ULMER, 1938)	K,R	.	.	.	.	2	+	-	-	.	.	.	.
21	*Agapetus delicatulus* McLACHLAN, 1884	R,P	.	.	.	.	4	+	+	-	.	.	.	.
22	*Agapetus fuscipes* CURTIS, 1834°	K,R	.	.	.	.	0	+	-	-	.	.	.	.
23	*Agapetus laniger* (PICTET, 1834)	R,P	0	-	+	-	n	+	+	-	0	+	-	-

Table 1. (continued)

		E	S	Mo	H	L	M	Mo	H	L	C	Mo	H	L
24	*Agapetus ochripes* CURTIS, 1834	R,P	.	.	.	.	n	+	-	-	.	.	.	.
25	*Agapetus rectigonopoda* BOTOSANEANU, 1957°	R,K	.	.	.	.	.	.	.	.	2	+	-	-
	Hydroptilidae													
26	*Stactobia maclachlani* KIMMIS, 1949°	H	.	.	.	.	.	.	.	.	0	+	-	-
27	*Orthotrichia angustella* McLACHLAN, 1865°	R,P,L	.	.	.	.	0	-	+	-	0	-	-	+
28	*Oxyethira flavicornis* (PICTET, 1834)	P,L	n	-	+	-	.	.	.	.	0	-	-	+
29	*Itytrichia lamellaris* EATON, 1873	R,P	.	.	.	.	0	-	+	-	.	.	.	.
30	*Hydroptila frocipata* (EATON, 1873)	R,P	n	-	+	-	n	+	+	-	n	+	-	-
31	*Hydroptila lotensis* MOSELY, 1930	P,R	0	-	+	-	3	+	+	-	0	+	-	-
32	*Hydroptila simulans* MOSELY, 1920	R,P	.	.	.	.	0	+	-	-	.	.	.	.
33	*Hydroptila sparsa* CURTIS, 1834°	P	.	.	.	.	0	-	+	-	.	.	.	.
34	*Agraylea sexmaculata* CURTIS, 1834	L	n	-	+	-	.	.	.	.	0	-	-	+
35	*Allotrichia pallicornis* (EATON, 1873)*	R,P	.	.	.	.	3	+	-	-	.	.	.	.
	Philopotamidae													
36	*Philopotamus montanus* DONOVAN, 1813	R	0	+	-	-	n	+	-	-	n	+	-	-
37	*Philopotamus variegatus* (SCOPOLI, 1763)	R	n	+	-	-	0	+	-	-	0	+	-	-
38	*Wormaldia occipitalis* (PICTET, 1834)	H,R	0	+	-	-	4	+	+	-	0	+	-	-
39	*Wormaldia pulla* (McLACHLAN, 1878)	K,R	0	+	-	-	2	+	-	-	.	.	.	.
40	*Wormaldia subnigra* (McLACHLAN, 1865) °	R,P	.	.	.	.	0	+	-	-	.	.	.	.
	Hydropsychidae													
41	*Hydropsyche angustipennis* (CURTIS, 1834)	R,P	n	-	+	-	n	+	+	-	1	-	-	+
42	*Hydropsyche botosaneanui* MARINKOVIC, 1966°	R	0	+	-	-	.	.	.	.	.	.	.	.
43	*Hydropsyche bulbifera* McLACHLAN, 1878	R,P	n	-	+	-	n	+	+	-	0	+	-	-
44	*Hydropsyche bulgaromanorum* MALICKY, 1977°	P	.	.	.	.	0	-	-	+	0	-	-	+
45	*Hydropsyche contubernalis* McLACHLAN, 1865	R,P	n	-	+	+	n	+	+	-	n	+	+	+
46	*Hydropsyche fulvipes* CURTIS, 1834	R	.	.	.	.	0	+	-	-	0	+	-	-
47	*Hydropsyche instabilis* (CURTIS, 1834)	R	.	.	.	.	n	+	+	-	n	+	-	-
48	*Hydropsyche modesta* NAVAS, 1925	R,P	n	-	+	-	n	-	+	-	n	+	-	-
49	*Hydropsyche ornatula* McLACHLAN, 1878°	P,R	.	.	.	.	0	-	+	-	.	.	.	.
50	*Hydropsyche pellucidula* (CURTIS, 1834)	R,P	n	+	+	-	n	+	+	-	n	+	+	-
51	*Hydropsyche saxonica* McLACHLAN, 1884	R,P	4	-	+	-	4	+	+	-	0	+	-	-
52	*Hydropsyche tabacarui* BOTOSANEANU, 1960°	R	.	.	.	.	2	+	-	-	2	+	-	-

Table 1. (continued)

		E	S	Mo	H	L	M	Mo	H	L	C	Mo	H	L
53	*Cheumatopsyche lepida* (PICTET, 1834)	R,P	n	-	+	+	4	+	+	-	4	+	+	-
	Polycentropodidae													
54	*Neureclipsis bimaculata* (LINNE, 1758)	P,R	4	-	+	-	4	-	+	-	.	.	.	.
55	*Plectrocnemia brevis* McLACHLAN, 1871	K,R	.	.	.	.	3	+	-	-	.	.	.	.
56	*Plectrocnemia conspersa* (CURTIS, 1834)	K,R	.	.	.	.	4	+	-	-	4	+	-	-
57	*Plectrocnemia kisbelai* BOTOSANEANU, 1976	R	.	.	.	.	2	+	-	-	.	.	.	.
58	*Polycentropus excisus* KLAPALEK, 1894°	R	.	.	.	.	0	+	-	-	.	.	.	.
59	*Polycentropus flavomaculatus* (PICTET, 1834)	G	0	-	+	-	4	+	-	-	0	+	-	-
60	*Polycentropus irroratus* CURTIS, 1835	R	.	.	.	.	2	+	-	-	.	.	.	.
61	*Holocentropus picicornis* (STEPHENS, 1836) °	L,M	.	.	.	.	2	+	-	-	.	.	.	.
62	*Cyrnus trimaculatus* (CURTIS, 1834)	L,P,R	.	.	.	.	4	+	-	-	0	+	-	-
	Psychomyiidae													
63	*Psychomyia pusilla* (FABRICIUS, 1781)	P,R,L	n	+	+	-	n	+	+	-	n	+	-	+
64	*Lype phaeopa* (STEPHENS, 1836) °	L,P,R	.	.	.	.	0	-	+	-	.	.	.	.
65	*Lype reducta* (HAGEN, 1868)	R,P	0	+	-	-	3	+	+	-	.	.	.	.
66	*Tinodes kimminsi* SYKORA, 1962*	K	.	.	.	.	2	+	-	-	.	.	.	.
67	*Tinodes rostocki* McLACHLAN, 1878°	R,K	4	+	-	-	.	.	.	.	4	+	-	-
	Ecnomidae													
68	*Ecnomus tenellus* (RAMBUR, 1842)	L	n	-	+	+	n	-	+	-	.	.	.	.
	Phryganeidae													
69	*Trichostegia minor* (CURTIS, 1834) °	L,P	1	-	+	-	.	.	.	.	.	.	.	.
70	*Agrypnia pagetana* CURTIS, 1835	L	4	-	+	-	.	.	.	.	.	.	.	.
71	*Agrypnia varia* (FABRICIUS, 1793)	L,M	n	-	+	-	n	+	+	-	.	.	.	.
72	*Phryganea bipunctata* RETZIUS, 1783°	L	1	-	+	-	.	.	.	.	.	.	.	.
73	*Phryganea grandis* LINNE, 1758°	L	1	-	+	+	0	-	+	-	.	.	.	.
74	*Oligotricha striata* (LINNE, 1758) °	L	0	+	+	-	0	+	-	-	1	+	-	+
75	*Oligostomis reticulata* (LINNE, 1761) °	G	.	.	.	.	1	-	+	-	.	.	.	.
	Brachycentridae													
76	*Brachicentrus montanus* KLAPALEK, 1892°	R	.	.	.	.	1	+	-	-	0	+	-	-
77	*Brachicentrus subnubilus* CURTIS, 1834	P	.	.	.	.	4	+	-	-	0	-	-	+
78	*Oligoplectrum maculatum* (FOURCROY, 1785) °	P,R	0	-	+	-	0	+	+	-	.	.	.	.
79	*Micrasema minimum* McLACHLAN, 1876	R	.		.	.	3	+	-	-	0	+	-	-
	Limnephilidae													
80	*Ironoquia dubia* (STEPHENS, 1837)	R	.	.	.	.	3	+	+	-	.	.	.	.

Table 1. (continued)

		E	S	Mo	H	L	M	Mo	H	L	C	Mo	H	L
81	*Apatania carpathica* (SCHMID, 1954) °	K,R	0	+	-	-	.	.	.	.	.	.	.	.
82	*Drusus biguttatus* (PICTET, 1834) °	R,K	.	.	.	.	0	+	-	-	.	.	.	.
83	*Drusus brunneus* KLAPALEK, 1898	R,K	0	+	-	-	4	+	-	-	.	.	.	.
84	*Drusus buscathensis* BOTOSANEANU, 1960°	K,R	.	.	.	.	2	+	-	-	.	.	.	.
85	*Drusus discolor* (RAMBUR, 1842)	R	0	+	-	-	0	+	-	-	.	.	.	.
86	*Drusus romanicus* MURGOCI & BOTOS.,1954	R	.	.	.	.	2	+	-	-	0	+	-	-
87	*Drusus tenellus* (KLAPALEK, 1898)	R	0	+	-	-	0	+	-	-	0	+	-	-
88	*Drusus trifidus* McLACHLAN, 1868°	K,R	.	.	.	.	0	+	-	-	.	.	.	.
89	*Ecclysopteryx dalecarlica* KOLENATI, 1848	R	n	+	-	-	n	+	-	-	n	+	-	-
90	*Ecclysopteryx madida* (McLACHLAN, 1867)	R	0	+	-	-	4	+	-	-	0	+	+	-
91	*Limnephilus affinis* CURTIS, 1834	G	n	+	+	-	n	+	+	-	0	-	-	+
92	*Limnephilus auricula* CURTIS, 1834	L	n	+	+	-	n	+	-	-	0	+	-	+
93	*Limnephilus binotatus* CURTIS, 1834°	L	1	-	-	+	.	.	.	.	.	.	.	.
94	*Limnephilus bipunctatus* CURTIS, 1834	L,R	4	+	+	-	4	+	+	-	1	+	+	+
95	*Limnephilus coenosus* CURTIS, 1834	R,M	.	.	.	.	3	+	+	-	.	.	.	.
96	*Limnephilus decipiens* (KOLENATI, 1848)	L,R	4	-	+	-	n	+	-	-	4	+	-	-
97	*Limnephilus extricatus* McLACHLAN, 1865	G	n	+	+	-	n	+	+	-	4	+	-	-
98	*Limnephilus flavicornis* (FABRICIUS, 1789)	L	4	+	+	-	0	-	+	-	4	-	+	+
99	*Limnephilus flavospinosus* (STEIN, 1874) *	L	.	.	.	.	0	+	-	-	.	.	.	.
100	*Limnephilus fuscicornis* RAMBUR, 1842°	L	1	-	+	-	0	-	+	-	1	-	-	+
101	*Limnephilus griseus* (LINNE, 1759)	G	n	+	+	+	n	+	+	-	0	+	-	+
102	*Limnephilus hirsutus* (PICTET, 1834)	L,P,R	.	.	.	.	4	+	+	-	3	+	-	-
103	*Limnephilus ignavus* McLACHLAN, 1865	L,R	.	.	.	.	4	+	-	-	.	.	.	.
104	*Limnephilus incisus* (CURTIS, 1834) *	L	.	.	.	.	0	+	-	-	.	.	.	.
105	*Limnephilus lunatus* CURTIS, 1834	L	n	+	+	-	n	+	+	-	0	-	-	+
106	*Limnephilus rhombicus* LINNE, 1758	G	n	-	+	-	n	+	+	-	0	+	-	-
107	*Limnephilus sparsus* CURTIS, 1834	G	n	+	+	-	n	+	-	-	.	.	.	.
108	*Limnephilus stigma* CURTIS, 1834	G	4	-	+	-	0	+	-	-	.	.	.	.
109	*Limnephilus vittatus* (FABRICIUS, 1798)	L,R	n	+	+	-	n	+	+	-	.	.	.	.
110	*Grammotaulius nigropunctatus* (RETZIUS, 1783)	G	4	+	+	-	4	+	+	+	0	+	+	-
111	*Grammotaulius nitidus* (MULLER, 1764) °	L,P	1	-	+	+	.	.	.	.	.	.	.	.
112	*Glyphotaelius pellucidus* (RETZIUS, 1783) °	G	0	-	+	-	4	+	-	-	0	-	-	+
113	*Anabolia furcata* BRAUER, 1857*	L,P	.	.	.	.	4	+	-	-	.	.	.	.

Table 1. (continued)

		E	S	Mo	H	L	M	Mo	H	L	C	Mo	H	L
114	*Asynarchus lapponicus* ZETTERSTEDT, 1848*	R,M	.	.	.	.	0	+	-	-	.	.	.	.
115	*Phacopteryx brevipennis* (CURTIS, 1834) °	L,M	0	-	+	-	3	+	-	-	.	.	.	.
116	*Rhadicoleptus alpestris* (KOLENATI, 1848)	R,M,K	3	+	-	-	3	+	-	-	0	+	-	-
117	*Potamophylax cingulatus* (STEPHENS, 1837)	R	3	+	-	-	4	+	-	-	0	+	-	-
118	*Potamophylax jungi* MEY, 1976	R	.	.	.	.	2	+	-	-	2	-	+	-
119	*Potamophylax latipennis* (CURTIS, 1834)	R	4	+	-	-	4	+	-	-	0	+	-	+
120	*Potamophylax luctuosus* (PILL. & MITT., 1793)	R	4	+	-	-	4	+	-	-	4	+	-	-
121	*Potamophylax milleni* (KLAPELEK, 1898) °	R	.	.	.	.	3	+	-	-	1	+	-	-
122	*Potamophylax nigricornis* (PICTET, 1834)	R	.	.	.	.	3	+	-	-	0	+	-	-
123	*Potamophylax pallidus* (KLAPALEK, 1900)	R	.	.	.	.	3	+	-	-	0	+	-	-
124	*Chionophylax mindszentyi* SCHMID, 1951°	K,R	0	+	-	-	0	+	-	-	0	+	-	-
125	*Halesus digitatus* (SCHRANK, 1781)	R,P,L	0	+	-	-	4	+	-	+	.	.	.	.
126	*Halesus tesselatus* (RAMBUR, 1842)	G	4	-	+	-	0	+	-	-	.	.	.	.
127	*Melampophylax nepos triangulifera* BOTOS., 1957	K,R	.	.	.	.	3	+	-	-	.	.	.	.
128	*Melampophylax polonicus gutnicus* BOTOS., 1994°	K,R	2	+	-	-	.	.	.	.	.	.	.	.
129	*Isogamus aequalis* (KLAPALEK, 1907) °	R	3	+	-	-	.	.	.	.	.	.	.	.
130	*Anisogamus difformis* McLACHLAN, 1875°	R	.	.	.	.	1	.	.	.	.	.	.	.
131	*Parachiona picicornis* (PICTET, 1834)	K	3	+	-	-	3	+	-	-	1	+	-	+
132	*Micropterna nycterobia* McLACHLAN, 1875	R,K	n	+	+	-	n	+	+	-	0	+	-	-
133	*Micropterna sequax* McLACHLAN, 1875°	R	0	+	-	-	4	+	-	-	0	+	-	-
134	*Micropterna testacea* (GMELIN, 1790)	R	0	+	-	-	0	+	-	-	0	+	-	-
135	*Stenophylax permistus* McLACHLAN, 1895	R	n	+	+	-	n	+	-	-	1	+	-	+
136	*Stenophylax vibex* (CURTIS, 1834)	R	4	+	+	-	0	+	-	-	0	+	-	-
137	*Allogamus auricollis* (PICTET, 1834)	R	4	+	-	-	0	+	-	-	.	.	.	.
138	*Allogamus dacicus* SCHMID, 1951	R	.	.	.	.	2	+	-	-	.	.	.	.
139	*Allogamus uncatus* (BRAUER, 1857)	R	4	+	-	-	4	+	-	-	0	+	-	-
140	*Chaetopteryx biloba* BOTOSANEANU, 1960	R,K	2	+	-	-	.	.	.	.	0	+	-	-
141	*Chaetopteryx bosniaca cissylvanica* BOTOS., 1994	R	0	+	-	-	0	+	-	-	0	-	+	-
142	*Chaetopteryx polonica* DZIEDZIELEWICZ, 1889°	R	3	+	-	-	.	.	.	.	.	.	.	.

Table 1. (continued)

		E	S	Mo	H	L	M	Mo	H	L	C	Mo	H	L
143	*Chaetopteryx sahlbergi* McLACHLAN, 1876°	R	.	.	.	.	.	.	.	.	1	-	-	+
144	*Psylopteryx curviclavata* BOTOSANEANU, 1957	R,K	0	+	-	-	2	+	-	-	0	+	-	-
145	*Psylopteryx psorosa carpathica* SCHMID, 1952°	K,R	0	+	-	-	.	.	.	.	.	.	.	.
146	*Psylopteryx psorosa gutinensis* MEY & BOTO., 1985°	K,R	0	+	-	-	.	.	.	.	.	.	.	.
147	*Psylopteryx psorosa retezatica* BOTO. & SCHN.,1978°	K,R	.	.	.	.	0	+	-	-	.	.	.	.
148	*Chaetopterygopsis maclachlani* STEIN, 1874°	R,K	.	.	.	.	.	.	.	.	2	+	-	-
149	*Annitella lateroproducta* (BOTOSANEANUI, 1952)	R	3	+	-	-	4	+	-	-	4	+	-	-
150	*Annitella obscurata* (McLACHLAN, 1876) *	R,P	.	.	.	.	4	+	-	-	.	.	.	.
	Goeridae													
151	*Goera pilosa* (FABRICIUS, 1775)	R,P,L	0	-	+	-	4	+	-	-	4	+	-	-
152	*Lithax niger* (HAGEN, 1859) °	K,R	0	+	-	-	0	+	-	-	.	.	.	.
153	*Lithax obscurus* (HAGEN, 1859) *	K,R	.	.	.	.	0	+	-	-	.	.	.	.
154	*Silo graellsi* PICTET, 1865	R	n	+	-	-	n	+	-	-	0	+	-	-
155	*Silo pallipes* (FABRICIUS, 1781)	R	.	.	.	.	3	+	-	-	.	.	.	.
156	*Silo piceus* BRAUER, 1857	R	0	-	+	-	4	+	-	-	1	+	-	+
	Lepidostomatidae													
157	Lepidostoma hirtum *(FABRICIUS, 1775)*	P,R	.	.	.	.	4	+	+	-	4	+	-	-
158	Lasiocephala basalis *(KOLENATI, 1848)*	R,P	.	.	.	.	3	+	+	+	.	.	.	.
159	Crunoecia monospina *BOTOSANEANU, 1960°*	R,K	.	.	.	.	2	+	-	-	.	.	.	.
	Leptoceridae													
160	Athripsodes albifrons *(LINNE, 1758)* °	R	.	.	.	.	0	+	-	-	.	.	.	.
161	Athripsodes bilineatus *(LINNE, 1758)*	R,P	.	.	.	.	4	+	+	-	.	.	.	.
162	Athripsodes cinereus *(CURTIS, 1834)* °	L,P	.	.	.	.	1	-	+	-	.	.	.	.
163	Athripsodes commutatus *(ROSTOCK, 1874)*	R,P	.	.	.	.	3	+	+	-	.	.	.	.
164	Ceraclea annulicornis *(STEPHENS, 1836)* °	L,P	1	-	+	-	1	-	+	-	.	.	.	.
165	Ceraclea dissimilis *(STEPHENS, 1836)*	L,P	.	.	.	.	0	-	+	-	n	+	-	-
166	Ceraclea fulva *(RAMBUR, 1842)* °	L	1	-	+	-	.	.	.	.	.	.	.	.
167	Ceraclea senilis *(BURMEISTER, 1839)* °	L	.	.	.	.	0	-	+	-	.	.	.	.
168	Mystacides azurea *(LINNE, 1761)*	L,P	4	-	+	-	4	+	+	-	.	.	.	.
169	Mystacides longicornis *(LINNE, 1761)*	L	n	-	+	-	1	-	+	-	.	.	.	
170	Mystacides nigra *(LINNE, 1761)*	L	0	-	+	-	4	+	-	-	.	.	.	.
170	Ylodes kawrauskii *(MARTYNOV, 1909)* °	P,R	2	-	+	-	2	+	-	-	.	.	.	.
172	Ylodes simulans *(TJEDER, 1929)* °	P,R	.	.	.	.	3	-	+	-	.	.	.	.
173	Oecetis furva *(RAMBUR, 1842)* °	L	.	.	.	.	1	+	-	-	.	.	.	.

Table 1. (continued)

		E	S	Mo	H	L	M	Mo	H	L	C	Mo	H	L
174	Oecetis lacustris *(PICTET, 1834)*	L	4	-	+	-	.	.	.	.	.	.	.	.
175	Oecetis notata *(RAMBUR, 1842)* *	P,L	.	.	.	.	.	.	.	.	0	+	-	-
176	Oecetis ochracea *(CURTIS, 1825)*	L	n	-	+	-	.	.	.	.	0	-	-	+
177	Oecetis testacea *(CURTIS, 1834)* *	L,P	.	.	.	.	.	.	.	.	2	+	-	-
178	Oecetis tripunctata *(FABRICIUS, 1793)* °	L, P	.	.	.	.	1	-	+	-	.	.	.	.
179	Setodes punctatus *(FABRICIUS, 1793)*	P	0	-	+	-	0	+	-	+	0	+	-	-
180	Setodes viridis *(FORUCROY, 1785)* °	P	1	-	+	-	.	.	.	.	.	.	.	.
181	Leptocerus interruptus *(FABRICIUS, 1775)* °	R,P	.	.	.	.	.	.	.	.	1	-	-	+
182	Leptoceris tineiformis *CURTIS, 1834*	L	n	-	+	-	n	-	+	-	.	.	.	.
183	Adicella filicornis *(PICTET, 1834)* °	K	.	.	.	.	0	+	-	-	0	+	-	-
	Sericostomatidae													
184	Notidobia ciliaris *(LINNE, 1761)*	R,L	n	+	+	-	0	+	-	-	0	-	-	+
185	Oecismus monedula *(HAGEN, 1859)*	R	3	+	-	-	1	+	-	-	3	+	-	-
186	Sericostoma flavicorne *SCHNEIDER, 1845*	R,P	.	.	.	.	n	+	-	-	1	+	-	+
187	Sericostoma personatum *(KIRBY & SPENCE, 1826)* °	R,K	0	+	-	-	1	+	-	-	1	-	-	+
	Bereidae													
188	Beraea pullata *(CURTIS, 1834)*	G	3	+	+	-	3	+	+	-	1	-	-	+
189	Beraeodes minutus *(LINNE, 1761)* °	G	.	.	.	.	0	+	-	-	1	-	-	+
190	Ernodes articularis *(PICTET, 1834)*	K,R	0	+	-	-	3	+	-	-	.	.	.	.
191	Ernodes vicinus *(McLACHLAN, 1879)*	K	.	.	.	.	2	+	-	-	.	.	.	.
	Odontoceridae													
192	Odontocerum albicorne *(SCOPOLI, 1763)*	R	4	+	-	-	4	+	-	-	.	.	.	.
193	Odontocerum hellenicum *MALICKY, 1972*	R	.	.	.	.	3	+	-	-	0	+	-	-

Conclusions

The Someş, Mureş and Crişuri river systems have a rich trichoptera fauna. Because of the different geographical and geological conditions, as well as the different sources of pollutions wich act along the river vallyes, the present status of threat of the trichoptera communities in these rivers can differ strongly. The trend of changes is directed towards the impoverishment of the caddis flies, with specific situations in each river sectors. A large number of stream dwelling trichoptera caddis flies in the mountainous area have strong populations, althought these populations may decline due to the degradation of habitats, mostly near localities (villages, towns). The high scientific value of these habitats consists in a large number of endemic or relict species developed in the spring sectors wich are strongly endangered by the wood-cutting actions here. In the mountainous area the construction of the dam-lakes (ex. in valleys of the Someşul Cald and Someşul Rece rivers) modified the water flow in these rivers. In addition, the unregulated tourism and construction of cottages can accelerate the

disappearance of some suitable habitats or sensitive species. The large agricultural crops in the immediate vicinity of the river banks, mostly in the middle and lower sections, pollute seriously the water with fertilizers and pesticides. The communal and industrial sewage-production of the industrial establishments along the middle and lower sector of these rivers is so intense that in some sectors it destroys the original fauna, some species have disappeared completely. The lower sector of these rivers became uniform, with a few ecologically indifferent species.

References

Botoşăneanu, L. (1952): *Rhyacophila furcifera* (KLAPALEK) BOTOS. syn. *Rhy. Mayeri var furcifera* KLAPALEK, 1904. Comun. Acad. R.P.R., 2, 9/10: 547-550.

Botoşăneanu, L. (1952): *Rhyacophila orghidanui* n.sp. (Trichcoptera, Rhyacophilidae) din Munţii Apuseni şi R.P.R., Comun.Acad.R.S.R., 2,11-12: 721-724.

Botoşăneanu, L. (1955): Note trichopterologice I. Bul.ştiinţ. Secţ.Şti.Biol., 7,3: 791-802.

Botoşăneanu, L. (1956): Contributions a la connaisance des stades aquatiques des Trichopteres crenobiontes: *Rhyacophila laevis* Pict., *Wormaldia triangulifera* McLach., *Drusus romanicus* Murg. et Botosaneanu., *Silo varipilosa* Bots. (Trichoptera).-Beitr.Entom. 6:590-624.

Botoşăneanu, L. (1957): Recherches sur les Trichopteres (imagos) de Roumania. Tjdsch. Ent., 100,2: 179-194.

Botoşăneanu, L. (1957): Quelques trichopteres nouveaux de Roumanie. Tjdsch. Ent. 100,2: 598-603.

Botoşăneanu, L. (1957): Neue Trichopteren Arten aus Rumanien. Senckenbergiana biol., 38, ": 61-65.

Botoşăneanu, L. (1958): Sur quelques *Triaenodes* (Trichoptera, Leptoceridae) du groupe *conspersa* CURTIS. Opusc.Ent. 28: 123-128.

Botoşăneanu, L. (1959): Cercetări asupra trichopterelor din Masivul Retezat şi Munţii Banatului. Biblio. Biol.Anim.,Ed.Acad.R.S.R., 1: 1-166.

Botoşăneanu, L. (1959): Recherches sur Trichopteres cavernicoles, principalment sur ceux collections "Biospeologica". Archs. Zool. Exp. et gener. Notes et Revue, 97/1: 32-50.

Botoşăneanu, L. (1960): Revision de quelques especies de *Philopotamus* Leach et de *Wormaldia* McL. (Trichoptera, Philopotamidae).-Acta.Soc.Entom.Cechosl. 57:223-228.

Botoşăneanu, L. (1960): Description de quatre nouvelles especies de Trichopteres de Roumanie. Ann. Mag. Nat. Hist., 13,3: 113-120.

Botoşăneanu, L. (1960): *Drusus buscatensis* n.sp. (Trichoptera, Ecclysopteryginae). Cas.Ces. Spol. Ent., 57:36-370.

Botoşăneanu, L. (1961): Materiaux por servir a'la connaissance des Trichopteres d'Europe orientale et centrale. Folia Ent. Hung., Ser.nov. 14,2: 11-91.

Botoşăneanu, L. (1965): Neue trichopterologische Fange in Poland, Rumanien und Bulgarien. Latv. Ent., 10: 53-60.

Botoşăneanu, L. (1966): Genurile *Stenophylax* şi *Micropterna* STEIN (Trichoptera) în România. Prezentare cu caracter sistematic. Lucr. Inst. Speol. "E. Racoviţă", 5: 99-114.

Botoşăneanu, L. (1967): Sur quelques *Plectrocnemia* des Carpates de Roumanie (Trichoptera, Polycentropodidae), Reichenbachia, 8,23: 269-273.

Botoşăneanu, L. (1972): Pour une milleure connaissance des *Micrasema* d'Europe (Trichoptera, Brachicentridae).-Fragmenta Entomologica 10(2): 65-106.

Botoşăneanu, L. (1973): Les Trichopteres (Insecta, Trichoptera) de l'espace carpato-balcanique, fournisseurs de documntes pour l-evolution. Riv.Idrobiol. (Perugia), 12, 2/3: 119-152.

Botoşăneanu, L. (1975): Die endemischem Trichopteren der Karpaten. Verh. Sechsten Int Symp. uber Entomofaunistk in Mitteleuropa: 91-103.

Botoşăneanu, L. (1993): A new caddisfly species from Romania and several species new to the country's fauna (Trichoptera). Ent. Zeitsch. 103/21:399-404.

Botoşăneanu, L. (1995): Additional documentes to the knowledge of the Trichoptera of Roumania, with data on European taxa from outside this country (Insecta, Trichoptera). Faun. Abh. Mus. Toerk. Drezden 20,6:57-88.

Ciubuc, C. (1993): Checklist of Romanian Trichoptera (Insecta). Extr. des Trav du Mus. d'Hist.Nat. Gr. Antipa, Bucuresti, 23: 11-147.

Higler, L., Tolkamp, H. (1982): Hydropsychidae as bio-indicators.-Environmental Monitoring and Assessment 3: 331-341.

Klima, F. (1994): Die aktuelle Gefahrdungsituation der Kocherfliegen Deutchlands (Insecta,Trichoptera).-Natur und Landschaft 69(11):511-518.

Klima, F. (1998): Rote Liste der Kocherfliegen (Trichoptera). In: Binot A et colab.: Rote Liste gefarderter Tiere Deutschlands.-Schriftenreiche fur Landschaftspflege und Naturschutz 55: 112-118.

Murgoci, A. (1951): Contribuţii la cunoaşterea trichopterelor din peşterile Munţilor Apuseni şi din regiunile Huniedoara şi Severin. Bull. Secţ. Şti.Biol, 3,4: 751-764.

Murgoci, A. (1953): Câteva genuri şi speci noi de trichoptere pentru fauna Romămiei. Bull. Secţ. Şti.Biol, 5,1: 29-36.

Murgoci, A. (1959): Donnes sur les imagos et les larves des Leptocerides (Trichoptera) de la R.P.R. Lucr. Ser. Şti. Staţiunii Zool. Mar. Agigea: 445-452.

Uherkovich Á., Nógrádi S. (1999): Protecetd and threatened caddisflies (Trichoptera) of Hungary. Proc. of the 9th Int. Symp. on Trichoptera, Chiang Mai: 291-297.

Ujvári J. (1972): Geografia apelor României. Edit. Ştiinţ., Bucureşti.

Ujvárosi L. (1995):Two new and some rare trichoptera species in the Romanian fauna. Bul. inf. Soc.lepid.rom., 6(1-2): 151-155.

Ujvárosi L. (1997): Study on the Trichoptera fauna in the Romanian section of the River Crişul Alb catchment area. Tiscia monograph series. Szolnok-Szeged-Tg.Mureş, pp.295-299.

Ujvárosi L. (1998): Trichopterele (Insecta: Trichoptera) din zona Cheile Someşului Cald (Ic Ponor). Bul.inf.Soc.lepid.rom., 9(3-4): 265-268.

Ujvárosi L. (1998): Four Trichoptera species new in the Romanian fauna. Entomol. Rom. 3:73-78.

Ujvárosi L., Nógrádi S. (1999): The female of *Potamophylax jungi* Mey, 1976 (Trichoptera, Limnephilidae). Braueria (Lunz am See, Austria) 26:24.

LUJZA UJVAROSI
"Babeş-Bolyai" University, Faculty of Biology and Geography,
Dept. of Zoology,
5-7 Clinicilor St.,
RO 3400 Cluj-Napoca
luiza@biolog.ubbcluj.ro