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ALGAL FLORA OF THE "VALEA MORII" - NATURE RESERVE AND SURROUNDING AREA (CLUJ COUNTY, ROMANIA)

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Abstract: Algal communities of the "Valea Morii" – Nature Reserve and surrounding area (Cluj County, Roumania). This paper is the first record that documents the qualitative structure of the algal communities inhabiting the creek crossing the Nature Reserve of botanic character – "Valea Morii" situated in Cluj County, Roumania. There have been identified 114 taxa belonging to the following major groups: Cyanoprokaryota (12 taxa), Rhodophyta (3 taxa), Bacillariophyta (92 taxa) and Chlorophyta (7 taxa). The diatoms are dominant in every season of the year, having their maximum in autumn. The species diversity of communities increases from upstream towards downstream according to the changes of natural local ecological conditions, but also due to human activities like sanitation measures and drainage of the bog, forest clearing, buildings, household waste waters or farming. As such, on a relatively short distance – just a few kilometers, the qualitative composition of the algal communities changes drastically. Upstream "Valea Morii" creek (sites 1-3) the communities dominated by acidophilous, microthermal, oligo-mesotrophic, xeno-, oligo- or β- mesosaprobic elements, markedly changed downstream. In sites 4-6 where the human impact is very evident, eutrophic, basiphilic - basibiontic saprophytes, some indicating critical saprobity levels (β-α-, α- or polisaprobity) overgrow the community, dominated by cosmopolitan algae.

Introduction

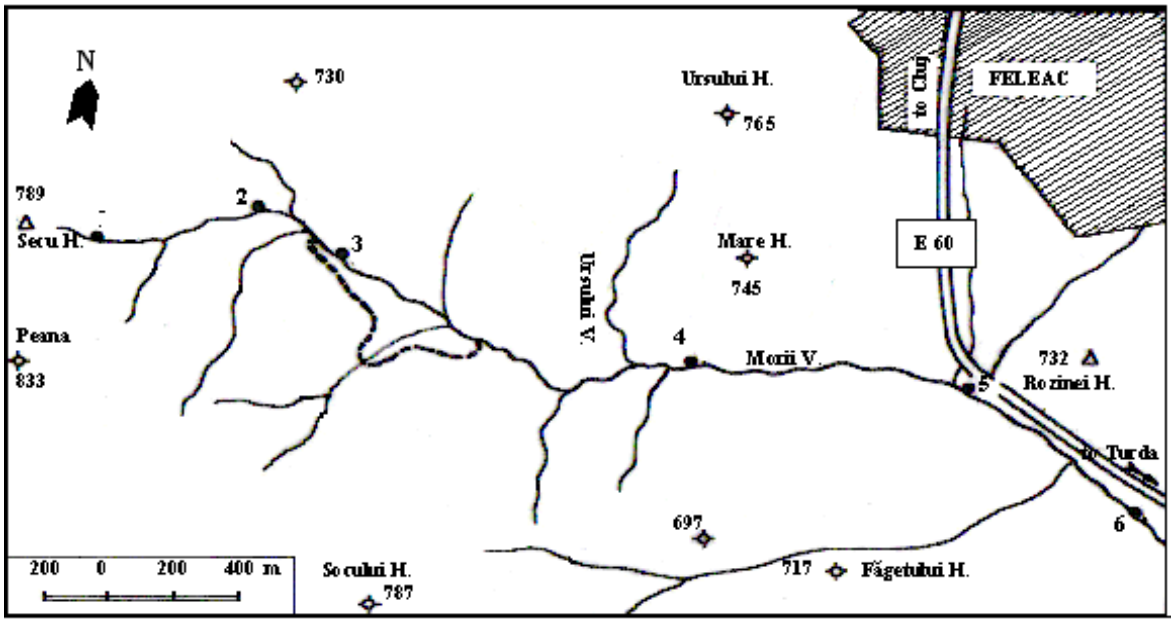
The "Valea Morii" Nature Reserve [5] or simply "Valea Morii" [16], was established by the Decision of the Council of Cluj County (No. 684/1974), and subsequently confirmed by the Law No. 5/2000. The preserved area is located on the bank of "Valea Morii" creek with a surface of 1 ha, it has botanical character and shelters rare plants, relicts or plant species with outstanding phytogeographical interest. In spite of the fact, that it has a reduced surface, this nature reserve (IVth category IUNC) preserves two habitat types: 7210 and 7230 of Habitat Directives, respectively 53.3 and 54.2 of the Berna Convention.

The catchment area of "Valea Morii" creek is situated south-west of Feleacu commune, below the top of "Făgetul Clujului" hill (Fig. 1), being surrounded by several other heights varying between 717 m a.s.l. – Făgetului Hill and 833 m a.s.l. – Peana Peak [3]. The creek belongs to the catchment area of the Arieş River, flowing into it at the town Turda. "Valea Morii" creek has several tributaries, most with narrow and deep channels with eroded, steep banks [10]. The right side tributaries, somewhat smaller, but more numerous, favored the settlement of swampy and boggy areas [9].

The soils of "Valea Morii" are mostly reddish-brown forest soils [8], of a peculiar genetic type occurring only in Transylvania, and belong to the category of brown forest soils. These soils are less dependent of vegetation type, but dependent of bedrocks consisting of reddish and striped clays, formed during Eocene and Oligocene, slipped and deposited to form the creek terraces. Characteristic for these soils is the loss of bases: are slightly acidic to neutral. Other important areas along the valley are covered with peat soil of "*Sphagnum*" type [2]. There are also present small patches of humid rendzinas, swampy, humus carbonatic soils, slightly alkaline to alkaline. Soil types, together with the nature of bedrocks [6] induce and influence the

properties of water and substratum from the "Valea Morii" creek that determine the pattern of the algal community structure.

The present investigations are the first ones performed on the periphyton of the "Valea Morii" creek and in the whole area. They have been carried out within a CNCSIS grant (A_{12}/372/2004) which purpose is to study biodiversity and to realize an ecological management plan. This paper deals with the preliminary results concerning the composition of algal communities occurring during summer and autumn.



Legend: - - - - - "Valea Morii" Reserve

Fig. 1: The catchment area of "Valea Morii" creek showing the sampling sites (1-6)

Materials and Methods

Periphytic algal samples (epilithon, epiphyton, epipsammon, epipelon) were collected in six sampling sites distributed in the "Valea Morii" creek, between the Căprioarelor Valley (left side tributary) and the international highway E 60 (Fig. 1), in June and October 2004. The samples were collected by employing usual standard methods, depending on the nature of substratum, and preserved in the field with 4% formalin. The determination of algae was performed with a Nikon Eclipse E400 light microscope, using the common and largely used key books. The identification was made at species level (Table 1) except in *Chlorococcum, Batrachospermum* and *Hildenbrandtia* genera.

Results and Discussion

There have been identified during June and October 2004 (Table 1) 114 algal taxa that belong to Cyanoprokaryota – 12 taxa, Rhodophyta – 3 taxa, Bacillariophyta – 92 taxa and Chlorophyta – 7 taxa. The benthonic algal communities of the creek are dominated by diatoms that represent 80% of the total number of species, the other groups being represented just by a few taxa. The green algae occur exclusively in the summer communities. Some of the blue-greens are epilithophytes, characteristic for the upper course of rivers with clean water (*Phormidium valderiae, Oscillatoria terebriformis*). Others indicate the organic loading of the water (*Oscillatoria chlorina, O. limosa, O. amoena*).

There were found no significant differences, except quantitative ones, among communities growing in the same site, but on different substrates (rocks, sand, silt, plant

remnants). Thus, at sampling site no. 3, the population of *Batrachospermum* sp. was found outstandingly abundant, forming dark mucilaginous masses on the stone surfaces, but other species present, mostly diatoms, occur with reduces number of individuals (Table 1). The occurrence of diatoms with high number of taxa in the periphyton of "Valea Morii" as compared with other algal groups is quite normal for the upper and middle courses of the creeks located in the temperate zone [4,7,11,12]. The presence in higher number of diatom species in autumn (Fig. 2) might suggest seasonal dynamics according to the usual pattern for temperate river

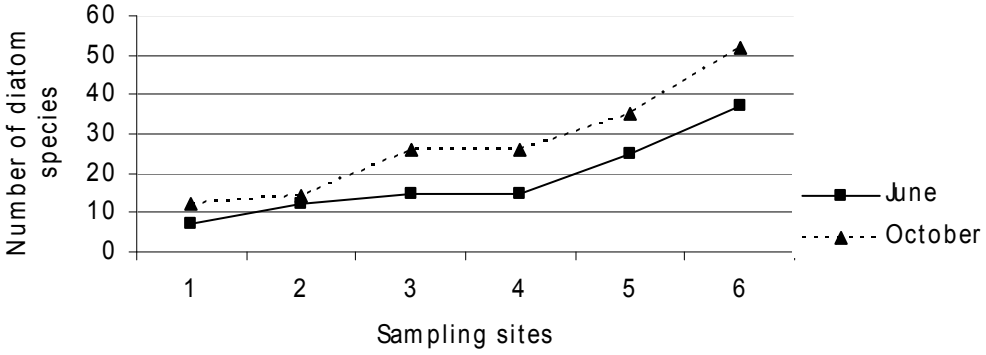


Fig. 2: Seasonal distribution of diatom species in "Valea Morii" creek

communities [1,17].

Another aspect worth pointing out (Table 1), concerns the changes in the structure of algal communities in the "Valea Morii" creek, from upstream towards downstream, depending on the modifications in physical, chemical and biotical conditions of the substratum and water in the catchment area. As result of these differences increases the number of species from site 1 (24 taxa identified) towards site 6 (68 taxa present) during both sampling seasons (Table 1). The same changes could be observed when only diatoms were considered (Fig. 2).

Besides natural causes, this situation is induced by anthropogenic factors. Below sampling site 3 (Fig.1), where sanitation measures, drainage and forest clearing have been performed, or further downstream where building activities take place and household wastes are deposited on the banks, or agricultural wastewaters flow into the creek (sites 5-6) the influence of human impact is quite evident. In the first three upstream sites the natural ecological factors are more conclusive upon the community structure. Low light intensity due to forest canopy shading, slightly acidic pH values of the reddish-brown forest soils induced the occurrence of acidophilic, oligo-mesotrophic algal forms like various species of *Pinnularia*, *Batrachospermum* sp., *Hildenbrandtia* sp. and some of the blue-green *Phormidium* and *Oscillatoria* species. The red algae and blue-greens grow abundantly forming a real "underwater turf" with brownish-olive color of red algae, or dark blue-green when consists mainly of cyanoprokaryotes. The cooler climate of the upper course of the creek due to local geographical conditions, like higher altitude and deep and narrow valley, as well as to forest shading [9] seem to justify the presence of the microthermal elements like *Achnanthes biasoletiana* and *Amphora montana*. These, besides *Batrachospermum* sp., *Hildenbrandtia* sp., *Phormidium corium* and *Oscillatoria terebriformis* are dominant in sampling sites 1-3. Of course, there have also been identified cosmopolitan elements in the upper sites like *Achnanthes minutissima, Caloneis bacillum, Cocconeis placentula, Cymbella minuta, Gomphonema parvulum* or *Navicula tripunctata*. Changes in the nature of substratum and consequently of water quality, the appearance of sand and silt on the bottom of the creek, due to the natural evolution of running waters according to the "river

continuum" concept [15], as well as due to human influence at sites 4-6, induce the increase of diversity in the algal communities.

These changes take place mainly at the level of the dimension of populations of the highly tolerant cosmopolitan elements like *Amphora pediculus, Cymbella sinuata, C. prostrata, Diploneis oblongella, Gomphonema parvulum, Gyrosigma acuminatum, Navicula cryptocephala, N. rhynchocephala, Nitzschia palea, N. sinuata* etc. Many of the species occurring in the lower sectors of the creek (sites 4-6) are eutrophic, basiphilic elements or even basibionts (*Achnanthes hungarica, Amphora ovalis, Cymbella tumida, Diatoma vulgare, Fragilaria ulna, Navicula cincta, Nitzschia dissipata, N. frustulum, Surirella brébissonii* and others). Some of these are growing on silt (epipelic) like *Navicula decussis, N. minima* or *Nitzschia acicularis*. A distinct category forms those species which are allochtonous, washed into the creek from the surrounding boggy areas (*Stauroneis smithii*) or are typical aerophytes (*Stichococcus bacillaris, Chlorococcum* sp.).

The algal communities that live in the "Valea Morii" creek gave valuable information concerning the saprobity status of the water based on the occurrence of indicator species. The xeno-, oligo- or β-mesosaprobic [14] elements indicating very clean or clean waters are present almost exclusively on the upper course of the creek (sites 1-3) like *Diatoma vulgare, Fragilaria intermedia, F. pinnata, Caloneis silicula, C. bacillum, Amphora montana*, *Diploneis oblongella, Fragillaria capucina, Navicula elginensis, Pinnularia subcapitata, Batrachospermum* sp. and *Hildenbrandtia* sp. The β-α-, α- or polysaprobic elements develop abundantly in the lower river course (sites 4-6), indicating the critical saprobity level of the water [13]. Some of such elements dominating the communities are *Achnanthes minutissima* var. *saprophila, Navicula accomoda, N. veneta, N. minuscula*, *Nitzschia amphibia* and *N. palea*. Others with similar preferences, but less abundant are *Cocconeis pediculus, Gomphonema pseudoaugur, Gyrosigma acuminatum, Navicula arvensis, N. cari, N. clementis, N. minusculus, Nitzschia linearis, N. fruticosa, N. recta* and *N. umbonata*.

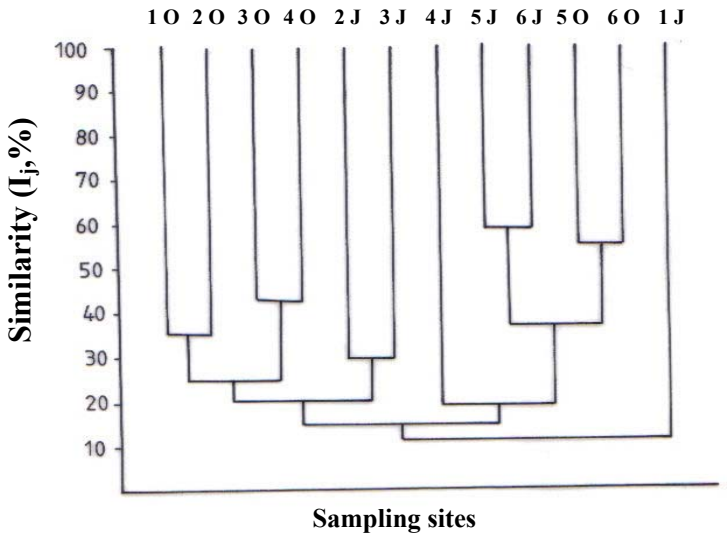


Fig. 3: Floristic similarity among the Summer (J) and Automn (O) algal communities
I_j – Jaccard index of similarity (%), sampling sites: 1 – 6

The dendrogram exhibiting the overall floristic affinity among the algal communities, growing in various sampling sites, based on Jaccard index of similarity (Fig. 3) exhibits rather high diversification of communities in the creek. The mosaic pattern of the periphyton in "Valea Morii" is possibly due to substratum heterogeneity and anthropic influences as well. There are two aggregates of communities joined below 20% similarity. One represent the communities of

the upper course of the creek (sites 1-3), the other includes those of the lower course (sites 4-6). Inside the aggregates the communities are grouped according to seasons.

Table 1: Composition of algal communities occurring in "Valea Morii" creek

Taxa		Sampling sites											
		1		2		3		4		5		6	
		J	O	J	O	J	O	J	O	J	O	J	O
CYANOPROKARYOTA													
1	Aphanocapsa rivularis	+	-	-	-	-	-	-	-	-	-	-	-
2	Calothrix fusca	-	-	-	-	-	-	+	-	-	-	-	-
3	Lyngbya nigra	-	-	-	-	-	-	-	-	-	+	-	-
4	Oscillatoria amoena	-	-	-	-	-	-	-	-	-	+	-	-
5	O. chlorina	-	-	-	-	-	-	-	-	+	+	+	+
6	O. limosa	-	-	-	-	-	-	-	-	-	-	-	+
7	O. terebriformis	-	-	+	+	+	-	-	+	-	-	-	-
8	Phormidium corium	+	+	+	-	-	-	-	-	-	-	-	-
9	P. fragile	-	-	-	-	-	-	-	-	-	-	-	+
10	P. frigidium	-	-	-	-	-	-	-	-	-	+	-	+
11	P. valderiae	-	-	+	-	-	+	-	+	-	-	-	-
12	Pseudoanabaena bipes	-	-	-	-	-	-	-	-	-	+	-	+
RHODOPHYTA													
13	Audouniella chalibaea	-	-	-	-	-	+	+	-	-	-	+	-
14	Batrachospermum sp.	-	-	-	-	+	-	+	-	-	-	-	-
15	Hildenbrandtia sp.	+	-	-	-	-	-	-	-	-	-	-	-
BACILLARIOPHYTA													
16	Achnantes biassoletiana	+	+	-	+	+	+	+	+	+	+	+	+
17	A. hungarica	-	-	-	-	-	-	-	-	-	-	-	+
18	A. lanceolata	-	-	-	+	-	+	-	+	-	+	+	+
19	A. minutissima	+	+	+	+	+	+	-	-	-	-	-	-
20	A. minutissima var. saprophila	-	-	-	-	-	-	+	+	+	+	+	+
21	Amphipleura pellucida	-	-	-	-	-	+	-	+	-	-	-	-
22	Amphora libyca	-	-	+	-	-	-	+	-	-	-	-	-
23	A. montana	-	-	-	-	-	+	-	-	-	-	-	+
24	A. oligotraphenta	-	+	-	-	-	-	-	-	-	-	-	-
25	A. ovalis	-	-	-	-	-	-	-	+	-	+	-	+
26	A. pediculus	-	-	-	-	-	-	+	-	-	+	+	+
27	Caloneis bacillum	-	+	-	+	-	-	-	+	-	-	-	-
28	C. silicula	-	-	+	-	-	-	-	-	-	-	-	-
29	Cocconeis placentula	-	+	+	-	-	+	+	-	+	+	+	+
30	C. pediculus	-	-	-	-	-	-	-	-	-	-	-	+
31	Cymbella affinis	-	-	+	-	-	-	-	-	-	-	-	-
32	C. amphicephala	-	-	-	-	-	-	+	-	-	-	+	-
33	C. cistula	-	-	-	-	-	-	+	-	-	+	-	+
34	C. minuta	-	-	+	+	+	+	+	+	+	+	+	+
35	C. naviculiformis	-	-	-	-	-	-	-	-	-	+	-	-
36	C. prostata	-	-	-	-	-	-	-	-	-	+	-	+
37	C. silesiaca	-	-	-	-	-	+	-	+	+	+	+	+
38	C. sinuate	-	-	-	-	-	-	+	+	+	+	+	+
39	C. tumida	-	-	-	-	-	-	-	-	-	-	+	-
40	Cyclotella antiqua	+	-	-	-	-	-	-	-	-	-	-	-
41	Diatoma vulgare	-	-	-	-	+	-	-	+	-	-	-	-
42	Diploneis oblongela	-	-	-	-	+	-	-	-	-	-	-	-
43	Fragilaria capucina	-	-	-	-	-	-	-	-	-	+	-	+
44	F. capucina var. perminuta	-	+	-	+	-	+	-	+	-	-	-	-
45	F. capucina var. vauchaerie	-	-	-	-	-	-	-	-	+	+	+	+
46	F. intermedia	+	-	+	-	+	-	-	-	-	-	-	-
47	F. pinnata	-	+	-	-	-	+	-	-	-	-	-	-

48	F. ulna	-	+	+	+	+	+	+	+	+	+	+	+
49	Frustulia vulgaris	-	-	-	-	-	+	-	-	+	+	+	+
50	Gomphonema affine	-	-	-	-	-	-	-	-	-	-	-	+
51	G. angustum	+	+	+	+	+	+	+	+	+	-	+	+
52	G. gracile	-	-	-	-	-	-	-	+	-	+	-	+
53	G. olivaceum	-	-	-	+	-	+	-	+	-	+	-	+
54	G. parvulum	-	-	+	-	-	+	-	+	+	+	+	+
55	G. pseudoaugur	-	-	-	-	-	-	-	-	-	-	-	-
56	Gyrosigma acuminatum	-	-	-	-	-	-	-	-	-	-	+	-
57	G. nodiferum	-	-	-	-	-	-	-	-	-	+	-	-
58	Hantzschia amphyoxis	-	-	-	-	-	-	-	-	+	-	+	-
59	Navicula accomoda	-	-	-	-	-	-	-	-	+	+	+	+
60	N. arvensis	-	-	-	-	-	-	-	-	-	-	-	+
61	N. bacillum	-	-	-	-	-	-	-	-	-	-	+	-
62	N. capitatoradiata	-	-	-	-	+	-	-	-	-	+	+	+
63	N. cari	-	-	-	-	-	+	-	+	-	-	-	-
64	N. cincta	-	-	-	-	-	-	-	-	+	+	+	+
65	N. contenta	-	-	-	-	-	-	-	-	-	-	-	+
66	N. clementis	-	-	-	-	-	-	-	-	-	-	+	-
67	N. cryptotenella	-	-	-	-	-	+	-	-	-	-	-	-
68	N. cryptocephala	-	-	-	-	+	+	-	+	+	+	-	+
69	N. decussis	-	+	-	+	-	-	-	-	-	+	-	+
70	N. digitoradiata	-	-	-	-	-	-	+	-	-	-	-	-
71	N. elginensis	-	-	+	-	+	-	-	-	-	-	-	-
72	N. gottlandica	-	-	-	-	+	-	-	-	-	-	-	-
73	N. hungarica	-	-	-	-	-	-	-	-	+	-	-	-
74	N. lanceolata	-	-	-	-	-	-	+	-	-	+	-	+
75	N. menisculus	-	-	-	-	-	-	-	-	+	-	+	+
76	N. minima	-	-	-	-	-	-	-	-	-	-	-	+
77	N. minuscula	-	-	-	-	-	-	-	-	-	-	+	-
78	N. pelliculosa	-	-	-	-	-	-	-	-	-	-	+	-
79	N. radiosa	-	-	-	-	-	+	-	+	-	-	-	+
80	N. reinhardtii	-	-	-	-	-	-	-	-	-	-	-	+
81	N. rhyncocephala	-	-	-	-	-	+	-	+	+	-	+	-
82	N. tripunctata	+	-	-	+	-	+	-	-	+	+	+	+
83	N. veneta	-	-	-	-	-	-	-	-	+	-	+	+
84	Nitzschia acicularis	-	-	-	-	-	-	-	-	-	+	-	+
85	N. amphibia	-	-	-	-	-	-	-	-	-	-	+	+
86	N. communis	-	-	-	-	-	-	-	-	+	-	+	+
87	N. dissipata	-	-	-	-	-	-	-	-	+	-	+	+
88	N. dissipata var. media	-	-	-	-	-	+	-	+	-	-	-	-
89	N. dissipata var. perminuta	-	+	-	+	-	-	-	-	-	-	-	-
90	N. fonticola	-	-	-	-	-	+	-	-	-	-	-	-
91	N. frustulum	-	-	-	-	-	-	-	-	-	-	-	+
92	N. fruticosa	-	-	-	-	-	-	-	-	-	+	-	+
93	N. hantzschiana	-	+	-	+	-	+	-	-	-	-	-	-
94	N. linearis	-	-	-	-	+	+	-	+	-	+	+	+
95	N. palea	-	-	-	-	-	-	-	-	+	-	+	+
96	N. perminuta	-	-	-	-	-	+	-	-	-	-	-	-
97	N. recta	-	-	-	-	-	-	-	+	-	-	-	+
98	N. sinuate	-	-	-	-	-	-	+	+	-	-	-	-
99	N. umbonata	-	-	-	-	-	-	-	-	-	+	-	+
100	Pinnularia microstauron	-	-	-	+	-	-	-	+	-	-	-	-
101	P. subcapitata	-	-	-	-	+	-	+	-	-	-	+	+
102	Rhoicosphaenia abbreviata	-	-	-	-	-	-	-	-	-	+	-	+
103	R. gibberula	-	-	-	-	-	-	-	-	-	+	-	-
104	Surirella angusta	-	-	-	-	-	-	-	-	+	+	+	+
105	S. brébissoni	-	-	-	-	-	-	-	-	+	+	+	+

106	S. minuta	-	-	-	-	-	-	-	-	-	-	+	-
107	Stauroneis smithii	+	-	+	-	+	-	-	+	-	-	-	+
CHLOROPHYTA													
108	Cladophora glomerata	-	-	-	-	-	-	-	-	+	-	-	-
109	Clorococcum sp.	+	-	-	-	-	-	-	-	-	-	-	-
110	Scenedesmus denticulatus	+	-	-	-	-	-	+	-	-	-	-	-
111	S. quadricauda	+	-	-	-	-	-	-	-	-	-	-	-
112	S. spinosus	-	-	-	-	-	-	+	-	-	-	-	-
113	Stichococcus bacillaris	+	-	-	-	+	-	-	-	-	-	-	-
114	Tetraëdron minimum	+	-	-	-	-	-	+	-	-	-	-	-
TOTAL		15	13	15	15	18	28	21	28	27	40	39	57

1 – 6: sampling sites; sampling time: J – June 2004; O – October 2004

Conclusions

There have been identified 114 taxa in two series of sampling (June and October 2004) distributed into four divisions: Cyanoprokaryota (12 taxa), Rhodophyta (3 taxa), Bacillariophyta (92 taxa) and Chlorophyta (7 taxa). All of these are new records for "Valea Morii".

The algal communities are dominated by diatoms, exhibiting maximum diversity in fall as usual in temperate rivers. Species diversity increases from upstream towards downstream parallel with substratum diversity, changes of local environmental conditions, including pollution stress. There are clear cut differences between the sites or the upper course dominated by microthermal, oligo-mesotrophic elements, many of them being indicators of clean xeno-, oligo- or β-mesotrophic waters and the lower river course dominated by eutrophic, basiphilic and basibiontic ones. Some of the later ones indicate critical saprobity levels (β-α-, α- and polysaprobity). Similarly, the creek exhibits the mosaic pattern of the bottom habitats, rocks followed by areas with sand and silt.

The dendrogram based on floristic similarity of communities sampled in various sites along the course of the creek, reveals their grouping tendency into two aggregates. One includes the communities sampled in the upper course of the creek (sites 1-3), the other one consists of those representing its lower course (sites 4-6). Inside the aggregates the communities are grouped according to seasons.

The structure of algal communities from the strictly protected area Nature Reserve, will represent the subject of another paper. The algal communities of this protected area (wetland) differ from the those occurring in the creek by the presence of 79 taxa which are absent in the creek. Therefore, the number of algae found for the first time in the studied area is up to 195.

REFERENCES

1. Battes, K., Câmpean, M., Pavelescu, C., Bogătean, M., Momeu, L., Tudorancea, C., 2000/2001, Ecological aspects of benthic communities from the Someşul Cald catchment area, *Ann. West Univ. Timişoara, ser. Biol.*, III-IV: 1-6.
2. Diaconeasa, B., Guist-Homm, E., 1981, Cercetări palinologice privind pădurile postglaciare de pe Valea Morii, *Contrib. bot., Cluj-Napoca*: 17-24.
3. Ielenicz, M., 1999, *Dealurile şi podişurile României*, Ed. Fund. "România de Mâine", Bucureşti.
4. Kawecka, B., Kwandrans, J., Szyikowski, A., 1999, Use of algae for monitoring rivers in Poland – Situation and development, in Prygiel, J., Witton, B.A., Bukowska, J., "*Use of algae for monitoring rivers*", Agence de l'Eau Artois-Picardie, Douai: 57-65.
5. Mihuţ, S., Cristea, V., 2002, Situ-ri de interes conservativ, In: Cristea, V., Baciu, C., Gafta, D., (eds.) *Municipiul Cluj-Napoca şi zona periurbană (Studii ambientale)*, Ed. Accent, Cluj-Napoca: 167-174.
6. Mitihac, V., Ionesi, L., 1974, *Geologia României*, Ed. Tehnică, Bucureşti.
7. Péterfi, L. Şt., Momeu, L., 1984, Dezvoltarea comunităţilor de diatomee epilitice din râul Arieş, Transilvania, *Studia Univ. „Babeş-Bolyai", ser. Biol.*, **29**: 3-8.

8. Piciu, T., Simihăian, M., Stan, G., 2002, Aspecte pedologice. În: Cristea, V., Baciu, C., Gafta, D., (eds.) *Municipiul Cluj-Napoca şi zona periurbană (Studii ambientale)*, Ed. Accent, Cluj-Napoca: 67-77.
9. Pop, E., 1960, *Mlaştinile de turbă din Republica Populară Română*, Ed. Acad. R.P.R., Bucureşti.
10. Pop, I., Csűrös-Káptalan, M., Raţiu, O., Hodişan, I., 1969, Vegetaţia din Valea Morii – Cluj, conservatoare de relicte glaciare, *Contrib. bot. Cluj*: 183-204.
11. Prygiel, J., Coste, M., 2000, *Guide methodologique pour la nise en oluvre de l'indice biologique diatomees*, Agence de l'Eau Artois-Picardie, Cemagref, Bordeaux.
12. Rasiga, A., Péterfi, L. Şt., Momeu, L., 1993, Structura comunităţilor de diatomee din râul Someşul Rece, Transilvania, România, *Studia Univ. „Babeş-Bolyai"*, *ser. Biol*., 1-2: 23-38.
13. Rott, E., 1997, *Indikationslisten für Aufwuchsalgen in Österreichischen Fliessgewässern, Wasserwirtschaftskataster*, Teil 1: *Saprobielle Indikation*, Wien.
14. Sládeček, V., 1973, System of water quality from the biological point of view, Arch. Hydrobiol., Beih. Ergedn. Limnol., **7**, 1-4: 1-218.
15. Sládečkova, A., Sládeček, V., 1998, Microbenthos of running waters in water resources catchment basin, in Bretschko, G., Helesšic, J., Advances in River Bottom Ecology", Backhuys Pulbl., Leiden: 207-213.
16. Toniuc, N., Oltean, M., Romanca, G., Zamfir, M., 1992, List of protected area in Romania (1932-1991), *Ocrot. nat. med. înconj*., Bucureşti, **36**, 1: 23-33.
17. Werner, D., 1977, *The Biology of Diatoms*, Blackwell Sci. Publ., Oxford, London, Edinburg, Melborne.

COMUNITĂŢI ALGALE DIN REZERVAŢIA NATURALĂ "VALEA MORII" ŞI ÎMPREJURIMI (JUD. CLUJ, ROMÂNIA)

(Rezumat)

Lucrarea prezintă primele date asupra structurii calitative a comunităţilor algale din Valea Morii – Rezervaţie Naturală cu caracter botanic şi împrejurimi, din Judeţul Cluj. S-a identificat un număr de 114 taxoni, aparţinând următoarelor încrengături: Cyanoprokaryota – 12 taxoni, Rhodophyta – 3 taxoni, Bacillariophyta – 92 taxoni şi Chlorophyta – 7 taxoni. Diatomeele domină atât per total, cât şi pe fiecare sezon în parte, cu un maxim înregistrat în sezonul de toamnă.

Diversitatea specifică a comunităţilor algale creşte din amonte spre aval pe pârâul Valea Morii în funcţie de modificarea condiţiilor ecologice locale, dar şi datorită unor factori de impact antropic (asanarea şi drenarea mlaştinii, defrişarea pădurilor, construcţii, poluare cu ape uzate menajere sau agricole). Astfel, pe distanţa de numai câţiva km compoziţia calitativă a comunităţilor algale de pe cursul superior al pârâului Valea Morii (staţiile 1-3), dominate de elemente microterme acidofile, unele oligo-mezotorfe, xeno-, oligo- sau β-mezosaprobe, se modifică semnificativ. Se ajunge ca în staţiile 4-6, unde apar şi factorii externi perturbatori, comunităţile algale să fie dominate de specii eutrofe, alcalifile şi alcalibionte, unele indicatoare de nivel saprobic critic (β-α-, α- sau polisaprobe), alături de specii cosmopolite.