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NEW DATA ON THE PRESENCE OF THE CLASS *PHRAGMITI-MAGNOCARICETEA* KLIKA IN KLICA ET NOVAC 1941 FROM THE ORIENTAL CARPATHIANS

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Abstract: The paper presents two plant associations of the class *Phragmiti-Magnocaricetea* Klika in Klica et Novac 1941: the association *Glycerietum plicatae* Kluczinsky 1928 of order *Nasturtio-Glyceritalia* Pignatti 1953, alliance *Glycerio-Sparganioni* Br.-Bl. et Sissing in Boer 1942, and the association *Carici-Menyanthetum* Soó 1955 of order *Magnocaricetalia* Pignotti 1953, alliance *Magnocaricion elatae* (Balatova-Tulakova 1963) Oberd. et al. 1967. The tables of phytosociological relevees, chorology, the ecology and the characteristic and accessory species were presented, and the analysis of bioforms, floristic elements and ecological indices was carried out for each association.

Keywords: paludal vegetation, bioforms, floristic elements, ecological indices

Introduction

The studied area is 140 km^2 and is located on the left slope of Izvoru Muntelui-Bicaz reservoir, which is a part of the Stânişoara Mountains.

Material and Method

The vegetation study of the natural ecosystems from the left side of Izvoru Muntelui-Bicaz reservoir was carried out according to the method of the Zürich-Montpellier school, formulated by J. Braun-Blanquet in collaboration with J. Pavillard.

The names of the associations were chosen according to the Phytosociological Nomenclature Code (J. J. Barkmon, J. Moraveç and S. Ranschert, 1986).

The description of the associations, based on characteristic, dominant and discriminant species, allowed the construction of the phytosociological tables, in agreement with the methodology formulated by Al. Borza and N. Boşcaiu (1965).

For the classification of the association we used general papers about Romanian vegetation together with the papers of G. Grabherr, L. Mucina and T. Ellmauer (1993).

Results and Discussions

1. Association *Glycerietum plicatae* Kluczynscki 1928

The plant communities with *Glyceria plicata* appear along mountain streams or in small depressions filled with rainwater. They occur on soils that are rich in nutrients, on calcareous substrata from the mountainous level (500 – 1100m-altitude) of the Oriental and the Occidental Carpathians.

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Together with *Glyceria plicata*, which has 70 – 80% coverage, occur many other species that are characteristic of the alliance *Glycerio-Sparganion* and the order *Nasturtio-Glycerietalia*, which are both superior syntaxa to the association (Tab. 1).

Although this association is not widespread, we identified it for the first time in the studied area, from the deposits of the Buhalnița and Hangu streams (Tab. 1).

Table 1. Ass. *Glycerietum plicatae* Kulczynski 1928

Relevee No.	1	2	3	4	5	K
Altitude (m)	755	758	760	790	795	
Coverage (%)	90	90	90	100	95	
Area (m^2)	25	10	10	25	10	
No. of species	7	8	5	8	9	
Characteristic species						
Glyceria plicata	5	5	5	5	5	V
Glycerio-Sparganion						
Veronica beccabunga	-	+	-	+	+	III
Nasturtio-Glycerietalia						
Epilobium hirsutum	+	-	-	+	-	II
Myosotis scorpioides	-	+	-	-	+	II
Mentha longifolia	-	-	+	-	-	I
Phragmitetalia						
Lycopus europaeus	+	+	-	-	+	III
Phragmiti-Magnocaricetea						
Equisetum palustre	-	+	+	+	+	IV
Galium palustre	+	+	+	-	+	IV
Molinio-Arrhenatheretea						
Juncus effusus	+	+	-	+	-	III
Ranunculus repens	-	-	+	+	+	III
Companion species						
Tussilago farfara	+	+	-	+	+	IV
Carex remota	+	-	-	+	+	III

Rel. 1, 2, 3 –Piciorul Vânăt forest road (Buhalnița), 21-07-2000, 4, 5 – Hangu, 19-07-2002.

The bioform analyses (Fig. 1) clearly revealed the dominance of hemicryptophytes (66,67%) followed by geophytes and helohydatophytes (16,67% each).

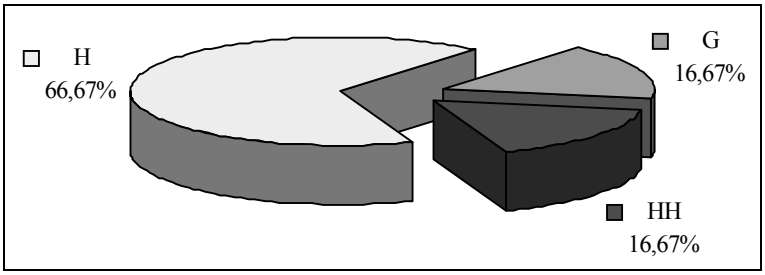

Figure 1. Bioform spectrum of Ass. *Glycerietum plicatae* Kulczynski 1928
(H – hemicryptophytes, HH – helohydatophytes, G - geophytes)

The floristic element analysis (Fig. 2) showed that among the 12 species, the Eurasian ones dominate with 50%, followed by circumpolar and worldwide ones with 33,33% and 16,67%, respectively.

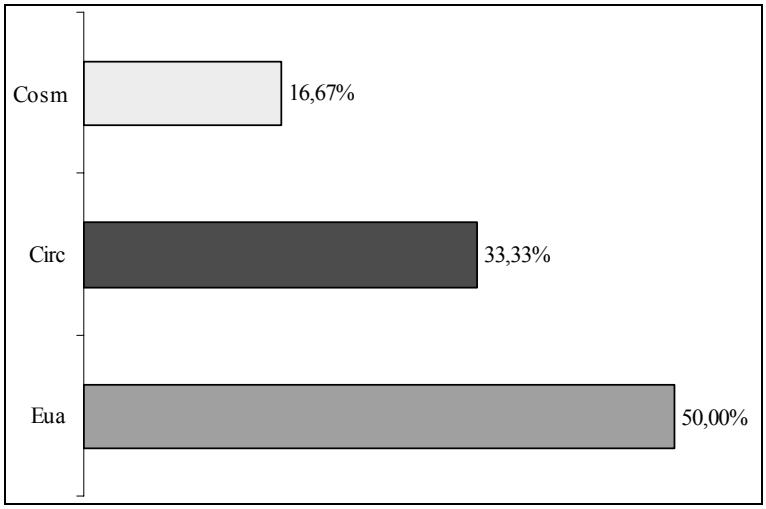

Figure 2. Floristic elements spectrum of Ass. *Glycerietum plicatae* Kulczynski 1928 (Eua – Eurasian; Circ – Circumpolar; Cosm – worldwide)

The analysis of the ecological indices (Fig. 3) showed that the association is dominated by hygrophytes and mesohygrophytes with 41,67%, by microthermophilous species with 91,67% and by neutrophilous species 41,67%.

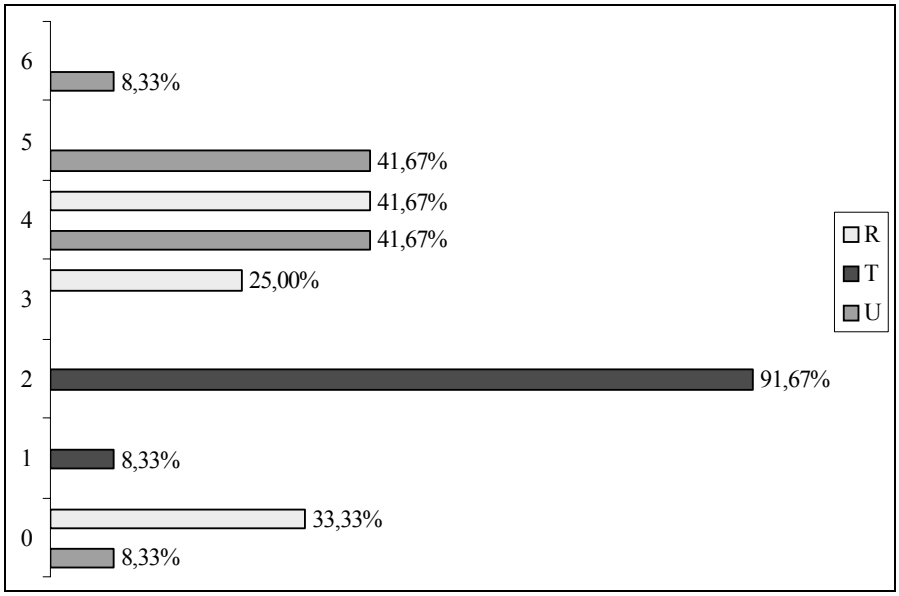

Figure 3. Ecological indices spectrum of Ass. *Glycerietum plicatae* Kulczynski 1928 (U – soil moisture; T – temperature; R – soil reaction)

2. Association *Carici-Menyanthetum* Soó 1955

The plant communities of this association were identified in many mountainous drainage basins and depressions from the Rodnei Mountains. They occur in shallow ponds and lakes. The characteristic species – *Carex pseudocyperus* and *Menyanthes trifoliata* – and the presence of hygro-hydrophilous species outline the strong hydrophilic characteristic of the association. After ponds dry out and peat develops the plant communities from these locations are replaced with peat bog ones that belong to the order *Caricetalia nigrae* (Rațiu 1972, Gergely and Rațiu 19873). This fact seems to endorse the classification of the observed plant communities in the suborder *Caricetosum flavae*.

This association has not been acknowledged before from the studied area or from any other parts of the Neamț District.

Table 2. Ass. *Carici-Menyanthetum - caricetosum flavae* subas. nova

Relevee No.	**1**	**2**	**3**	**4**	**5**	**6**	**K**
Altitude (m)	**610**	**610**	**610**	**610**	**610**	**610**	
Coverage (%)	**50**	**50**	**25**	**25**	**25**	**50**	
Area (m^2)	**100**	**100**	**95**	**95**	**95**	**80**	
No. of species	**14**	**13**	**13**	**13**	**12**	**11**	
Characteristic species							
Menyanthes trifoliata	4	4	3	4	4	2	V
Subassociation differential species							
Carex flava	+	+	+	+	+	+	V
Magnocaricion şi Magnocaricetalia							
Galium palustre	+	+	+	+	+	+	V
Lysimachia vulgaris	+	+	+	+	+	-	V
Carex vesicaria	+	+	+	-	-	+	IV
Lathyrus pratensis	-	-	+	-	+	-	II
Myosotis caespitosa	-	+	-	+	-	-	II
Lythrum salicaria	+	-	-	-	-	-	I
Phragmitetalia							
Lycopus europaeus	+	-	-	-	-	-	I
Nasturtio-Glycerietalia							
Epilobium hirsutum	+	+	+	+	+	+	V
Mentha longifolia	+	+	+	+	+	+	V
Phragmiti-Magnocaricetea							
Typha latifolia	+	+	+	+	1	+	V
Scirpus sylvaticus	+	+	+	+	+	+	V
Alisma plantago-aquatica	-	-	+	+	-	+	III
Rumex palustris	-	+	-	-	-	-	I
Polygonum amphibium	-	-	-	+	-	-	I
Lemnetea							
Lemna minor	2	+	+	-	-	-	III
Companion species							
Salix cinerea	+	5	5	4	5	3	V
Juncus effusus	+	-	-	-	+	+	III
Calamagrostis epigeios	-	-	-	+	+	-	II

Rel. 1, 2, 3, 4, 5, 6 – Rugineşti (Mormântului Valley), 19-07-2000

The bioform analysis (Fig. 4) showed that among the component species of the association, hemicryptophytes were dominant with 55%, followed by helohydatophytes with 20%, and geophytes and therophytes, each with 10%.

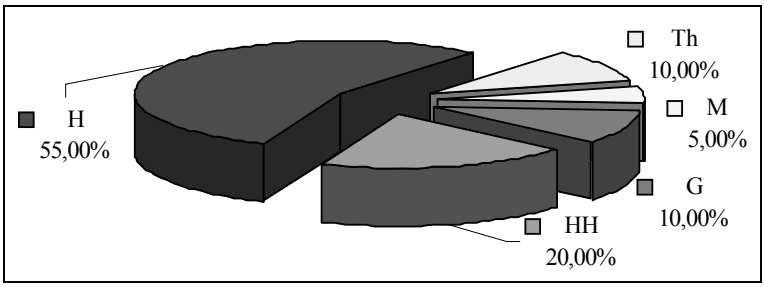

Figure 4. Bioform spectrum of Ass. *Carici-Menyanthetum - caricetosum flavae* subas. nova (H – hemicryptophytes, HH – helohydatophytes, G – geophytes Th – therophytes, M – mesophanerophytes)

The floristic element analysis (Fig. 5) indicated the dominance of Eurasian species with 40%, followed by circumpolar and worldwide species, each with 30%

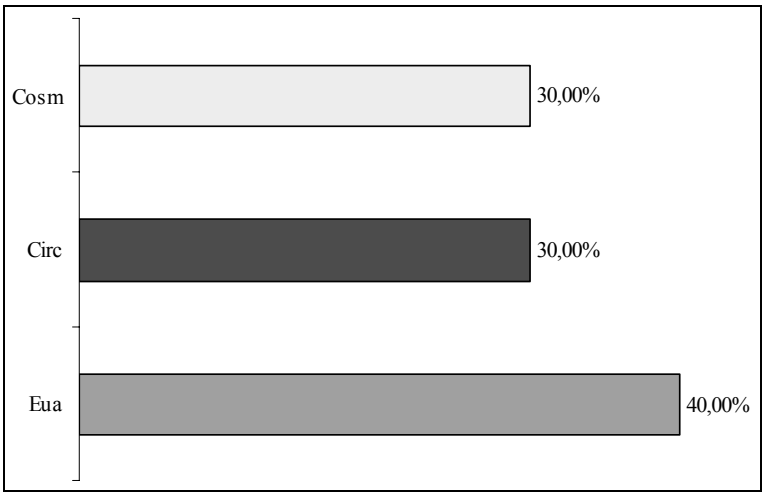

Figure 5. Floristic elements spectrum of Ass. *Carici-Menyanthetum - caricetosum flavae* subas. nova (Eua – Eurasian; Circ – Circumpolar; Cosm – worldwide)

The analysis of the ecological indices (Fig. 6) outlines the dominance of mesohygrophytes and hydrophytes with 40%, of mesothermophilous species with 70%, and, concerning the soil reaction, the dominance of the euryionic species with 60%.

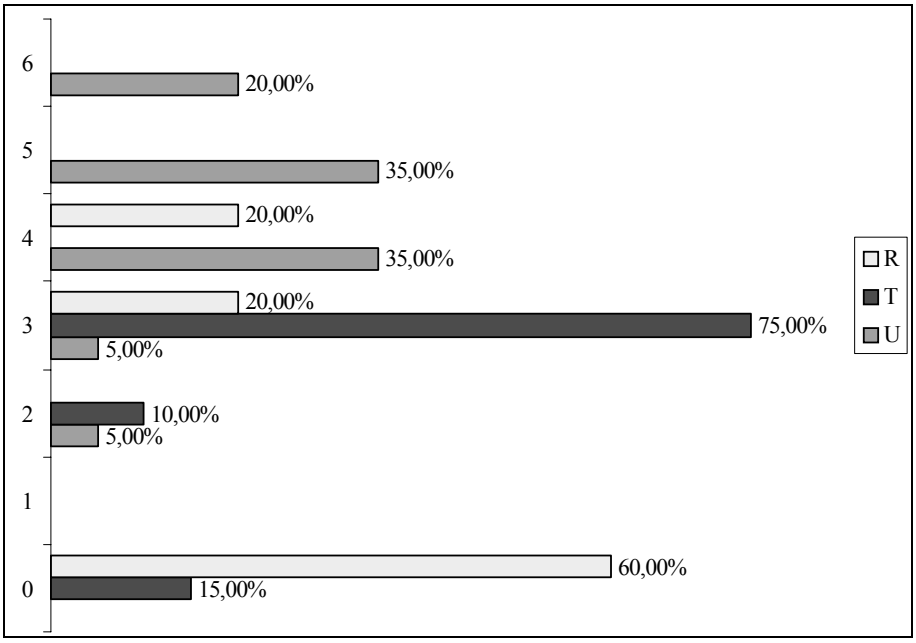

Figure 6. Ecological indices spectrum of Ass. *Carici-Menyanthetum - caricetosum flavae* subas. nova (U – soil moisture; T – temperature; R – soil reaction)

Conclusions

1. The study demonstrates that the identified plant communities belong to the associations *Glycerietum plicatae* Kluczinsky 1928 and *Carici-Menyanthetum* Soó 1955.
2. Hemicryptophytes, Eurasian species, hygrophytes and mesohygrophytes dominate the plant communities of both associations.
3. Regarding temperature and soil reaction figures, plant communities of the association *Glycerietum plicatae* Kluczinsky 1928 are dominated by microthermophilous and neutrophilous species, while plant communities of the association *Carici-Menyanthetum* Soó 1955 are dominated by mesothermophilous and euryionic species, respectively.

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