

STUDY OF HYGROPHILOUS VEGETATION ON THE LUPULUI VALLEY (BIHOR COUNTY)

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Abstract

This paper represents a phytocoenologic study of hygrophilous vegetation on Wolf Valley, Bihor County. The plant associations identified as a result of the carried out research in this area are *Junco-Molinietum* Preising 1951 and *Lysimachio vulgaris-Filipenduletum ulmariae* Balátová-Tuláčková 1978.

For the two associations synthetic tables were drawn up in which there is information about the species which are included in the floristic composition, life forms and floristic elements.

The spectrum of life forms and floristic elements for both associations have also been made.

Key words: association, life forms, floristic elements, phytocoenoses.

INTRODUCTION

Valea Lupului is an affluent of Iadului Valley and flows from the Vlădeasa Mountains near Stâna de Izvor Peak (1339 m).

Iadului Valley, in the years 1970 to 2000, was subjected to a process of landscaping water technology, which led to the construction of several dams and reservoir regulation course. In this context, Lupului Valley, empties into the Leșu Lake near the forestry building.

The climate is typically mountainous, cold and wet. The litologic substrate specific of Lupului Valley area consists of sandstone, marl and clay, but also of limestone and dolomite.

Forest vegetation in the area consists of beech and beech forests with spruce and european fir.

Junco-Molinietum association Preising 1951 and *Lysimachio vulgaris-Filipenduletum ulmariae* association Balátová-Tuláčková 1978 have been studied in some recent works by Resmeriță (1977), Oroian (1998), Mihăilescu (2001), Sămărghițan (2005), Chifu et al. (2006), Răduțoiu (2006), Zamfirescu (2007), Oprea, Sîrbu (2009), Pășcuț (2012).

The study of those two associations on the Lupului Valley, is based on my own research, observations, descriptions made in land during the year 2014.

MATERIAL AND METHODS

In the study of hygrophilous vegetation on Lupului Valley the vegetable association was used as the basic cenotaxonomic unit. The identification of the associations was made on floristic criteria using the characteristic species, without neglecting the edifying, dominant and differential species.

The sample surfaces were selected according to the characteristic fragments of the phytocenoses, their size is 50 m². Particular attention was paid to analysis of the life forms and floristic elements.

The drawing up of the relevés and quantitative and qualitative assessments were carried out according to the indications provided by Cristea et al. (2004). In the ground we used floristic guideline developed by Ciocârlan (2000, 2004). In the classification of the coenotaxons the work developed by Rothmaler (1994-2000), Borhidi (1996), Coldea et al. (1997), Sanda et al. (2008) was taken into account.

RESULTS AND DISCUSSION

The phytocenoses of *Junco-Molinietum* association have been identified on plane lands at altitudes between 600 and 775 m (table 1). Soils on which we can find these phytocenoses are peat, gleyeds, with acid reaction soils.

Lysimachio vulgaris-Filipenduletum ulmariae association Balátová-Tuláčková 1978 appears on flat lands with stagnant water, in the riverbed of Lupului Valley, at altitudes of 600-700 m (table 2). The soil is silty with much organic material.

The coenotaxonomic classification of the associations is the following:

Class *Molinio-Arrhenatheretea* R. Tüxen 1937

Order *Molinietalia caeruleae* Koch 1926

Alliance *Molinion caeruleae* Koch 1926

Association *Junco-Molinietum* Preising 1951

Alliace *Filipendulion* Lohmeyer in Oberdorfer et al. 1967

Association *Lysimachio vulgaris-Filipenduletum ulmariae*
Balátová-Tuláčková 1978

We used in this paper the following abbreviations:

- L.f. – life forms; mPh – Mezophanerophytes; nPh – Nanophanerophytes; Ch – Camephytes; H – Hemicryptophytes; G – Geophytes; Th – Annual terophytes; Hh – Helohidatophytes;

- F.e. – floristic elements; Cp – Circumpolar; Eua – Eurasian; E – European; Ec – Central European; Cosm – Cosmopolitan; Carp – Carpathian.

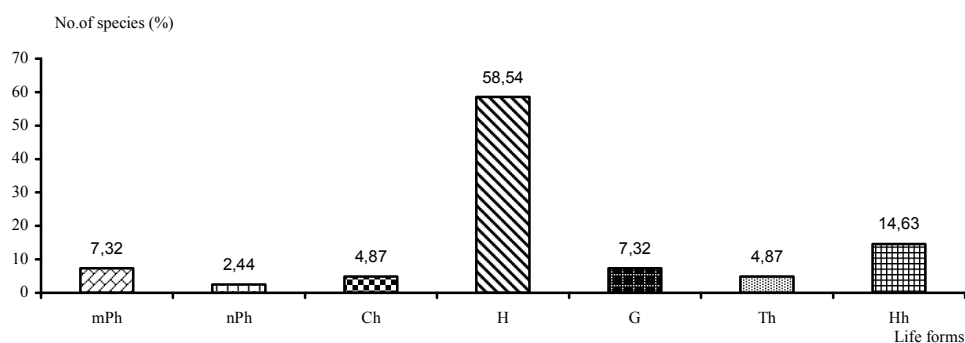


Fig. 1 The life forms spectrum of *Junco-Molinietum* association

The life forms spectrum of *Junco-Molinietum* association illustrates the presence in large numbers of hemicryptophytes species (58.54%), followed by helohidatophytes species (14.63%) and phanerophytes species (9.76%) (figure 1).

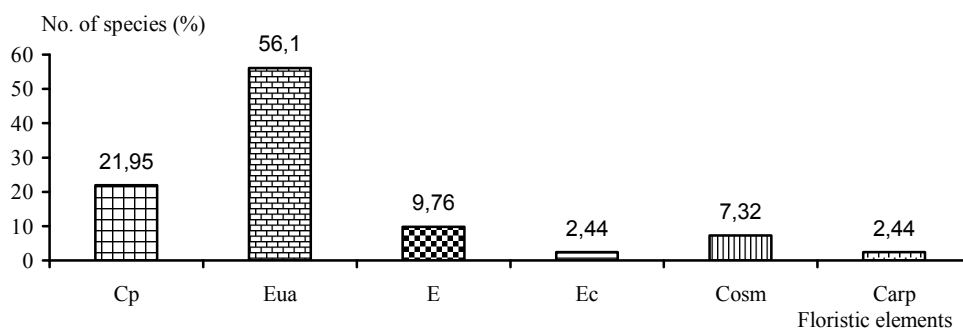


Fig. 2 Spectrum of floristic elements of *Junco-Molinietum* association

In the floristic elements spectrum of *Junco-Molinietum* association (figure 2), it is observed the presence in large numbers a Eurasian species (56.1%), followed by circumpolar species (21.95%), European (9.76%) and cosmopolitan species (7.32%).

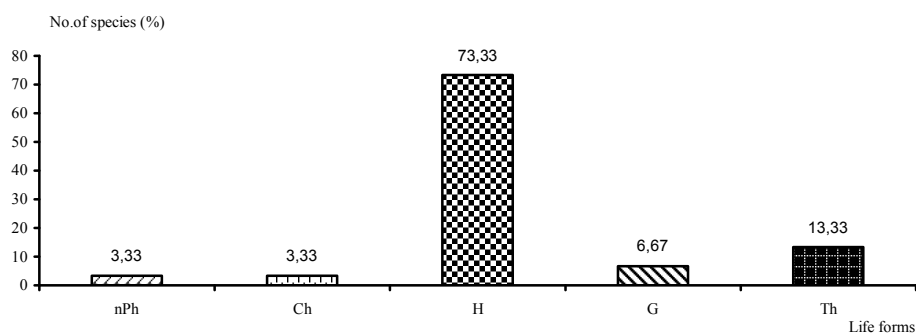


Fig. 3 The life forms spectrum of *Lysimachio vulgaris-Filipenduletum ulmariae* association

In the life forms spectrum of *Lysimachio vulgaris-Filipenduletum ulmariae* association dominates the hemicryptophytes species (73.33%), followed by annual terophytes species (13.33%) (figure 3).

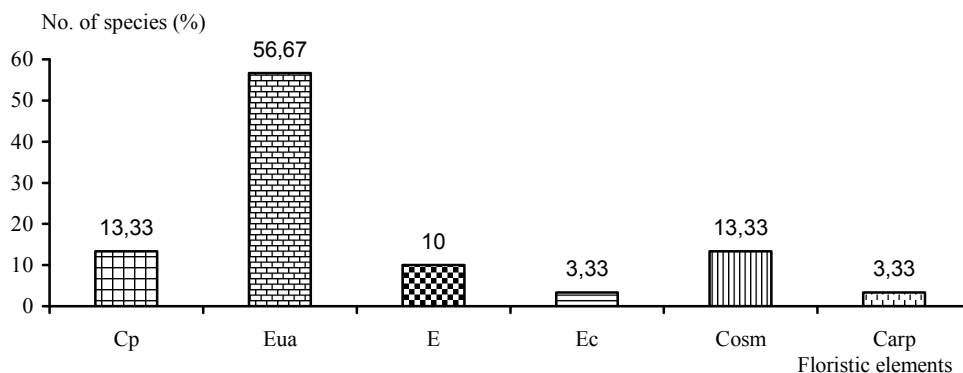


Fig. 4 Spectrum of floristic elements of *Lysimachio vulgaris-Filipenduletum ulmariae* association

The floristic element spectrum for *Lysimachio vulgaris-Filipenduletum ulmariae* association show the dominance of Eurasian species (56.67%), followed by cosmopolitan (13.33%) and circumpolars species (13.33%) (figure 4).

Table 1

***Junco-Molinietum* association Preising 1951**

L.f.	F.e.	Number	1	2	3
		GPS	Altitude (m)		
		coordonates	Lat. N		
			Long. E		
		Vegetation coverage (%)			
		Area (m ²)			
0	1	2	3	4	5
H	Cosm	As. <i>Juncus effusus</i>	4	4	4
H	Eua	As. <i>Molinia caerulea</i>	1	2	1
		<i>Molinion caeruleae</i>			
H	Eua	<i>Stachys officinalis</i>	+	.	.
H	Cp	<i>Juncus articulatus</i>	.	+	+
H	Eua	<i>Ranunculus polyanthemos</i>	+	+	.
		<i>Molinietalia caeruleae</i>			
H	Cp	<i>Galium palustre</i>	+	.	+
H	Eua	<i>Succisa pratensis</i>	+	+	.
H	Eua	<i>Filipendula ulmaria</i>	+	+	+
H	Cp	<i>Scutellaria galericulata</i>	+	.	.

0	1	2	3	4	5
		Molinio-Arrhenatheretea			
H	Cp	<i>Agrostis stolonifera</i>	1	·	·
H	Eua	<i>Achillea millefolium</i>	+	·	·
G	E	<i>Carex hirta</i>	·	1	·
H	Cp	<i>Epilobium palustre</i>	+	+	+
H	Eua	<i>Juncus inflexus</i>	+	·	·
H	Eua	<i>Mentha longifolia</i>	·	+	+
H	Eua	<i>Ranunculus repens</i>	+	+	·
H	Eua	<i>Rumex crispus</i>	·	+	·
Hh	Cp	<i>Scirpus sylvaticus</i>	+	+	1
H	Ec	<i>Cirsium rivulare</i>	+	·	·
		Phragmitetea australis			
H	Eua	<i>Lysimachia vulgaris</i>	·	+	·
Hh	Eua	<i>Lycopus europaeus</i>	+	+	·
H	Cosm	<i>Lythrum salicaria</i>	+	·	·
Hh	Eua	<i>Myosotis scorpioides</i>	+	+	+
Hh	Cosm	<i>Typha latifolia</i>	+	+	·
		Variae Syntaxa			
mPh	E	<i>Corylus avellana</i>	·	+	+
mPh	Eua	<i>Sambucus racemosa</i>	·	+	+
mPh	Eua	<i>Salix capraea</i>	+	+	+
nPh	Cp	<i>Rubus idaeus</i>	+	+	·
H	Eua	<i>Brachypodium sylvaticum</i>	·	+	+
Hh	Eua	<i>Carex riparia</i>	1	·	·
G	Eua	<i>Circaea lutetiana</i>	·	+	·
H	Eua	<i>Cirsium heterophyllum</i>	·	+	+
H	Eua	<i>Eupatorium cannabinum</i>	+	+	+
G	Cp	<i>Equisetum telmateia</i>	·	+	+
Th	Eua	<i>Galeopsis tetrahit</i>	+	·	·
H	E	<i>Hypericum tetrapterum</i>	+	·	·
Th	Eua	<i>Polygonum hydropiper</i>	·	+	·
Ch	Eua	<i>Solanum dulcamara</i>	·	+	·
Ch	E	<i>Lysimachia nummularia</i>	·	+	+
H	Carp	<i>Telekia speciosa</i>	·	·	+
Hh	Cp	<i>Thelypteris palustris</i>	·	·	+

Place and date of relevées: 1 - 3 Lupului Valley (Bihor County) 14.09.2014.

Table 2

Lysimachio vulgaris-Filipenduletum ulmariae association Balátová-Tuláčková

L.f.	F.e.	Number	1	2	3
		GPS	625	760	670
		Altitude (m)			
		Lat. N	46.79577	46.78199	46.79101
		Long. E	22.58677	22.59697	22.59471
		Vegetation coverage (%)	100	100	100
		Area (m ²)	50	50	50
0	1	2	3	4	5
H	Eua	As. <i>Lysimachia vulgaris</i>	+	+	+
H	Eua	As. <i>Filipendula ulmaria</i>	5	5	5
		<i>Filipendulion, Molinietalia caeruleae</i>			
H	Cp	<i>Galium palustre</i>	+	.	+
H	Cosm	<i>Juncus effusus</i>	.	+	.
H	Cosm	<i>Lythrum salicaria</i>	+	.	+
H	Eua	<i>Succisa pratensis</i>	.	+	+
H	Eua	<i>Mentha longifolia</i>	+	1	.
H	Eua	<i>Molinia caerulea</i>	.	.	+
		<i>Molinio-Arrhenatheretea</i>			
H	Eua	<i>Ranunculus acris</i>	+	+	+
H	Eua	<i>Achillea millefolium</i>	+	.	.
H	Cp	<i>Epilobium palustre</i>	+	+	+
H	Ec	<i>Centaurea phrygia</i>	+	.	.
H	Eua	<i>Hypericum maculatum</i>	+	.	+
H	Eua	<i>Leucanthemum vulgare</i>	+	.	.
H	Cosm	<i>Potentilla reptans</i>	+	.	+
H	Cp	<i>Prunella vulgaris</i>	.	+	.
H	Eua	<i>Stellaria graminea</i>	+	.	.
		Variae Syntaxa			
nPh	Cp	<i>Rubus idaeus</i>	+	+	.
H	Eua	<i>Brachypodium sylvaticum</i>	.	+	.
G	E	<i>Carex hirta</i>	+	.	1
G	Eua	<i>Circaea lutetiana</i>	+	.	+
H	Eua	<i>Eupatorium cannabinum</i>	+	+	+
Th	Eua	<i>Galeopsis tetrahit</i>	.	+	.
Th	Eua	<i>Impatiens noli-tangere</i>	+	+	.
Ch	E	<i>Lysimachia nummularia</i>	+	.	+
Th	Eua	<i>Polygonum hydropiper</i>	+	+	.

0	1	2	3	4	5
H	E	<i>Stellaria nemorum</i>	+	·	+
H	Carp	<i>Telekia speciosa</i>	·	+	·
H	Cosm	<i>Urtica dioica</i>	+	·	·
Th	Eua	<i>Xanthium strumarium</i>	+	·	·

Place and date of relevées: 1 - 3 Lupului Valley (Bihor County) 14.09.2014.

CONCLUSIONS

The high level of groundwater in these phytocoenoses of *Junco-Molinietum* association determines the appearance of hygrophilous species, of which the highest proportion are: *Scirpus sylvaticus*, *Myosotis scorpioides*, *Typha latifolia*, *Carex riparia*.

They also encountered a number of 9 circumpolar species in the floristic composition of *Junco-Molinietum* association, such as: *Juncus articulatus*, *Galium palustre*, *Agrostis stolonifera*, *Scutellaria galericulata*, *Epilobium palustre*, *Scirpus sylvaticus*, *Rubus idaeus*, *Equisetum telmateia*, *Thelypteris palustris*, which that shows a cool and wet microclimate in the area.

In both associations the life forms spectrum is dominate of hemicryptophytes species, and the floristic elements spectrum is dominate of Eurasian species.

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