

CONTRIBUTION TO THE FAMILIARIZATION WITH THE MEADOWS OF IERULUI PLAIN

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Abstract

Association Hordeetum hystricis (Soó 1933) Wendelberger 1943, is distributed to low salt solis in Ierului Plain. This study aims to analyze the phytocoenoses of the Hordeetum hystricis (Class Puccinellio-Salicornietea Topa 1939) from phytocoenologic, floristic and economic points of view. Phytocoenoses association analysis present a scientific importance, with a total of 64 species, which is a very rich biodiversity, some species are rare, vulnerable, endemic and need to be protected. Meadow to Hordeum histrix is an very low important forage for both livestock grazing and harvesting land-mass. Meadows give this association a low phytomass production, with low economic value. Because of human low biodiversity, flora and vegetation of these meadows have a natural character. Grassland maintain stable equilibrium and the ungrassed bush tend to phytocoenoses progress.

Key words: association, phytocoenoses, floristic study, life form, ecological indexes.

INTRODUCTION

Ierului Plain is located in the North – West of Romania, on the administrative territory of Satu Mare and Bihor counties, being one of the lowest sections of the Western Plain. In the East and North-East it neighbours Crasnei Plain and in the North-West Careiului Plain, in the West Nirului Plain, in the East the Santăului Plain and the Sălacea – Săcueni Hillocks, but the great morphological and morphometrical resemblance with the neighbouring units makes it difficult its net geographical delimitation.

The altitude level of Ierului Plain varies between 125 m and 159 m in the North and North-East, decreasing to 100 m in the South, according to the flowing direction of Ier. The highest point it reaches is on the Cetății Hill from Otomani (159 m), and the lowest (100 m) on the actual valley at the border with Hungary. The annual average temperature distribution varies between 9, 7 °C in Carei and 10,3°C in Săcueni. Analyzing the distribution of the annual average precipitation quantities, we find that they increase with altitude from 580,6 mm registered in Săcueni, to 589,3 mm in Carei.

The *Hordeetum hystricis* (Soó 1933) Wendelberger 1943 association is present all over Ierului Plain, this type of meadow being the most

widespread on the researched area. It is a shorter vegetation, rich in species, which can be found all over the soil type salt Soloneti.

MATERIAL AND METHODS

To realize this study, there were performed a total of 6 local incursions, and about 9 phytocoenologic sampling on natural grasslands. The sample surfaces, homogeneous in floristic and physiognomic terms, were chosen from the studied natural grasslands. Their size varies between 4-100 m².

The process used was phytocoenologic survey method drawn up by Braun-Blanquet.

Along with species recording, abundance and dominance (AD) were subscribed in relevées after Braun-Blanquet scale subsequently developed by Tüxen (1955) and Ellenberg (1974).

The association's synthetic table was structured after the methodology proposed by Braun-Blanquet (1964) and developed by Ellenberg (1974); therefore, in the column header of the table for the association analyzed the following have been entered: the serial number of land surveys, altitude (m.s.m.), slope, surface (m²), coverage (%).

The following have been considered in the structure of the phytocoenologic table: illustrating or dominant species, characteristic species of the association, species for the recognition or differentiation of the sub- alliance, alliance, order, class and environmental significance.

Synthetic phytocoenologic indicex of constancy (K) whose classes are included between I-V values, that expresses the degree of coenotic fidelity compared to phytocoenoses environment of the association has been entered and calculate don the right of the table.

After Braun-Blanquet & Pavillard (1928), the medium abundance and dominance (mAD) shows percentually the average coverage realized in the association's phytocoenoses by the phytoindividuals of each recorded specie.

Differential species allowed us to set limits in the association for the taxons that are hierarchically superior to the alliance, order and class. The association's phytocoenoses are analyzed and characterized physiognomically, coenologically and ecologically.

In this respect particular attention has been given to the analysis of life forms, floristic elements and ecologic indices (UTR) through their graphical representation.

RESULTS AND DISCUSSION

The *Hordeetum hystricis* (Soó 1933) Wendelberger 1943 (Tab. 1) associations have been identified in the following places: Otomani, Adoni, Diosig, Tiream, Andrid and Ady Endre. It forms semi-halophilic meadows distributed on habitat where the land are wet in the spring, even temporarily flooded, but are drying in summer time and slightly salty soils.

The characteristic species of the *Hordeetum hystricis* (Soó 1933) Wendelberger 1943 association are *Hordeum hystricis* (68.05%), they have a maximum constancy and a high abundance and dominance.

The class of *Hordeetum hystricis* (Soó 1933) Wendelberger 1943 reunites a number of 19 species of which we mention: *Trifolium fragiferum*, *Cichorium intybus*, *Achillea setacea*, *Leontodon autumnalis*.

From the class *Molinio-Arrhenatheretea* limitrophe to the phytocenosis of the association *Hordeetum hystricis* penetrates a number of approximately 19 species of which we mention: *Lolium perenne*, *Trifolium repens*, *Ranunculus repens*, *Daucus carota*.

The spectrum of bioforms (Fig. 1), points out the preponderance of the hemicryptophytes in the association (60.94%), followed by annual terophytes (28.12%). From the floral elements (Fig. 2) the distinguished species is the eurasian one (60.94%), the cosmopolitan (12.5%) and circumpolar (9.36%) species are not as much.

Analyzing the phytocenoses of the association in relation with the humidity (Fig. 3) we find that most of the species have a xeromesophilous characteristic (40.62%), followed by the mesophilous species (26.57%), the euryhydric (4.69%) and hydrophilic ones (4.69%), which also shows in the floral structure. Considering the temperature, the species from the association are micro-mesotherms (48.44%) and followed by eurytherms (31.25%). As for the chemical reaction of the soil in the association there are dominance disputes between the euriionic species (39.06%) followed closely by the slightly acid-neutrophile ones (34.38%).

In the cariologic spectrum (Fig. 4) there are, polyploid (45.31%), diploid (45.31 %) and diplo-polyploids (9.38%).

These types of pastures populate the 2nd degree dry salt marshes, which are pastured by sheep. Generally it is pretty resistant when stepped on. Once the salinisation increases and the soil becomes more settled (compact), the rest of the graminaceae start to disappear from the vegetation carpet, but in most cases we have analyzed, the vegetation carpet reflects the increasing dryness of the populated stations, lately we can observe the appearance of many empty spaces on these meadows, due to the substantial level decrease of the subsoil waters.

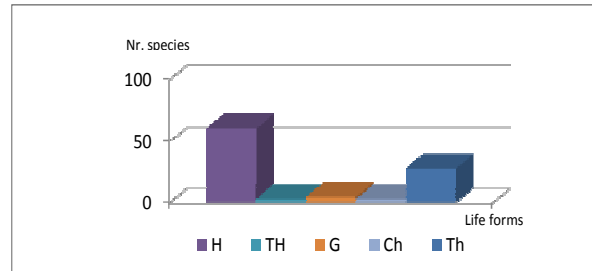


Fig. 1 The life forms of association *Hordeetum hystricis* in Ierului Plain: H-Hemicryptophytes; TH- Hemiterophytes; G-Geophytes; Ch-Chamaephytes; Th-Euterophytes;

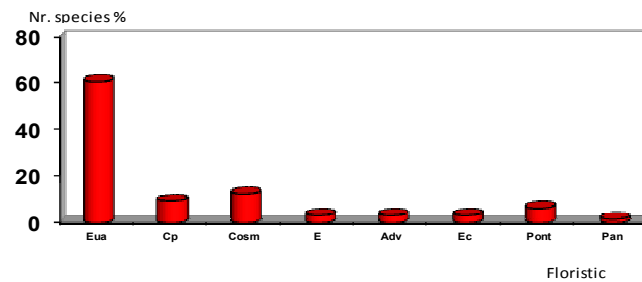


Fig. 2 The spectrum of floristic elements of association *Hordeetum hystricis* in Ierului Plain: Eua-Eurasian; Cp-Circumpolar; Cosm-Cosmopolitan; E- European;Atl-Atlantic; Ec- Ecvtorial; Pont-Pontic; Pan-Pannonian

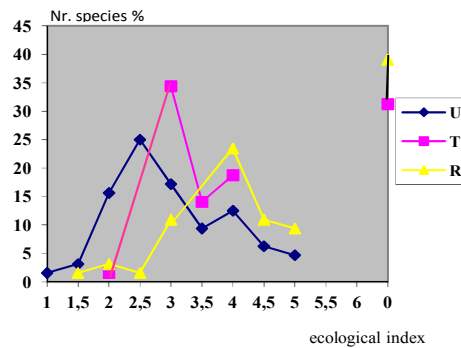


Fig. 3 The diagram of ecologic indices of asociacion *Hordeetum hystricis* in Ierului Plain where: U-humidity, T-temperature, R-the chemical reaction of the soil

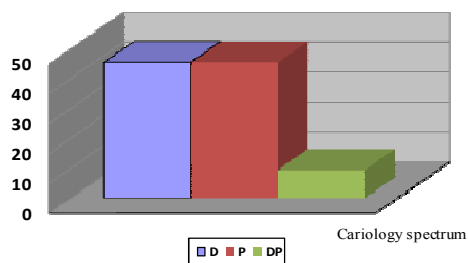


Fig. 4 Cariology spectrum of asociacion *Hordeetum hystrix* in Ierului Plain: D-Diploid, P-Poliploid, DP-Diplo-poliploid

Table 1

Hordeetum hystrix (Soó 1933) Wendelberger 1943
(Syn. *Matricario recutitae*-*Hordeetum hystrix* G. Popescu 1996)
(natural grassland from Ierului Plain, Bihor and Satu-Mare Country)

L.f.	F.e.	U.	T.	R.	2 n	Nr. Land Surveys	1	2	3	4	5	6	7	8	9	K	ADm
						Altitude (m.s.m.)	105	99	91	109	109	104	104	104	110		
						Surface (m²)	50	4	100	8	20	100	50	25	40		
						Coverage (%)	100	70	100	90	95	100	95	100	95		
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Th	Eua	2	4	4.5	DP	As. Hordeum hystrix	5	3	4	4	5	4	4	4	5	V	68.05
Puccinellion limosae, Puccinellietalia limosae, Puccinellio-Salicornietea																	
H	Eua(C)	2	3	5	D	Achillea setacea	.	+	.	.	.	+	+	+	+	IV	0.28
H(TH)	Eua	2.5	3.5	4.5	D	Cichorium intybus	+	.	+	.	.	+	+	+	+	IV	0.33
H	Eua	3	3	5	D	Trifolium fragiferum	+	+	.	.	.	+	+	+	+	IV	0.33
Th	Eua(C)	2	3	2	D	Gypsopila muralis	+	1	+	.	.	.	.	.	+	III	0.72
H	Eua	4	0	3	D	Plantago major ssp. major	+	+	+	.	.	.	.	.	+	III	0.22
H	Pan	4	3	4	D	Rorippa sylvestris ssp. kernerii	+	.	.	.	.	+	+	+	.	III	0.22
H	Cosm	3.5	0	4	P	Potentilla reptans	+	.	.	.	.	+	+	+	.	III	0.22
H	Eua	3	0	0	DP	Leontodon autumnalis	.	.	.	.	.	+	+	+	+	III	0.22

Th	Eua(M)	3	3.5	0	D	Matricaria chamomilla	+	.	.	.	+	.	.	.	+	II	0.17
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
H	Cosm	2.5	3.5	3	P	Potentilla anserina	+	.	.	.	+	.	.	.	.	II	0.11
Th	Cosm	2.5	0	3	P	Polygonum aviculare	.	.	.	+	.	.	.	.	+	II	0.11
Th	Mp	2	4	4	D	Lotus angustissimus	.	.	.	.	.	.	+	+	.	II	0.11
H(TH)	P-M	2	4	1.5	D	Scorzonera cana	.	+	.	.	.	.	.	.	+	II	0.11
H	Eua(C)	3,5	0	5	P	Puccinellia distans	.	+	.	.	.	.	.	.	+	II	0.11
H	Eua	3	3	0	D	Taraxacum bessarabicum	.	.	+	.	.	.	+	+	.	II	0.17
G	Cp	4,5	3	5	P	Juncus gerardi	.	.	+	.	.	.	.	.	+	II	0.11
H	Cp	3	0	0	P	Poa pratensis	.	.	+	.	.	.	.	.	.	I	0.06
H	Cp	5	2	0	P	Juncus articulatus	.	.	+	.	.	.	.	.	.	I	0.06
H	P-Pan	5	0	5	D	Aster tripolium ssp. pannonicus	.	.	+	.	.	.	.	.	.	I	0.06
Molinio-Arrhenatheretea																	
H	Eua(M)	2.5	4	4.5	D	Lolium perenne	1	.	+	+	1	+	+	+	+	V	1.44
H-TH	Eua	3,5	0	0	P	Trifolium repens	+	.	1	.	.	+	+	+	+	IV	0.83
Th-H	Eua(M)	2.5	3	0	D	Daucus carota ssp carota	.	.	.	.	.	+	+	+	+	III	0.22
H	Eua(M)	4	0	0	P	Ranunculus repens	.	.	.	.	.	2	+	+	.	II	2.06
H	Eua	2,5	0	0	P	Lotus corniculatus	.	1	+	.	+	.	.	.	.	II	0.67
H	Eua(C)	2	4	4	DP	Festuca pseudovina	.	+	+	.	.	.	.	.	+	II	0.17
H	Cp	4	0	0	P	Agrostis stolonifera	.	.	.	.	.	+	+	+	.	II	0.17
H	Cosm	4.5	3	3	P	Juncus effusus	.	.	.	.	.	+	+	+	.	II	0.17
H	Eua	0	0	0	D	Plantago lanceolata	.	.	.	.	.	+	+	+	.	II	0.17
H	Eua(M)	4	4	4	P	Juncus inflexus	+	.	.	.	.	.	.	+	.	II	0.11
H	Eua	3	3	2,5	D	Hypochoeris radicata	.	+	+	.	.	.	.	.	.	II	0.11
H	Eua	3	0	0	P	Achillea millefolium	.	.	+	+	.	.	.	.	.	II	0.11
H	Eua(M)	3,5	0	0	D	Ranunculus acris	.	.	+	.	.	.	.	+	.	II	0.11
H	E(M)	3.5	3	4	D	Trifolium hybridum	.	.	.	+	+	.	.	.	.	II	0.11
Ch-H	Eua(C)	3	4	0	DP	Ononis arvensis(O.hircina)	.	.	.	.	.	.	+	+	.	II	0.11

H	Cp	3	3	0	P	Prunella vulgaris	.	.	.	.	.	.	+	+	.	II	0.11
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
H	Eua	3	4	4,5	P	Leonurus cardiaca	+	.	.	.	.	.	.	.	.	I	0.06
G	Eua(M)	0	3	0	P	Carex hirta	+	.	.	.	.	.	.	.	.	I	0.06
H-HH	Eua(C)	4,53,5	4		P	Lythrum virgatum	+	.	.	.	.	.	.	.	.	I	0.06
Festuco-Brometea																	
G(H)	Cosm	2	3,5	0	DP	Cynodon dactylon	.	.	+	2	+	+	+	+	.	IV	2.22
H	Eua	2.5	0	4.5	DP	Plantago media	.	.	.	+	+	.	.	.	+	II	0.17
Stellarietea mediae																	
Th	Cosm	3	0	0	P	Capsella bursa -pastoris	.	.	.	.	+	.	+	+	.	II	0.17
Th-TH	Adv	2,5	0	0	D	Conyza canadensis	+	.	.	.	.	.	+	.	.	II	0.11
Th-TH	Eua(M)	2.5	3	0	D	Bromus arvensis	.	.	+	.	.	.	+	.	.	II	0.11
H-G	Cosm	0	0	0	P	Convolvulus arvensis	.	.	.	.	+	.	.	.	.	I	0.06
Th	Eua(C)	2	4	4,5	D	Anthemis austriaca	.	+	.	.	.	.	.	.	.	I	0.06
Bidentetea tripartiti																	
H	Cp	4	4	4	D	Rumex conglomeratus	+	.	.	.	.	.	.	.	.	I	0.06
Th-TH	Eua	5	3	4	P	Rumex palustris	+	.	.	.	.	.	.	.	.	I	0.06
H	Eua	4	3	0	P	Rumex crispus	.	.	.	.	+	.	.	.	.	I	0.06
Artemisietea vulgaris																	
TH	Ec	2.5	0	4	D	Cirsium eriophorum	.	.	.	.	.	+	+	+	.	II	0.17
TH	E	2	3	0	D	Cardus acanthoides	.	.	.	.	+	.	.	.	.	I	0.06
H	Mp	4,5	3	4	D	Galega officinalis	+	.	.	.	.	.	.	.	.	I	0.06
Th	Eua	3.53.5	4		P	Xanthium strumarium	.	.	+	.	.	.	.	.	.	I	0.06
Variae syntaxa																	
Ch(H)	Eua(C)	2,5	3	4,5	D	Artemisia maritima ssp. monogyna	.	.	+	.	.	.	.	.	+	II	0.11
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Th	Eua(C)	1	3,5	2	P	Vulpia myorus	.	.	+	.	.	.	.	.	.	I	0.06
Th	Cosm	2.5	0	0	P	Erodium cicutarium	.	.	.	.	+	.	.	.	.	I	0.06

Th	Eua	1,5	4	4	P	Bromus squarrosus	.	.	+	.	.	.	.	.	.	I	0.06
H	Eua	2.5	3	4	P	Agrimonia eupatoria	.	.	.	+	.	.	.	.	.	I	0.06
H	Eua	2,5	3	3	D	Ranunculus polyanthemus	+	.	.	.	.	.	.	.	.	I	0.06
Th	Eua	1,53,5	0		D	Bromus tectorum	.	.	+	.	.	.	.	.	.	I	0.06

Studied places: 1. Otomani (29.07.2009); 2. Adoni (06.07.2011);

3. Diosig (15.07.2011); 4-5. Tiream (11.07.2011);

6-8. Andrid (04.08.2011); 9. Ady Endre (11.08.2011);

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