

PHYTOCOENOLOGIC STUDY OF ASSOCIATION LEMNETUM MINORIS IN THE NATURAL AQUATIC HABITAT FROM THE IERULUI PLAIN

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Abstract

Association Lemnetum minoris Soó 1927, is distributed to in channels, the water basins in Ierului Plain. This study aims to analyze the phytocoenoses of the Lemnetum minoris (Class Lemnetea O. de Bolós et Masclans 1955) from phytocoenologic, floristic and economic points of view. Phytocoenoses association analysis present a scientific importance, with a total of 21 species, which is a very small biodiversity. It is a pioneer association, in standing water and slowly running water, in the first stage consists of a single species.

Key words: Lemnetum minoris, association, phytocenoses, floristic study, ecological factors.

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 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, reaching 589,3 mm the quantity registered in Carei.

The *Lemnetum minoris* Soó 1927 appears in the areas with channels and ponds in Ierului Plain. Preferă stațiunile călduroase însorite, unde se înmulțește în special pe cale vegetativă. They prefer warmly sunniest stations, especially where multiply by vegetative way. This plant is

especially spread by means aquatic birds, it can contribute the water purification because to incorporate inorganic substances and organic.

MATERIAL AND METHODS

To realize this study, there were performed a total of 4 local incursions, and about 6 phytocoenologic sampling. The sample surfaces, homogeneous in floristic and physiognomic terms, were chosen from the studied in natural habitats. Their size varies between 10-25 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 *Lemnetum minoris* Soó 1927 (Tab. 1) were identified in the following localities: Tiream, Galoşpetreu, Otomani, Ghenci.

The phytocenoses of the association reunites a number of 21 species which indicates a low biodiversity. Natant layer is dominated by the characteristic species *Lemna minor* which is covered 83.33%.

The characteristics species of the *Lemnetum minoris* Soó 1927 is *Lemna minor* has a maximum constancy and a large abundance and dominance.

The *Lemnetum minoris* alliance Soó 1927, Lemnetalia minoris order reunites a number of 5 species among which: *Lemna trisulca*, *Ceratophyllum demersum*, *Ceratophyllum submersum*, *Hydrocharis morsus-ranae*, *Salvinia natans*.

The spectrum bioforms (Fig. 1) points out the preponderance in the association of helohydatophyte (90.48%), followed by hemicryptophytes (4.76%) and euterophytes (4.76%). Among the flower elements (Fig. 2) the eurasiatic species are emphasized (38.10%) and the same value cosmopolite (38,10%) and circumpolar (23.80%).

The specific ecological conditions (Fig. 3) impregnate to the association a hydrophilic character (71.44 %) and less hygrophilic (23.80%), which reflects also in the floristic structure. Depending on the temperature, the species from the association are micro-mezzo-thermal (47.64%). As concerns the chemical reaction of the soil in association, the dominance is disputed by the euriionic species (52.39%), followed by low acid-neutrophil (33.33%).

In the cariologic spectrum (Fig. 4), the polyploidy (52.38%), diploid (33.33%), diplo- polyploidy species (14.29%) are present.

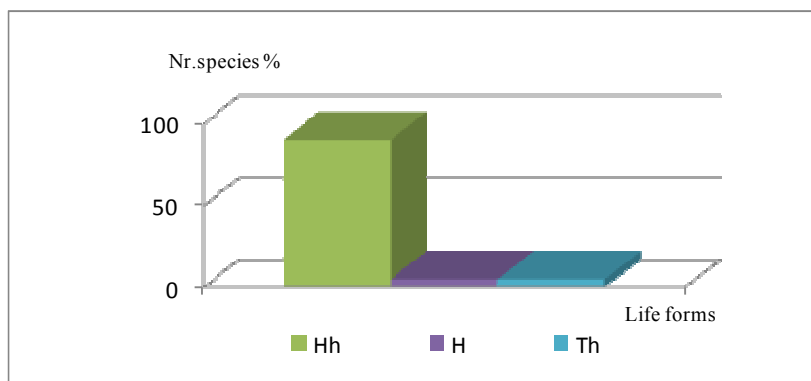


Fig. 1 The life forms of association . *Lemnetum minoris*
in Ierului Plain: Hh- Helohydatophytes; H-Hemicryptophytes;
Th-Euterophytes;

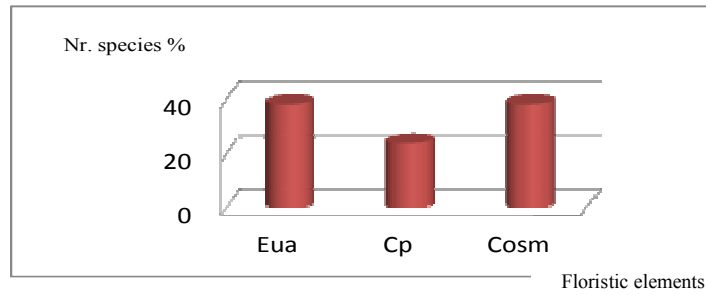


Fig. 2 The spectrum of floristic elements of association . *Lemnetum minoris*
in Ierului Plain: Eua-Eurasian; Cp-Circumpolar; Cosm-Cosmopolitan;

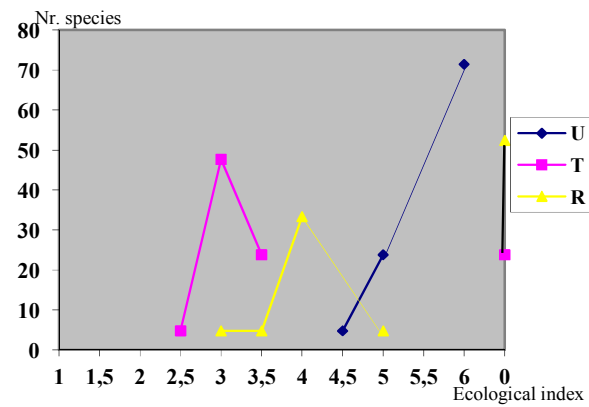


Fig. 3 The diagram of ecologic indices of asociacion . *Lemnetum minoris*
in Ierului Plain where: U-humidity, T-temperature, R-the chimical reaction of the soil

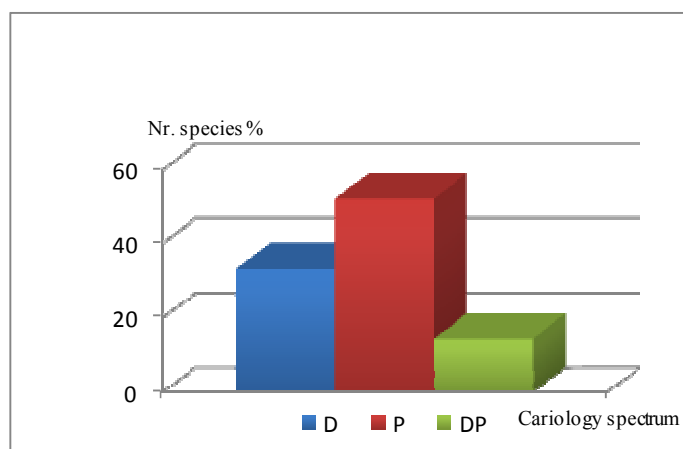


Fig. 4 Cariology spectrum of asociacion . *Lemnetum minoris* in Câmpia Ierului: D-Diploid, P-Poliploid, DP-Diplo-poliploid

Table 1

<i>Lemnetum minoris</i> Soó 1927 (natural aquatic plant 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	K	ADm	
					Altitude (m.s.m.)	109	105	105	120	120	120			
					Surface (m ²)	20	15	20	25	10	20			
					Coverage (%)	100	100	100	95	100	100			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hh	Cosm	6	0	0	P	As. Lemna minor	5	5	5	4	5	5	V	83.33
Lemnion, Lemnetalia, Lemnetea														
Hh	Cosm	6	0	4	P	Lemna trisulca	.	+	+	2	+	.	IV	3.17
Hh	Cosm	6	3	0	D	Ceratophyllum demersum	.	+	+	+	+	.	IV	0.33
Hh	Eua(M)	6	3.5	0	DP	Ceratophyllum submersum	.	.	+	+	.	+	III	0.25
Hh	Eua	6	3.5	3.5	P	Hydrocharis morsus -ranae	.	+	.	.	.	+	II	0.17
Hh	Eua	6	3	3	D	Salvinia natans	.	.	.	.	+	.	I	0.08
Potamogetonetalia, Potamogetonetea														
Hh	Eua(M)	6	0	4	P	Potamogeton lucens	.	+	.	+	+	.	III	0.25
Hh	Cp	6	3.5	4	P	Potamogeton nodosus	.	.	+	.	.	+	II	0.17
Hh	Cp	6	2.5	4	P	Potamogeton natans	.	+	.	.	.	.	I	0.08
Phragmitetalia, Phragmitetea														
Hh	Cp	6	3.5	0	DP	Berula erecta	+	.	.	.	+	+	III	0.25
Hh-H	Cp	5	3	4	P	Glyceria maxima	.	.	+	.	+	.	II	0.17
Hh	Cosm	6	0	0	D	Typha angustifolia	.	.	+	.	+	.	II	0.17

Hh	Cosm	6	3.5	0	D	Typha latifolia	.	.	+	.	+	.	II	0.17
Hh	Cosm	5	0	4	P	Phragmites australis	.	.	.	.	+	+	II	0.17
Hh	Cosm	6	3	0	D	Oenanthe aquatica	.	.	.	+	.	.	I	0.08
Hh-G	Cosm	6	3	4	P	Schoenoplectus lacustris	.	+	.	.	.	.	I	0.08
Hh-H	Eua	5	3	0	P	Mentha aquatica	.	.	.	.	+	.	I	0.08
Hh	Eua(M)	5	3	0	D	Lycopus europeus	.	.	.	+	.	.	I	0.08
Hh	Eua(M)	6	3	0	DP	Butomus umbellatus	.	.	.	.	.	+	I	0.08
Variae syntaxa														
Th	Eua	4,5	3	0	P	Bidens tripartita	+	.	+	.	.	.	II	0.17
H	Cp	5	3	5	D	Alopecurus aequalis	+	.	.	.	+	.	II	0.17

Localitatea: 1. Tiream (11.07.2011); 2. Galoşpetreu (18.08.2010);
3. Otomani (18.08.2010); 4-6. Ghenci (11.07.2011);

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