THE STUDY OF THE FOREST HABITATS FOUND IN THE BICAZ GORGE QUARRY AND THE SURROUNDINGS, (NEAMȚ COUNTY)

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ABSTRACT

The quarry mine Bicaz Gorge is situated in the North-East part of Romania, close to the established and spectacular gorges – Bicaz Gorge.

Within this study had been aimed the identification, description, diversity, ecological analysis and monitoring of the herbal and wooden vegetal communities, which belong to the Natura 2000 habitats and implicitly of the rare plant species, vulnerable, endemic whitin Quarry Bicaz Gorge and from the surroundings, concidering that it can be found by the contact limit of two protected areas: ROSCI0033 Sugaului-Munticelu Gorge and Bicazului-Hasmas Gorge National Park. The study and knowledge about the vegetation and cormoflora biodiversity in the Bicaz Gorge quarry, whose vegetating cover goes through profound changes due to anthropo-zoogen factors existing in that area, answer to a necessity of great interest. A big part of those vegetal communities represent the basis for the edification of some important Natura 2000 haibtats, with a community or priority interest. It has been made a study in order to see the distribution, diversity, dynamic, ecological and the can mode of those. According to the targets of this studies, a very important place I gave to the complex study of the habitat 91Q0, edified of the Leucobryo - Pinetum Matuszkiewicz 1962 from this are. Considering the place where the study had been located to, the eco-pedo-climatic conditions and the anthropic term exerted I have considered that is necessary to develop some ecological studies and using statistical methods (UPGMA si WPGMA, STYN-TAX 2000) for the plants's communities from the quarry mine Bicaz Gorge and the nearby territories. In the available time limit from the vegetation season in 2016 I successed some achievements about this study. For a good ecologic rehabilitation to an area where the studies about anthropic impact and the can mode of the species and habitats are required. I tried to successed this study by writing the type and the intensity of the current pressures and the next threats. All of these studies are the basis to an accession of the constant resource from Bicaz Gorge quarry and the other areas harness, to make sure that it will conserve the the species and the natural habitats, and also maintaining a right landscape.

INTRODUCTION

The thematic area provided in this project, inbuilt part of the Hasmas Moutains, it is a very important area by point of view geographically, flora and fauna, landscape, cultural and course economic (fig. 1). The study and knowledge about the vegetation and cormoflora biodiversity in the Bicaz Gorge quarry, whose vegetating cover goes through profound changes due to anthropo-zoogen factors existing in that area, answer to a necessity of great interest. A big part of those vegetal communities represent the basis for the edification of some important Natura 2000 haibtats, with a community or priority interest. It has been made a study in order to see the distribution, diversity, dynamic,

ecological and the can mode of those. According to the targets of this studies, a very important place I gave to the complex study of the habitat 91Q0, edified of the *Leucobryo - Pinetum* Matuszkiewicz 1962 from this are. Considering the place where the study had been located to, the eco-pedo-climatic conditions and the anthropic term exerted I have considered that is necessary to develop some ecological studies (adjacency, diversity index, ecotone, fragmentation, connectors, aggregation etc.) and using statistical methods (UPGMA si WPGMA, STYN-TAX 2000) for the plants's communities from the guarry mine Bicaz Gorge and the nearby territories.

Fig. 1 – Bicaz Gorge Quarry

MATERIAL AND METHOD

The vegetal communities, which establish the habitats, will be described based on their own observations considering several syntheses. Regarding the classification of vegetal associations it will be used the synthetic work written by JS Rodwell et al (2002). To identify the habitat will be used: Romanian Manual for interpretation of Eu habitats and Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. A very big importance we will give to the complex ecological studies and also to the Bray-Curtis's index determination and to achieve dendrograms using method Group Average (UPGMA) and Simple method average (WPGMA) using SYN-TAX 2000 program. To determine the type and degree of intensity of current and future threats pressures we used List Threats, Pressures and Activities (final version).

RESULTS AND DISCUSSIONS

Natural habitat types dentified in the quarry and the surrounding areas are classified into the following categories: forest habitats, grassland habitats, habitats of rocky habitats of tall grasses, streams habitats, streams mineralized inlaid training saddle tuff habitats.

Forest habitats. From the perimeter and in the surrounding areas career were identified the following types of habitats: 91Q0 Western Carpathian calcicolous *Pinus sylvestris* forests - CLAS. PAL.: 42.542, 42.5C8, edified for the plant community *Leucobryo - Pinetum* Matuszkiewicz 1962, very important habitat for this area; 9410 Acidophilous *Picea* forests of the montane to alpine levels (*VaccinioPiceetea*), CLAS. PAL.: 42.21 până la 42.23, 42.25; 91E0* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) - CLAS. PAL.: 44.3, 44.2 şi 44.13

edified for the - *Salicetum fragilis* Passarge 1957; *Telekio-Alnetum incanae* Coldea (1986) 1990 plant communities; 9180* *Tilio-Acerion* forests of slopes, screes and ravines - CLAS. PAL.: 41.4, Habitat that is not found in the quarry, but only in Munticelu area; 91V0 Dacian Beech forests (*SymphytoFagion*) - CLAS. PAL.: 41.1D2. The most important habitat is 91Q0 Western Carpathian calcicolous *Pinus sylvestris* forests.

This habitats is edified by the woody plant communty *Lucobryo - Pinetum* Matusz. 1962 from the quarry and and in the surrounding areas (table 1).

Ass. *Leucobryo - Pinetum* Matuszkiewicz

Table no. 1

No. of relevée	1	2	3	4	5	K
Altitude m.o.s. (x 10 m)	82	80	85	95	100	
Exposure	V	S	NE	SE	NE	
Inclination (in grades)	20	35	15	40	5	
Canopy (%)	0,6	0,6	0,6	0,6	0,6	
Coverage of herbacaeous layer (%)	30	45	35	50	60	
Area (m^2)	400	400	400	400	400	
Char. ass.						
Pynus sylvestris	4	4	4	4	4	V
Hypnum cupressiforme	1	1	1	1	1	V
Pino-Quercion						
Calamagrostis arundinacea	+	-	+	+	+	IV
Chamaecytisus hirsutus	+	+	+	+	+	V
Veronica officinalis	+	-	+	+	-	III
Seslerio rigidae-Pinion						
Helianthemum nummularium	+	+	+	1	1-2	V
Teucrium chamaedrys	+	+	+	1-2	2	V
Fagetalia						
Epilobium montanum	+	+	+	+	+	V
Oxalis acetosella	-	-	+	+	+	III
Gentiana asclepiadea	+	-	+	-	+	III
Mycelis muralis	+	+	+	+	+	V
Querco – Fagetea						
Poa nemoralis	1	1	1	1	1	III
Solidago virgaurea	+	+	+	+	+	V
Vaccinio – Piceetalia						
Picea abies	+	-	+	-	-	II
Vaccinium myrtillus	+	-	+	+	-	III
Deschampsia flexuosa	+	-	-	+	+	III
Calamagrostis arundinacea	+	+	+	+	+	V
Chamaenerion angustifolia	+	-	+	+	-	III
Variae Syntaxa						
Anthemis carpatica	+	+	-	-	-	II
Achillea distans	-	-	-	+	+	II
Jovibarba heuffelii	+	+	+	+	+	V
Sedum maximum	+	-	+	+	+	IV
Diverse specii briofite	+	+	+	+	+	V

Place and data of the relevés: Bicaz Chei Quarry, Surduc Peak, Munticelu, Bicazul Ardelean:1-5 -21-22.VII.2016

Due to the location of the territory under study the eco-pedo-cymaticconditions and anthropogenic factors gave a big part that made me feel they needed to conduct studies environmental statistics using methods (UPGMA and WPGMA, Styne-TAX 2000) for the

most important community of forestry vegetation that is representative of this area: *Leucobryo - Pinetum* Matusz. 1962. So, the investigations on the basis of data processing and realization dendrogramelor was found of reports which are grouped into two clusters so by analyzing the coefficient Bray-Curtis, useing the method Group Average (UPGMA). Bray-Curtis index is an index quantitatively dendrogram showing the highest value obtained for the survey of 2 - which is in the lowest intensity of human pressure, the number of species in the floristic composition is optimal (Fig. 2).

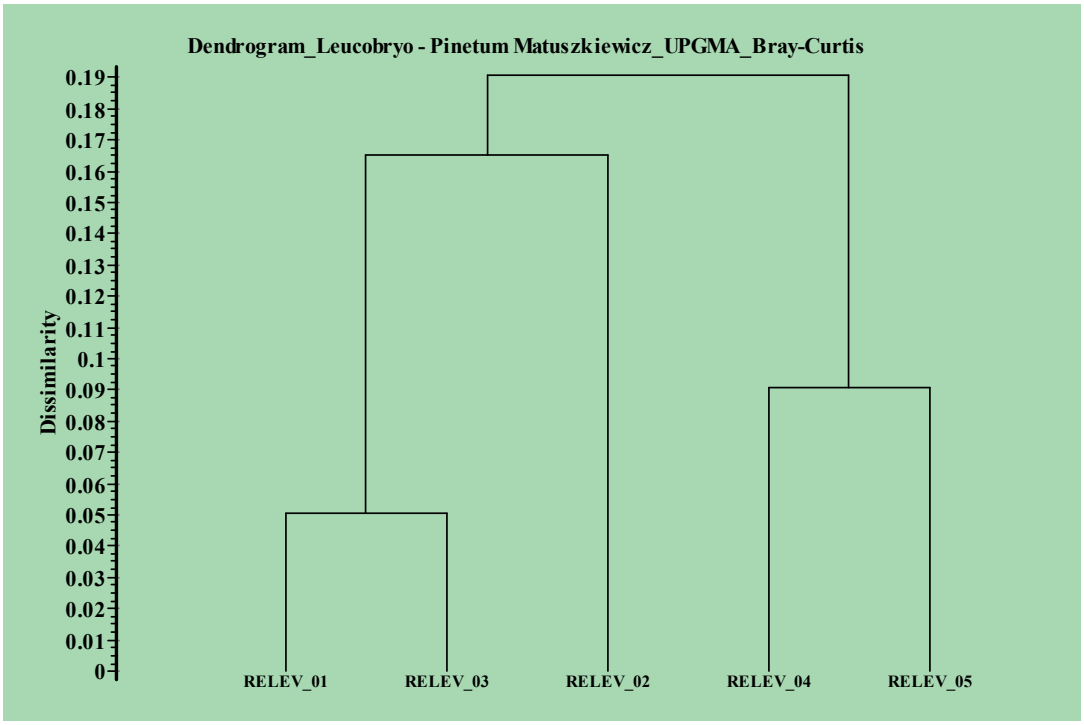

Fig 2. Dendrogram of the *Leucobryo - Pinetum* Matusz. 1962 plant community

Threats, Pressures in the Quarry Bicaz Chei and surrounding area

From studies conducted in quarry and surrounding areas have noted the type and menace pressures on habitats and their intensity. So, according to the guide - List Threats, Pressures and Activities (final version) I noted:

A. Current Pressures: A04.01.05 - intensive mixed animal grazing- M (Medium intensity); B02- Forest and Plantation management & use - L (Low intensity); A03.01- intensive mowing or intensification - M (Medium intensity); G01.03- motorised vehicles - L (Low intensity); G01.04 - mountaineering, rock climbing, speleology - L (Low intensity); I01 - invasive non-native species- L (Low intensity); G05.07 - missing or wrongly directed conservation measures – H (Major intensity); H01.09 - diffuse pollution to surface waters due to other sources not listed- M (Medium intensity); J02.06 - Water abstractions from surface waters - H (Major intensity); M02.01 - habitat shifting and alteration - L (Low intensity); H05.01 - garbage and solid waste - H (Major intensity).

B. Future Threats: G05.07 - missing or wrongly directed conservation measures – H (Major intensity); G01.03- motorised vehicles - L (Low intensity); A04.01.05 - intensive mixed animal grazing- M (Medium intensity); A03.01- intensive mowing or intensification - H (Major intensity); J02.06 - Water abstractions from surface waters - H (Major intensity); M02.01 - habitat shifting and alteration - L (Low intensity); H05.01 - garbage and solid waste - H (Major intensity).

CONCLUSIONS

The investigated area including Bicaz Gorge quarry is characterized by highly complex eco-pedo-climatic, geographic, flora and fauna, landscape, with a potential agro-tourist great around and with a population that preserves the traditions of the life that day of day. Bicaz Gorge quarry is a complex quarry in all aspects, with the likely ecological rehabilitation and restoration of the landscape. For good ecological rehabilitation in mining careers it is necessary first to know biodiversitsatea in the area in all its complexity. The most important woody plant communty is *Leucobryo - Pinetum* Matusz. 1962 from the quarry and and in the surrounding areas and represtents the basis of building habitat : 91Q0 Western Carpathian calcicolous *Pinus sylvestris* forests.

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