

## **THE FOREST HABITATS FOUND IN LESPEZI QUARRY, DÂMBOVIȚA COUNTY**

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### **ABSTRACT**

*"The only possibility to protect endangered species from extinction is preserving the biological communities and the ecosystems they are part of" (N. Boscaiu, 1985)." The consequences of the forest, shrubs, pastures and hay-fields areas reduction are multiples and they influence the whole planet: climate changes, exploitation mining, floods, the clogging of the inferior river basins, soils erosion, landslips, etc. All of these have negative effects over either the species or the landscape balance. In the area of the Lespezi Quarry part of the site ROSCI0013 - Bucegi, meet important Natura 2000 species and habitats. The diversity of flora and fauna in the Quarry Lespezi is very rich and very interesting. Conserving biological diversity in the Quarry Lespezi includes protecting habitats and protecting the wild animals and plants. Also this means and sustainable use. For preserving biological diversity is required to ensure a strategy based on the premise that the protection and use of biodiversity should always be considered from both an ecological, economic and social view point. In this project we plan evaluation this species and habitats, as well as anthropogenic effects resulting from the exploitation mining in the area of the Quarry Lespezi. It is necessary to establish reference values of favourable conservation status of species and habitats Natura 2000. It is important to give a special attention to the most affected habitat. We carry out inventory and evaluate Natura 2000 species. Monitoring the state of preservation of habitats and species it is very important in this area.*

### **INTRODUCTION**

Mining exploitation has been known and applied worldwide since ancient times. Throughout the world major actions are carried out for ecological reconstruction in areas where biodiversity was disturbed following the anthropic impact. Lespezi Quarry, an integral part of Bucegi National Park site ROSCI0013 – Bucegi, is located within the administrative scope of Dâmbovița County, near the locality of Fieni (fig. 1). From a geo-morphological point of view, the territory of this quarry belongs to Carstic Plateau from Mount Lespezi.

### **MATERIALS AND METHODS**

For the study of the vegetal carpet in this area, we have used methods of phytosociologic research characteristic to the Central European phytosociologic School, which was based on the principles and methods elaborated by J. Braun-Blanquet (1926) and adapted by A. Borza (1934) to the particularities of our country's vegetation. The woody plant communities have been analyzed and characterized from the chorological, ecological point of views. They were also examined according to their floristic composition and physiognomy, syndynamics and economics.

## RESULTS AND DISCUSSION

The ground cover in Lespezi Quarry is a reflection of the very diverse stationary conditions, adding to a certain extent to the influence of the anthropo-zoogenic factors. However, following the field research, we were pleasantly surprised to find that the anthropic impact here is quite low compared to other mining quarries we worked on, for instance Arnota.

The woody vegetation is represented by forests and scrubs characteristic especially to the higher mountainous understory and to a smaller extent to the subalpine level. The main forestry vegetal associations found here are: *Phyllitidi-Fagetum* Vida (1959) 1963 (Syn: *Phyllitidi-Aceretum*, *Acereto-Fagetum* auct. roman.), *Hieracio rotundati-Fagetum* Vida 1963, *Pulmonario rubrae-Fagetum* (Soó 1964) Täuber 1987, *Sorbo-Betuletum pendulae* Dihoru 1975, *Populo-Betuletum pendulae* Coldea 1972 (Syn. *Junipero-Betuletum albae* Soó ex Borza et Boșcaiu 1965), *Hieracio rotundati-Piceetum* Pawl. et Br.-Bl. 1939, the latter one being also the widest spread.

### Natura 2000 habitats found in Lespezi Quarry and the surroundings

The main habitats of the researched area are typical to the alpine biogeographical area. Knowledge of the different types of habitats, as well as their distribution and area is particularly important for biodiversity conservation in Lespezi Quarry. This requires the identification and mapping of not only the species, but also Natura 2000 habitats, as well as the establishment of conservation measures. In Lespezi Quarry and the surroundings, Natura 2000 habitats fall under the following categories: forests, rock and debris, grasslands, tall grass along the springs, shrubs.

#### Forest habitats

1. The most important forest habitat present in the perimeter of Lespezi Quarry is Habitat **9410** – Acidophilus spruce forests (*Picea*) of the montane to the alpine levels (*Vaccinio-Piceetea*); CLAS. PAL.: 42.21 to 42.23, 42.25-Eastern Carpathian arolla forests; EUNIS cod - G3.1B62 -Eastern Carpathian subalpine spruce forest; RO habitat type code: R4203, R4205, R4206, R4207, R4208, R4209.

They include spruce forests, grouping the following associations: *Soldanello majoris-Piceetum* Coldea et Wagner 1998; *Hieracio rotundati-Piceetum* Pawl. et Br.-Bl. 1939 (syn.: *Luzulo sylvaticae-Piceetum* Wraber 1953); *Hieracio rotundati-Abietetum* (Borhidi 1974) Coldea 1991; *Leucanthemo waldsteinii-Piceetum* Krajina 1933 (fig. 2, 3, table 1).

Carpathian spruce forests represent the woody vegetation characteristic to the higher montane level, growing on slopes with different inclinations and layouts, on lands with districambosol. Characteristic and dominant species for habitat **9410**: *Picea abies*, *Abies alba*, *Vaccinium myrtillus*, *V. vitis-idaea*, *Moneses uniflora*, *Orthilia secunda*, *Pyrola minor*, *P. rotundifolia*, *Hieracium rotundatum*, *Monotropa hypopitys*, *Huperzia sellago*, *Lycopodium annotinum*, *Sorbus aucuparia*, *Lonicera coerulea*, *Deschampsia flexuosa*, *Oxalis acetosella*, *Soldanella hungarica* ssp. *major*, *Homogyne alpina*, *Luzula luzuloides*, *Saxifraga cuneifolia*, *Oxalis acetosella*, *Dryopteris dilatata*, *Hylocomium splendens*, *Pleurozium schreberi*, *Sphagnum girgensohnii*.

2. The second type of important habitat found in this area is habitat **91V0** - Dacian beech forests (*Symphyto-Fagion*) CLAS. PAL.: 41.1D2; RO habitat type code R4101, R4103, R4104, R4108, R4109, R4116. This type of habitat groups: spruce (*Picea abies*), beech (*Fagus sylvatica*) and fir (*Abies alba*) forests with *Pulmonaria rubra*; spruce (*Picea abies*), beech and fir (*Abies alba*) forests with *Leucanthemum waldsteinii*; beech and fir forests with *Pulmonaria rubra*; beech and fir forests with *Leucanthemum waldsteinii*; beech forests with *Symphytum cordatum* and beech forests with *Phyllitis scolopendrium* (M. Niculescu, 2008). Characteristic and dominant species: *Picea abies*, *Fagus sylvatica* ssp. *sylvatica*, *Abies alba*, *Acer pseudoplatanus*, *Pulmonaria rubra*, *Symphytum cordatum*,

*Cardamine glanduligera* (Syn. *Dentaria glandulosa*), *C. bulbifera*, *Leucanthemum waldsteinii*, *Ranunculus carpaticus*, *Phyllitis scolopendrium*, *Aconitum moldavicum*, *Hepatica transsylvanica*, *H. nobilis*, *Galium odoratum*, *Actaea spicata*, *Asarum europaeum*, *Helleborus purpurascens*, *Euphorbia carniolica*, *Saxifraga rotundifolia*, *Silene heuffelii*, *Hieracium transsylvanicum*, *Festuca drymeia*, *Calamagrosis arundinacea*, *Luzula luzuloides*. Grupează asociațiile forestiere: *Pulmonario rubrae-Fagetum* (Soó 1964) Täuber 1987 (including subas. *taxetosum baccatae* Comes et Täuber 1977); *Leucanthemo waldsteinii-Fagetum* (Soó 1964) Täuber 1987; *Symphyto cordati-Fagetum* Vida 1959 (including subas. *taxetosum baccatae* Hodoreanu 1981); *Phyllitidi-Fagetum* Vida (1959) 1963.

3. In neighboring areas there is also habitat **9110** –*Luzulo-Fagetum* beech forests; CLAS. PAL.41.11; RO habitat type code: R4102, R4105-4107, R4110. It comprises the following forest vegetal associations: *Festuco drymejae-Fagetum* Morariu et al. 1968; *Hieracio rotundati-Fagetum* (Vida 1963) Täuber 1987 (syn.: *Deschampsio flexuosae-Fagetum* Soó 1962).



Fig. 1. Aspect from Lespezi Quarry



Fig. 2. Habitat 9410 in Lespezy Quarry



**Fig.3. Mining exploitation in the Lespezi Quarry**

**Ass. *Hieracio rotundati-Piceetum* Pawl. et Br.-Bl. 1939**

**Table no. 1**

No. of relevée	1	2	3	4	5	K
Altitude m.o.s. (x 10 m)	135	140	135	140	140	
Exposure	S	S	SE	SE	SV	
Inclination (in grades)	10	10	20	10	15	
Canopy (%)	0,7	0,7	0,7	0,8	0,8	
Coverage of herbaceous layer (%)	20	25	30	25	20	
Area (m <sup>2</sup> )	400	400	400	400	400	
<b>Char. ass.</b>						
<i>Picea abies</i>	4	4	4	4-5	4-5	V
<i>Hieracium rotundatum</i>	+	+	+	+	+	V
<b>Vaccinio-Piceion</b>						
<i>Homogyne alpina</i>	+	+	+	+	1	V
<i>Soldanella hungarica ssp. major</i>	-	+	+	+	+	IV
<i>Dryopteris dilatata</i>	+	+	+	+	+	V
<i>Gymnocarpium dryopteris</i>	+	-	+	+	-	IV
<b>Vaccinio-Piceetalia</b>						
<i>Vaccinium myrtillus</i>	+	1	+	1	+	V
<i>Vaccinium vitis-idaea</i>	-	-	-	+	+	II
<i>Huperzia selago</i>	+	+	-	-	-	II
<i>Lycopodium anotinum</i>	-	-	+	+	-	II
<i>Deschampsia flexuosa</i>	+	+	+	+	+	V
<b>Symphyto – Fagion</b>						
<i>Symphytum cordatum</i>	-	+	-	-	-	I
<i>Pulmonaria ruhra</i>	-	-	-	+	+	II
<i>Dentaria glandulosa</i>	-	-	-	+	-	I
<b>Fagetalia</b>						
<i>Fagus sylvatica</i>	-	+	-	-	-	I
<i>Daphne mezereum</i>	-	-	+	-	-	I
<i>Actaea spicata</i>	+	+	-	+	-	III

<i>Luzula luzuloides</i>	+	+	+	+	+	V
<i>Polystichum setiferum</i>	-	-	+	-	+	II
<i>Rubus hirtus</i>	-	-	-	+	+	II
<b>Quercus – Fagetea</b>						
<i>Athyrium filix-femina</i>	-	-	+	-	+	II
<i>Galium schultesii</i>	-	-	+	-	+	II
<i>Poa nemoralis</i>	-	+	-	+	+	III
<i>Viola reichenbachiana</i>	-	+	+	+	-	III
<b>Variae Syntaxa</b>						
<i>Polypodium vulgare</i>	-	+	-	+	-	II
<i>Geranium robertianum</i>	-	-	+	-	+	II
<i>Mycelis muralis</i>	-	+	+	+	+	IV
<i>Oxalis acetosella</i>	+	+	+	+	+	V
<i>Campanula patula ssp. abietina</i>	+	+	+	+	+	V
<i>Gentiana asclepiadea</i>	-	+	-	-	-	I
<i>Rubus idaeus</i>	+	-	-	+	-	II

**Place and data of the relevés: 12.VI.2012, Lespezi Quarry**  
(M. Miculescu, 2012)

### CONCLUSIONS

In conclusion, the biodiversity of Lespezi Quarry presents a particular interest through its richness, diversity and the presence of many rare, endangered, vulnerable, endemic or Natura 2000 species. Natura 2000 habitats are some of the most diverse, with forest habitats and brushes, grasslands and rocky areas, tall-herbs and even ruderal habitats found here. Taking into account the scientific, landscape, economic and social significance of this area, we believe its rehabilitation, conservation is imperative. In order to have chances of success, the ecological rehabilitation in Lespezi Quarry must follow the best restoration methods for the vegetal communities and, implicitly, the animal communities, as well as landscape reintegration, highly significant phenomena in biodiversity conservation. All these actions must be carried out at the level of herbaceous as well as forest habitats. The natural habitats here must under no circumstance be fragmented, even though their restoration takes time. We must not forget one important thing, which is keeping the uncovered soil nearby the respective area, so as to be restored and repopulated after the end of the exploitation. This is the best soil, and the natural vegetation will be much quicker reinstalled.

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