

STUDIES CONCERNING THE ROCK VEGETATION IN THE CHEILE GLOBULUI NATURE RESERVE (SOUTH-WESTERN ROMANIA)

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Abstract:

The area under study is located in South-Western Domașne - Mehadia Depression (Caraș - Severin County), a typical intra-mountain depression, surrounded by the Almăj, Semenic, and Cernei Mountains. The Cheile Globului Nature Reserve goes along the Globul Craiovei River valley and is flanked by abrupt mountain slopes 100 - 200 m high above the watercourse. The rocky slopes vegetation is represented by four plant associations frequently met: *Festucetum rupicolae* Burduja *et al.* 1956, corr. Burduja *et al.* 1972-1973, *Melico - Phlegetum montani* Boșcaiu *et al.* 1966, *Carpino orientalis - Quercetum cerris* Klika 1938 (Boșcaiu *et al.* 1969), and *Syringo - Fraxinetum orni* Borza 1958 em. Resmeriță 1972 together with other two plant associations identified on smaller areas.

INTRODUCTION

The Cheile Globului Nature Reserve, though located near other better known nature reserves such as Cheile Rudăriei or Cheile Minișului, has been very little studied so far. Cheile Globului Nature Reserve was certified by the Decree No. 499/1982, and the Decision No. 8/1994 as a floristic, faunistic and geological reserve (mixed nature reserve) [1].

In the Cheile Globului, as well as all along the Domașne - Mehadia Depression, geological formations are represented by crystal schists, eruption rock, and sedimentary deposits [12].

From the point of view of the soils, podzol and humic-illuvial soils are predominant. The geographical setting of the reserve in South-Western Romania explains the existence of a temperate climate with a moderate continental feature and sub-Mediterranean influences.

MATERIAL AND METHODS

Floristic research was carried on by field observation in different periods of the year, between 2003-2008. Plant communities are described in the spirit of Central-European phyto-sociological school (J. Braun - Blanquet, 1926; Borza Al., Boșcaiu N., 1965). Species identification was done using *Flora României*; the species are named after Ciocârlan, 2000 [2] and *Flora Europaea* (electronic edition) [13]. Due to the diversity of the vegetal associations and to the high number of samples, we have included in a single table all the species, and noted the abundance - dominance (from the lowest to the highest), the frequency and constancy for each species (Table 1).

RESULTS AND DISCUSSIONS

Research along 2.5 km shows the presence of 202 species in the area, which indicates a high biodiversity compared to the surface under study. From a phyto-geographical point of view, flora is

made up mainly of Euro-Asian elements (37%). The specific feature of flora is the presence of sub-Mediterranean elements, mainly meso-xerophilous species making up rock specific associations.

From the point of view of their adaptations to the unfavourable weather conditions during winter, flora is represented by bio-forms of which hemi-cryptophytes represent more than half (58%). Among moisture spectrum, we note the preponderance of xero-mesophylous elements (49%). The temperature spectrum shows that the flora of the studied area is part of the sub-Mediterranean influence area, which is also confirmed by the dominant share of meso-thermal elements (50%) and by a large number of moderate thermophilous elements (24%). Regarding the soil reaction, most of the species are slightly acid-neutrophilous [6].

The general orientation of the Cheile Globului Depression is from East to West. The rocky slope that borders the national road has southern expositions and covers mainly grassy and bushy vegetation. The opposite slope is forested and the forestry vegetation goes down to the water side.

The river is surrounded by typical flooding meadow vegetation, with *Alnus glutinosa*, *Salix fragilis*, *S. alba*, *Populus nigra* and species characteristic to this type of habitat. On the forested slope there are mixed woody species such as: *Quercus cerris*, *Q. frainetto*, *Q. petraea*, *Carpinus orientalis*, *C. betulus*, *Fraxinus excelsior*, *F. ornus*, *Tilia tomentosa*, *T. cordata*, *Acer campestre*, *A. tataricum*, *Corylus avellana*, *Cornus mas*, *Rhamnus cathartica*, *Frangula alnus*, *Pyrus pyraster*, *Sorbus torminalis*, *Prunus avium*, *P. spinosa*, *Crataegus monogyna*, *Ligustrum vulgare*, *Sambucus nigra*, *Clematis vitalba*, *Euonymus europaea*, *Hedera helix*, *Fagus sylvatica*.

On plane, moister and smaller areas in the vicinity of the river there are pastures of *Festuca pratensis*. Abundant and/or constant species in these phyto-coenoses are *Holcus mollis*, *Dactylis glomerata*, *Cynosurus cristatus*, *Filipendula ulmaria*, *Hypochoeris maculata*, *Dianthus carthusianorum*, *Linaria genistifolia*, *Elymus repens*, *Medicago lupulina*, *Leucanthemum vulgare*, *Ranunculus sardous*, *Rhinanthus rumelicus*, *Trifolium medium*, *T. montanum*, *T. pratense*, *Equisetum pratense*, *Achillea millefolium*, *Cruciata laevipes*, *Rumex acetosa*, *Hieracium umbellatum*, *Muscati racemosum* subsp. *neglectum*. Among Mediterranean and Balkan species in these hay-making fields we should mention *Lathyrus latifolius*, *Polygala amara*, *Campanula sparsa* subsp. *sphaerothrix*.

In this paper we present in details the rock vegetation on the south, west, and east oriented slope. Compared to the gorges of other rivers in the area, the Cheile Globului are more exposed to solar radiation, with lower shade due to the relatively long distance between the two slopes.

Species whose frequent abundance – dominance is above 40% are *Festuca rupicola*, *Alyssum petraeum*, *Bromus riparius*, *Chamaecytisus hirsutus*, *Clematis vitalba*, *Fraxinus ornus*, *Galium divaricatum*, *Galium flavescens*, *Cytisus nigricans*, *Melica ciliata*, *Phleum montanum*, *Sedum maximum*, *Teucrium chamaedrys*, some of which are building up the main vegetal associations we have identified.

Other more abundant species (whose coverage is above 40%) are: *Acer tataricum*, *Achillea crithmifolia*, *Bromus squarrosus*, *Campanula grossekii*, *Carpinus orientalis*, *Dorycnium pentaphyllum*, *Elymus repens*, *Elymus hispidus*, *Erysimum comatum*, *Festuca valesiaca*, *Humulus lupulus*, *Lactuca viminea*, *Linaria genistifolia*, *Poa pratensis*, *Salvia verticillata*, *Scleranthus perennis*, *Sedum hispanicum*, *Seseli pallasii*, *Syringa vulgaris*, *Trifolium arvense*.

Species with high constancy in the phyto-coenosis are: V - *Galium flavescens*, *Melica ciliata*, *Phleum montanum*; IV - *Alyssum petraeum*, *Bromus squarrosus*, *Festuca rupicola*, *Sedum hispanicum*, *S. maximum*, *Stachys recta*; III - *Achillea crithmifolia*, *Acinos arvensis*, *Centaurea biebersteinii*, *Echium vulgare*, *Festuca valesiaca*, *Galium divaricatum*, *Linaria genistifolia*, *Seseli pallasii*, *Teucrium chamaedrys*, *Thymus pannonicus*, *Verbascum lychnitis*.

The main plant associations are:

Festucetum rupicolae Burduja *et al.* 1956; corr. Burduja *et al.* 1972-1973. The phytocoenoses of this association are frequent in the Cheile Globului. Due to the high abundance – dominance values of the species *Cytisus nigricans*, this association was described in the Cheile Rudăriei under the name *Cytiso – Festucetum rupicolae* [9].

Species whose abundance – dominance and frequency have high values within these phytocoenoses are *Achillea crithmifolia*, *Acinos arvensis*, *Alyssum petraeum*, *Bromus riparius*, *Centaurea biebersteinii*, *Chamaecytisus hirsutus*, *Dianthus carthusianorum*, *Galium divaricatum*, *Galium flavescens*, *Genista ovata*, *Linaria genistifolia*, *Melica ciliata*, *Phleum montanum*, *Potentilla argentea*, *Salvia verticillata*, *Sanguisorba minor*, *Sedum maximum*, *Seseli pallasii*, *Stachys recta*, *Teucrium chamaedrys*, *Thymus pannonicus*, *Torilis arvensis*, *Verbascum lychnitis*. In the lower stratum of the plant cover there is, with high constancy, the *Sedum hispanicum* species.

Numerous Balkan, Pontic, and sub-Mediterranean species confer to this association in the Cheile Globului a thermophilous character, with obvious southern influences: *Achillea crithmifolia*, *Allium flavum*, *Alyssum petraeum*, *Bromus riparius*, *Carpinus orientalis*, *Centaurea triniifolia*, *Cerastium banaticum*, *Chrysopogon gryllus*, *Clematis recta*, *Cotinus coggygria*, *Dianthus giganteus*, *D. petraeus*, *Digitalis lanata*, *Echinops bannaticus*, *Erysimum comatum*, *E. odoratum*, *Euphorbia epithymoides*, *Ferulago sylvatica*, *Fraxinus ornus*, *Galium divaricatum*, *G. flavescens*, *G. tenuissimum*, *Iris reichenbachii*, *Lychnis coronaria*, *Medicago minima*, *Minuartia setacea* subsp. *banatica*, *Orlaya grandiflora*, *Petrorhagia saxifraga*, *Peucedanum longifolium*, *Quercus cerris*, *Scabiosa columbaria*, *Sedum hispanicum*, *Sempervivum marmoreum*, *Stachys recta*, *Syringa vulgaris*, *Teucrium chamaedrys*, *T. montanum*, *Thymus glabrescens*, *Th. pannonicus*, *Veronica teucrium* subsp. *crinita*.

Melico – Phleetum montani Boșcaiu *et al.* 1966. The association built up by *Phleum montanum* and *Melica ciliata* is well represented particularly toward the foot of the rocky slope. The two species have abundance – dominance values of up to 80% of the total plant coverage. Sometimes, they are in co-dominance with *Festuca rupicola*.

The most frequent and abundant species within the phytocoenoses are: *Achillea crithmifolia*, *Allium flavum*, *Alyssum petraeum*, *Anthemis tinctoria*, *Bromus riparius*, *Calamagrostis epigeios*, *Campanula grossekii*, *Centaurea biebersteinii*, *C. triniifolia*, *Coronilla varia*, *Crataegus monogyna*, *Cytisus nigricans*, *Dianthus giganteus* subsp. *banaticus*, *Echinops bannaticus*, *Echium vulgare*, *Erysimum comatum*, *Euphorbia helioscopia*, *Festuca rupicola*, *Fraxinus ornus*, *Galium divaricatum*, *G. flavescens*, *Geranium sanguineum*, *Hypericum perforatum*, *Linaria genistifolia*, *Sedum hispanicum*, *Sedum maximum*, *Seseli pallasii*, *Stachys recta*, *Syringa vulgaris*, *Teucrium montanum*, *Thymus glabrescens*, *Thymus pannonicus*, *Verbascum lychnitis*.

The *Galium flavescens* species, together with *Galium divaricatum*, make up facies within the **Festucetum rupicolae** and **Melico – Phleetum montani** associations, with abundance – dominance values between 20 and 60% of the total plant coverage, in general on plant less rocks with skeletal soils. Other abundant species here and there are *Bromus riparius*, *Clematis vitalba*, *Cytisus nigricans*, *Alyssum petraeum*, *Seseli pallasii*, and *Sedum hispanicum*. Phyto-coenoses under the two associations above have some similarities with **Melico – Festucetum rupicolae** Gh. Popescu (1974) 1975, Gh. Popescu *et* Elena Popescu 1974 described in Cheile Bistricei – Vâlcii and Cheile Costeștilor [10] and with **Galietum erecti** Pop *et* Hodisan 1964, which have a vegetation characteristic to mobile stone debris.

Syringo – Fraxinetum orni Borza 1958 em. Resmeriță 1972. The phytocoenoses of this association are found particularly in the upper part of the rocky slope and cover smaller areas compared to the Cheile Carașului [5], Cheile Gârlăștei [4], Cheile Minișului [9] or Cheile Rudăriei [7]. Together with build up species there are *Acer tataricum*, *Asplenium trichomanes*, *Carpinus*

orientalis, *Chamaecytisus hirsutus*, *Cotinus coggygria*, *Crataegus monogyna*, *Cytisus nigricans*, *Genista ovata*, *Prunus spinosa*, *Quercus cerris*, *Robinia pseudacacia*, etc.

Carpino orientalis – Quercetum cerris Klika 1938 (Boșcaiu et al. 1969). This vegetal association covers large surfaces on the highest and inaccessible parts of the rocky slopes.

On smaller areas we have identified **Campanulo lingulatae - Brometum riparii** (Roman 1974) Sanda et Popescu 1999, **Alyssum petraei – Sedetum hispanicum** E. Scheider – Binder et al. 1971.

The last one has also been noted in the Cazanele Mari, in Valea Mraconiei, Dubova and Plavișevița [11], in the Locvei Mountains, in the Baziaș area [3]. In the Cheile Globului, these phyto-coenoses cover very small areas. Total plant coverage is 60%. Build up characteristic species are *Sedum hispanicum* and *Alyssum petraeum*. Other species with coenotic and ecological value are *Petrorhagia saxifraga*, *Scabiosa columbaria*, *Melica ciliata*, and *Achillea crithmifolia*.

Species	A-D.F	K
<i>Acer campestre</i>	+.3	I
<i>Acer tataricum</i>	+.1 - 1.2	II
<i>Achillea collina</i>	+- +.1	I
<i>Achillea crithmifolia</i>	+.1 - 1.4	III
<i>Achillea millefolium</i>	+.2 - +.3	II
<i>Acinos alpinus</i>	+- +.2	I
<i>Acinos arvensis</i>	+- +.5	III
<i>Agrostis capillaris</i>	+.1 - +.3	I
<i>Allium flavum</i>	+- +.3	II
<i>Alyssum montanum</i>	+.1 - +.3	II
<i>Alyssum petraeum</i>	+- 2.5	IV
<i>Alyssum saxatile</i>	+- +.1	II
<i>Anthemis tinctoria</i>	+- +.3	II
<i>Asplenium trichomanes</i>	+- +.1	I
<i>Brachypodium pinnatum</i>	+.1 - +.2	I
<i>Briza media</i>	+.2	I
<i>Bromus commutatus</i>	+- +.3	II
<i>Bromus riparius</i>	+- 3.5	II
<i>Bromus sterilis</i>	+.1 - +.2	II
<i>Bromus squarrosus</i>	+.1 - 1.5	IV
<i>Bromus tectorum</i>	+- +.2	I
<i>Calamagrostis epigeios</i>	+.2 - +.4	II
<i>Campanula gieseckii</i>	+- 1.5	II
<i>Campanula sibirica</i> ssp. <i>divergens</i>	+.2	I
<i>Campanula sparsa</i> ssp. <i>sphaerothrix</i>	+- +.3	I
<i>Cardaminopsis arenosa</i>	+- +.1	I
<i>Carpinus orientalis</i>	+.1 - 1.3	II
<i>Centaurea biebersteinii</i>	+.1 - +.3	III
<i>Centaurea trinitifolia</i>	+.1 - +.2	II
<i>Cerastium banaticum</i>	+- +.2	I
<i>Chamaecytisus hirsutus</i>	+.1 - 3.5	I
<i>Chrysopogon gryllus</i>	+.1 - +.3	I
<i>Cirsium vulgare</i>	+- +.1	I
<i>Clematis recta</i>	+.2	I
<i>Clematis vitalba</i>	+- 3.5	II
<i>Convolvulus arvensis</i>	+- +.2	I
<i>Coronilla varia</i>	+- +.3	II
<i>Cotinus coggygria</i>	+.1 - +.2	I
<i>Crataegus monogyna</i>	+.1 - +.3	II
<i>Cytisus nigricans</i>	+- 3.5	II
<i>Dactylis glomerata</i>	+.1 - +.3	I
<i>Daucus carota</i>	+- +.2	I
<i>Dianthus carthusianorum</i>	+- +.5	II
<i>Dianthus giganteus</i>	+- +.2	I
<i>Dianthus giganteus</i> ssp. <i>banaticus</i>	+.1 - +.4	II
<i>Dorycnium pentaphyllum</i> ssp. <i>germanicum</i>	+- 1.2	I
<i>Echinops banaticus</i>	+- +.3	I
<i>Echium vulgare</i>	+- +.3	III
<i>Elymus hispidus</i>	+.2 - 1.4	II
<i>Elymus repens</i>	+.1 - 1.5	II
<i>Erigeron annuus</i>	+- +.3	I
<i>Erysimum comatum</i>	+- 1.5	II
<i>Erysimum odoratum</i>	+- +.2	I
<i>Euphorbia cyparissias</i>	+- +.4	II
<i>Euphorbia epithymoides</i>	+- +.2	I
<i>Euphorbia helioscopia</i>	+- +.3	II
<i>Ferulago sylvatica</i>	+- +.3	I
<i>Festuca heterophylla</i>	1.3 - 2.5	I

<i>Festuca pratensis</i>	+.1 - 1.2	I
<i>Festuca rupicola</i>	+.2 - 4.5	IV
<i>Festuca valesiaca</i>	+.2 - 1.4	III
<i>Filipendula hexapetala</i>	+- +.1	I
<i>Fraxinus ornus</i>	+.1 - 2.3	II
<i>Galium divaricatum</i>	+- 2.4	III
<i>Galium flavescens</i>	+- 3.5	V
<i>Galium mollugo</i>	+.1 - +.2	II
<i>Galium tenuissimum</i>	+.1 - +.2	I
<i>Genista ovata</i>	+- +.4	II
<i>Genista tinctoria</i>	+.1 - +.2	I
<i>Genistella sagittalis</i>	+- +.2	I
<i>Geranium sanguineum</i>	+- +.3	II
<i>Gypsophila muralis</i>	+- +.2	II
<i>Hieracium pilosella</i>	+- +.4	I
<i>Holcus lanatus</i>	+.1 - +.3	I
<i>Humulus lupulus</i>	1.4	I
<i>Hypericum perforatum</i>	+- +.2	II
<i>Iris reichenbachii</i>	+.2 - +.3	I
<i>Lactuca serriola</i>	+.1 - +.2	I
<i>Lactuca viminea</i>	+- 2.4	II
<i>Leontodon crispus</i>	+- +.2	I
<i>Linaria genistifolia</i>	+- 1.4	III
<i>Lithospermum purpureocaeruleum</i>	+.2	I
<i>Lotus corniculatus</i>	+- +.1	I
<i>Luzula sylvatica</i>	+.3	I
<i>Lychnis coronaria</i>	+.1 - +.5	II
<i>Lychnis viscaria</i>	+- +.4	II
<i>Medicago falcata</i>	+- +.2	I
<i>Medicago lupulina</i>	+- +.1	I
<i>Melica ciliata</i>	+- 2.4	V
<i>Melica nutans</i>	+.1 - +.3	II
<i>Melilotus albus</i>	+- +.1	I
<i>Orlaya grandiflora</i>	+- +.2	I
<i>Petrorhagia saxifraga</i>	+- +.3	I
<i>Peucedanum longifolium</i>	+.3 - +.5	I
<i>Peucedanum oreoselinum</i>	+.2 - +.5	II
<i>Phleum montanum</i>	+.1 - 2.5	V
<i>Picris hieracioides</i>	+- +.2	I
<i>Plantago media</i>	+- +.2	I
<i>Poa compressa</i>	+.1 - +.3	II
<i>Poa nemoralis</i>	+- 1.3	I
<i>Poa pratensis</i>	+.1 - 1.3	I
<i>Polygonum convolvulus</i>	+- +.3	II
<i>Potentilla arenaria</i>	+- +.1	I
<i>Potentilla argentea</i>	+.1 - +.4	II
<i>Potentilla inclinata</i>	+.3	I
<i>Potentilla recta</i>	+- +.2	I
<i>Prunus spinosa</i>	+.2 - +.3	I
<i>Quercus cerris</i>	+.1 - +.3	I
<i>Robinia pseudacacia</i>	+.1 - +.2	I
<i>Rosa canina</i>	+.1 - +.2	I
<i>Rosa micrantha</i>	+- +.1	I
<i>Rosa pimpinellifolia</i>	+- 1.3	II
<i>Rumex acetosa</i>	+- +.1	I
<i>Rumex acetosella</i>	+.1 - +.3	I
<i>Salvia verticillata</i>	+- 1.4	II
<i>Sanguisorba minor</i>	+- +.3	II
<i>Scabiosa columbaria</i>	+.2	I

<i>Scabiosa ochroleuca</i>	.2	I
<i>Scleranthus perennis</i>	+ .3 - 1.2	I
<i>Sedum acre</i>	+ - +.3	II
<i>Sedum hispanicum</i>	+ - 1.3	IV
<i>Sedum maximum</i>	+ .1 - 2.3	IV
<i>Sedum sexangulare</i>	+ - +.1	I
<i>Sempervivum marmoreum</i>	.2	I
<i>Seseli pallasii</i>	+ .1 - 1.5	III
<i>Silene vulgaris</i>	+ .1 - +.2	I
<i>Sonchus oleraceus</i>	+ - +.3	I
<i>Stachys recta</i>	+ - +.4	IV
<i>Stellaria graminea</i>	.2	I
<i>Syringa vulgaris</i>	+ .1 - 1.2	II
<i>Teucrium chamaedrys</i>	+ .1 - 2.5	III
<i>Teucrium montanum</i>	+ .1 - +.3	II
<i>Thymus glabrescens</i>	+ - +.2	II

<i>Thymus pannonicus</i>	.1 - +.5	III
<i>Torilis arvensis</i>	+ - +.3	II
<i>Tragopogon pratensis ssp. orientalis</i>	+ - +.2	II
<i>Trifolium arvense</i>	+ .1 - 1.3	I
<i>Trifolium campestre</i>	+ - +.1	I
<i>Trifolium medium</i>	+ - +.1	I
<i>Trifolium pratense</i>	.2	I
<i>Tussilago farfara</i>	+ .1 - +.3	I
<i>Verbascum lychnitis</i>	+ - +.5	III
<i>Verbascum phlomoides</i>	.2	I
<i>Veronica spicata ssp. crassifolia</i>	+ .1 - +.3	I
<i>Veronica teucrium ssp. crinita</i>	+ .1 - +.3	I
<i>Vicia angustifolia</i>	+ - +.2	I
<i>Vicia grandiflora</i>	+ .1 - +.2	I
<i>Vincetoxicum hirundinaria</i>	+ - +.2	I
<i>Viola arvensis</i>	+ .1 - +.2	II

Other species (+ - +.1 / I): *Agrimonia eupatoria*, *Ambrosia artemisiifolia*, *Anthriscus sylvestris*, *Asplenium septentrionale*, *Astragalus glycyphyllos*, *Athamanta turbith ssp. hungarica*, *Campanula lingulata*, *C. persicifolia*, *C. rapunculoides*, *Chondrilla juncea*, *Cichorium intybus*, *Crataegus pentagona*, *Cynodon dactylon*, *Cystopteris fragilis*, *Dianthus petraeus*, *Digitalis lanata*, *Draba muralis*, *Equisetum palustre*, *Eryngium campestre*, *Eupatorium cannabinum*, *Fragaria viridis*, *Galium album*, *G. aparine*, *Hieracium umbellatum*, *Knautia arvensis*, *Ligustrum vulgare*, *Lychnis flos-cuculi*, *Lysimachia vulgaris*, *Lythrum salicaria*, *Medicago minima*, *M. sativa*, *Melica uniflora*, *Melilotus officinalis*, *Minuartia setacea ssp. banatica*, *Moehringia muscosa*, *Morus nigra*, *Origanum vulgare*, *Pimpinella major*, *Plantago lanceolata*, *Ranunculus sardous*, *Rorippa pyrenaica*, *Salvia nemorosa*, *S. pratensis*, *Sambucus ebulus*, *Saponaria officinalis*, *Setaria viridis*, *Silene alba*, *S. armeria*, *Sonchus asper*, *Stellaria holostea*, *Vicia cassubica*.

On the very abrupt portions of the slope, in the rock crevasses where more humus and water from precipitations can accumulate, there are specimens of *Iris reichenbachii*, a rare species also met in the Cheile Minișului [9]. Some species such as *Chamaecytisus hirsutus*, *Cytisus nigricans*, *Echinops banaticus*, *Festuca heterophylla*, *Euphorbia epithymoides*, *Geranium sanguineum*, *Campanula rapunculoides* point out that these rock areas are in the vicinity of the woods built up by *Quercus* species, *Carpinus orientalis*, *C. betulus*, *Tilia tomentosa*, etc.

More recent stone debris and, in general, precipitation water drainage areas, are colonised almost exclusively by the pioneer species *Clematis vitalba*. At the foot of the slope, where there is more moisture, there are patches of *Elymus repens*, *Equisetum palustre*, *Lythrum salicaria*.

Man's influence is strong because of the road transportation and particularly because of heavy trucks. Though the slope is, in general, stable, there is permanent accumulation of stone debris at the foot of the wall resulted from rock pieces accumulation. Along the road, at the foot of the rocky slope, we could identify species of weeds and also wheat and barley, sprouted from the seed fallen from trucks and carts.

We could identify in the Cheile Globului rare and/or endemic species such as: *Athamanta turbith* subsp. *hungarica*, *Campanula grossekii*, *Campanula lingulata*, *Centaurea triniifolia*, *Cerastium banaticum*, *Dianthus giganteus* subsp. *banaticus*, *Dianthus petraeus*, *Dorycnium pentaphyllum* subsp. *germanicum*, *Echinops bannaticus*, *Erysimum comatum*, *Iris reichenbachii*, *Lactuca viminea*, *Petrorhagia saxifraga*, *Peucedanum longifolium*, *Sempervivum marmoreum*, *Teucrium montanum*, *Veronica crassifolia* [8].

Other endemic species according to the *Flora Europaea* [13] are: *Achillea collina*, *Achillea crithmifolia*, *Allium flavum*, *Alyssum petraeum*, *Campanula sibirica* subsp. *divergens*, *Campanula sparsa* subsp. *sphaerothrix*, *Draba muralis*, *Erysimum odoratum*, *Minuartia setacea* subsp. *banatica*, *Moehringia muscosa*, *Sedum sexangulare*, *Verbascum banaticum*. Together with these species, some other ones have been rarely found in the Cheile Globului: *Chamaecytisus hirsutus* subsp. *leucotrichus*, *Potentilla inclinata*, *Scabiosa columbaria*.

The main habitat types present on the rocky slope of the Cheile Globului are: 40A0* - Subcontinental peri-Pannonic scrub; 6110* - Rupicolous calcareous or basophile grasslands of the Alyssio - *Sedion albi*; 6190 - Rupicolous Pannonic grasslands (*Stipo - Festucetalia pallentis*); 6240* - Sub-pannonic steppic grasslands; 8120 - Calcareous and calcashist screes of the montane to alpine levels (*Thlaspietea rotundifolii*); 91M0 – Pannonian-Balkanic turkey oak - sessile oak forests [14].

Regarding the vegetation dynamics, we have noticed some differences between years. A humid spring like this year (2008) determined an increased percentage of the total vegetation cover, especially of the ***Melico – Phleetum montani*** association.

CONCLUSIONS

The main plant associations on the rocky slopes in the Cheile Globului Nature Reserve are: ***Festucetum rupicolae*** Burduja *et al.* 1956, corr. Burduja *et al.* 1972-1973; ***Melico – Phleetum montani*** Boșcaiu *et al.* 1966; ***Syringo – Fraxinetum orni*** Borza 1958 em. Resmeriță 1972; ***Carpino orientalis – Quercetum cerris*** Klika 1938 (Boșcaiu *et al.* 1969).

We could identify in the Cheile Globului rare and/or endemic species such as: *Athamanta turbith* subsp. *hungarica*, *Campanula grossekii*, *Campanula lingulata*, *Centaurea trinifolia*, *Cerastium banaticum*, *Dianthus giganteus* subsp. *banaticus*, *Dianthus petraeus*, *Dorycnium pentaphyllum* subsp. *germanicum*, *Echinops bannaticus*, *Erysimum comatum*, *Iris reichenbachii*, *Lactuca viminea*, *Petrorhagia saxifraga*, *Peucedanum longifolium*, *Sempervivum marmoreum*, *Teucrium montanum*, *Veronica crassifolia*.

The main habitat types present on the rocky slope of the Cheile Globului are: 40A0* - Subcontinental peri-Pannonic scrub; 6110* - Rupicolous calcareous or basophile grasslands of the *Alyso - Sedion albi*; 6190 - Rupicolous Pannonic grasslands (*Stipo - Festucetalia pallentis*); 6240* - Sub-pannonic steppic grasslands; 8120 - Calcareous and calcashist screes of the montane to alpine levels (*Thlaspietea rotundifoli*); 91M0 – Pannonian-Balkanic turkey oak - sessile oak forests.

Ruderalisation of the vegetal cover within the reserve is pointed out by the large number of cosmopolitan and adventive species (9%), as well as by a large number of annual (17%) and bi-annual (8%) therophyta. This is due to the location of the Cheile Globului on both sides of the main road linking Bozovici and Iablanița and then Mehadia.

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