

THE ASSOCIATION *HYPERICO-EUPHORBBIETUM GLABRIFLORAE* REXHEPI 1978 IN THE SERPENTINE TERRAINS OF DRENICA MOUNTAIN

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Abstract

In the territory of Kosovo there are many serpentine mountain massifs. The largest complexes are found in the valley of the Ibër River, and the same are continued in a discontinuous chain through Koznica and Golesh to the southwest of the territory of Kosovo. Vegetation on the serpentine bedrock is rich in rare species and communities, which cannot be found in the Balkans and Europe. The communities appearing on the serpentine bedrock are characteristic and important for science. They are endemic due to the presence of endemic species in their species composition. Drenica Mountain (1051 m) is part of the Central Kosovo Mountains. These terrains are situated in the central part of Kosovo, between Çiçavica, Kosovo plain (Golesh), Llapusha, the Carraleva Mountains and the Anadrini region. A considerable part of these areas consists of serpentine bedrock, which is covered by interesting flora and vegetation. In the vegetation of Drenica Mountain 10 communities have been identified. Two of them are found on serpentine bedrock: ass. *Hyperico-Euphorbietum glabriflorae* and ass. *Potentillo-Fumanetum bonapartei*. These communities belong to the open space, and are also located in other parts of Kosovo, but only on serpentine bedrock. On Drenica Mountain there are two localities where these two communities appear. In this paper we focus in particular on ass. *Hyperico-Euphorbietum glabriflorae*.

Key words: Drenica Mountain, Serpentine terrains, ass. *Hyperico-Euphorbietum glabriflorae* Rexhepi 1978, Kosovo, vegetation.

Izvešček

Na Kosovu so številni gorski masivi iz serpentinita. Največje površine so v dolini reke Ibër. Nadaljujejo se v prekinjeni verigi skozi Koznico in Golesh proti jugozahodnem delu Kosova. Vegetacija na serpentinitu je bogata z redkimi vrstami in združbami, ki ne uspevajo nikjer drugje na Balkanu in v Evropi. Te združbe na serpentinitu so pomembne, ker vsebujejo endemične vrste. Drenica (1051 m) je del osrednjega gorovja na Kosovu. To območje se nahaja v osrednjem delu Kosova, med kraji Çiçavica, Golesh, Llapusha, gorovjem Carraleva in območjem Anadrini. Precejšen del območja je na serpentinitu. V vegetaciji gore Drenica je najdenih deset združb. Dve sta na serpentinitu: asociacija *Hyperico-Euphorbietum glabriflorae* in asociacija *Potentillo-Fumanetum bonapartei*. Najdemo ju na odprtih rastiščih. Na Drenici sta dve najdiščiteh dveh združb. V članku je predstavljena predvsem asociacija *Hyperico-Euphorbietum glabriflorae*.

Ključne besede: Drenica, serpentinit, *Hyperico-Euphorbietum glabriflorae* Rexhepi 1978, Kosovo, vegetacija.

1. INTRODUCTION

Serpentine bedrock is spread all over the world, and scientists dedicate special attention to researching the geologic, chemical and petrographical conditions of the flora and fauna. Serpentine is rarely

found on the surface of the earth (Kruckeberg 1985). In the Balkan Peninsula there appear serpentine rocks with interesting and rich flora and vegetation. Kosovo, which is situated in the central part of the Balkans has very interesting serpentine

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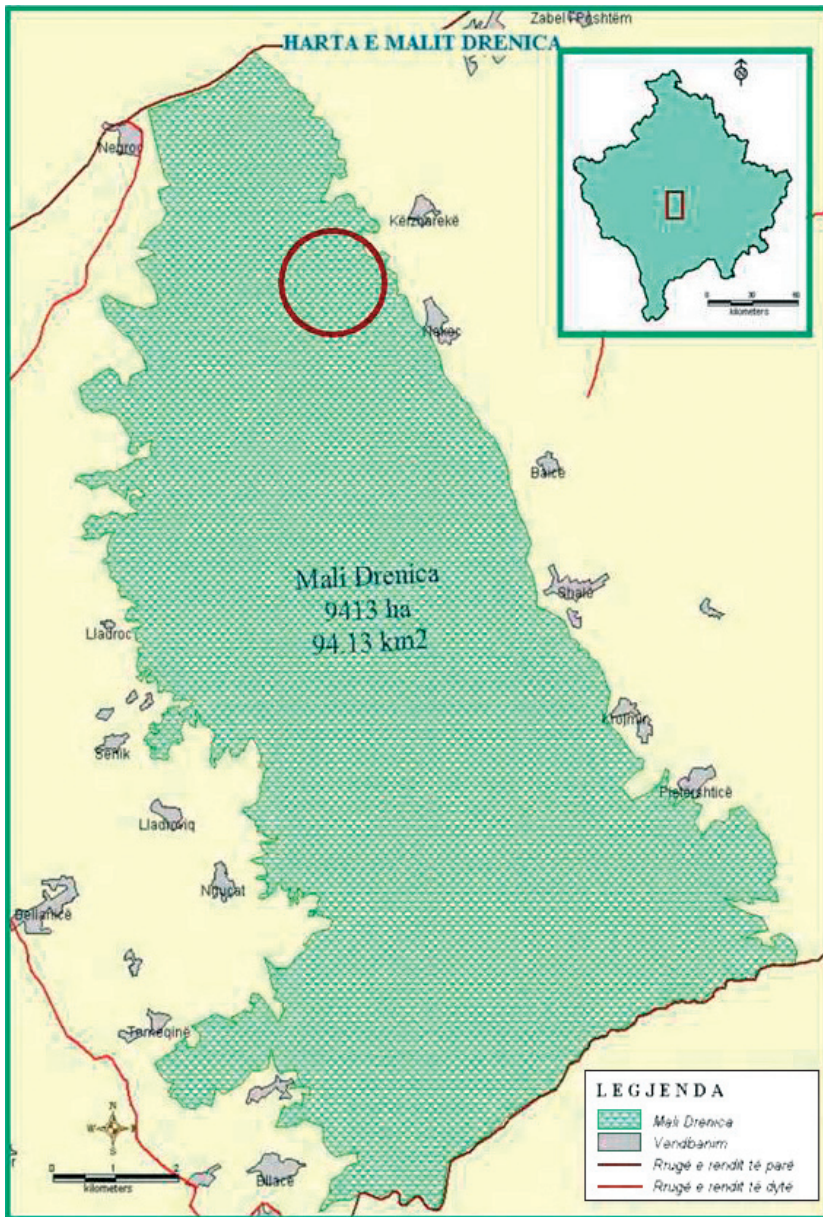


Figure 1: The map of Drenica Mountain (MESP – GIS. 2005)
 O The locality of the community.

Slika 1: Zemljevid Drenice (MESP – GIS 2005), z označeno lokaliteto združbe.

territory (Rexhepi 1985), and considering the climate, altitude and anthropogenic factors, the resulting flora and vegetation are very diverse.

Throughout the territory of Kosovo there are many basic and ultra basic rocks, which are known by their common name as “serpentine”. The largest complexes of serpentines are situated in the valley of the Ibër river, Golesh, the Sharr Mountains (Maja e Pashallarëve-Ostrovicë), the Albanian Alps (Gubavc), Koznik, the Mirusha region, Mushtisht, Gjakova surroundings, Koznicë, Guranë, Badovc and the Drenica Mountain.

The serpentine rocks in the Kosovo territory, belong to the cretaceous age. Their chemical composi-

tion consists mainly of magnesium, silica and iron, while other elements are present in smaller quantities. Due to the small amount of biogenic elements necessary for plant life, serpentine terrains are not suitable for the development of plants. Such a chemical structure is the main reason for the unique flora and vegetation in these terrains (Rexhepi 1978).

Referring to the researches of the floristic composition in serpentine areas, we emphasise some plant categories such as: relict serpentinophytes, typical (exclusive) serpentinophytes and plants which predominantly thrive on serpentines, indifferent plants (very often to be found on serpentine) and serpentinomorphosis. On the serpentine area all types of

vegetation are found: forest and bush (shrub) and herbaceous communities (Rexhepi 1985).

Flora and vegetation on serpentine bedrock in Kosovo have been investigated by many researchers: Blečić et al. (1969), Blečić & Krasniqi (1971), Krasniqi (1972), Rexhepi (1978, 1979, 1982, 1994, 2000), Krasniqi (2003, 2006), Krasniqi & Millaku (2004) etc.

The aim of our study is to sample the dry grassland of the *Hyperico-Euphorbietum glabiflorae*, to analyse its floristic inventory and to show some peculiarities. At the same time we would like to present also the site conditions of the communities and to present and analyse serpentine vegetation on Drenica mountain.

2. MATERIALS AND METHODS

2.1 Description of the researched area

Drenica Mountain (1051m) is part of the central mountains in Kosovo, respectively the western part of mountains of the Drenica region, in contact with: Kasmaç (976 m), Gradina e Vogël, Gradina Madhe (940 m), Buleni (740 m) and Mali i Lisit të gjatë (856 m). The area is situated in the central part of Kosovo, between Çiçavica, Kosovo plain, Golesh, Llapusha, the Carraleva Mountains and Anadrini.

The Llapushnik-Carralevë territory of Drenica Mountain includes areas with different substrates and natural habitats, where the major part is covered by forests while the other parts are grasslands and paddocks. A large part of this mountain is grassland over a serpentine substrate (Pavičević et al. 1974, Krasniqi 2006). In the serpentine terrains of Drenica Mountain, there appear two communities identified: *Hyperico-Euphorbietum glabiflorae* Rexhepi 1978 and *Potentillo-Fumanetum bonapartei* Rexhepi 1979 (Krasniqi 2006).

The center of the community *Hyperico-Euphorbietum glabiflorae* is situated in the coordinates: X=0490902 and Y=4708414 (measured with GPS). Altitude is 730–895 m. Slope is 5–30° with the dominant aspect Northeast and North.

Brownized rendzina over serpentine bedrock is the predominant soil type where the community *Hyperico-Euphorbietum glabiflorae* (Figure 2) thrives (Pavičević 1974, Krasniqi 2006).

The Drenica Mountain area has a continental climate, from time-to-time hostile, under the influence of predominant wind direction from the Northeastern part of the region (Tahirsylaj 2004).

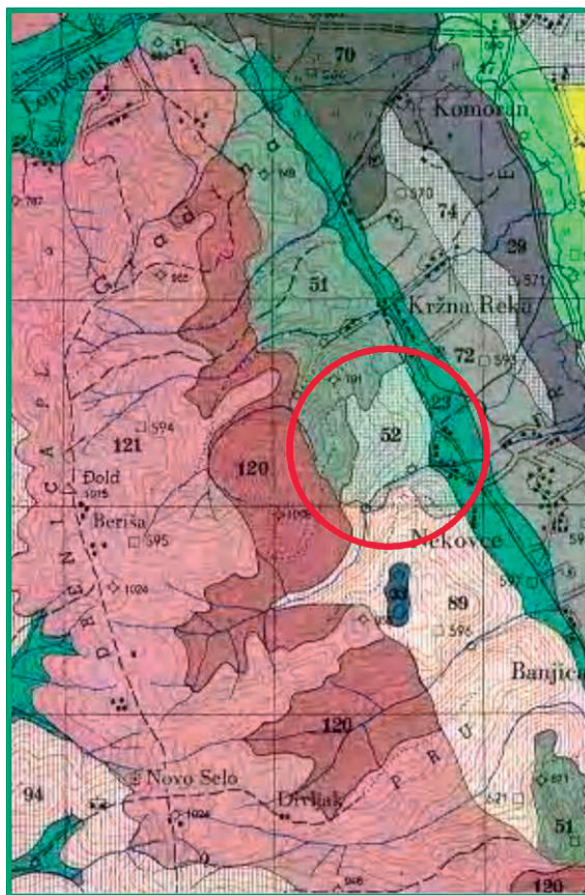


Figure 2: The pedological map of Drenica Mountain (52. Brownized rendzina on serpentine) (Pavičević 1974, Krasniqi 2006).

Slika 2: Pedološka karta pogorja Drenica (52. rendzina na serpentinitu) (Pavičević 1974, Krasniqi 2006).

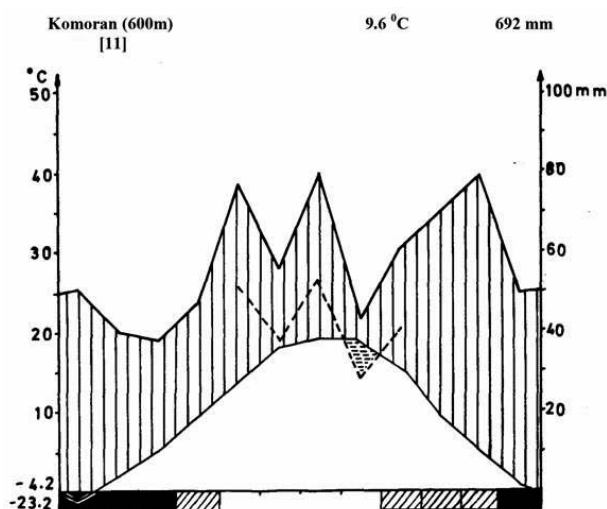


Figure 3: Climatic diagram of Komoran.

Slika 3: Klimatski diagram mesta Komoran.

The relationship between the air temperature and rainfall is presented in the climate diagram of Komoran (a locality next to the researched location) (Figure 3).

2.2 Methods

Vegetation is studied according to the principles and methods of the Zürich-Montpellier School (Braun-Blanquet 1964). In the research work done in Kosovo, this method has also been used by Blečić et al. (1969), Krasniqi (1972), Rexhepi (1978, 1982, 1994, 2007), Hundozi (1980, 1987), Pajazitaj (2000) and Krasniqi (2006). The elementary activities in the field have been the identification and determination of homogeneous plots. This has been completed on the basis of field analyses of the floristic composition of each relevé in a certain community, together with other additional data, such as number of relevé, altitude, aspect, slope, bedrock and the size of each relevé (m²). The floristic composition assigned to higher syntaxonomic categories (class, order and alliance) is presented according to the principles of characteristic species assignment to these categories (Rexhepi 1978, 1982, 1994, Mucina et al. 1993, Čarni et al. 2000). The arranging of all characteristic species of syntaxonomic categories is made according to the constancy class, beginning from grade V to I. This is the same as for the classification of accompanying plant species in the community (Rexhepi 1994, Buzo 2005).

3. RESULTS

3.1 Syntaxonomical scheme

FESTUCO – BROMETEA Br. Bl. et R. Tx. 1943

HALACSYETALIA SENDTNERI Rt. 1970

Centaureo – Bromion fibrosi Blečić et al. 1969

Hyperico – Euphorbietum glabriflorae Rexhepi 1978

3.2 Floristic composition of the Community

The floristic composition of the community is presented in the phytocoenological table (Table 1) with 10 relevés. In the table, there are 80 species present. Characteristic species of the association are: *Euphorbia glabriflora*, *Potentilla australis*, *Linum*

tauricum var. *serbicum*, *Hypericum barbatum*, *Potentilla visianii* and *Scorzonera austriaca*. For all character species the locality of Drenica mountain is new for this species in the flora of Kosovo.

***Euphorbia glabriflora* Vis.** (Figure 4). A small spineless shrub 10–20 cm, of stony mountain slopes, with lanceolate to linear-lanceolate leaves and obovate yellowish floral bracts. Rays usually 3–5, each with one “flower”. Fruit globular, with long cylindrical swellings (Polunin 1997). Is spread throughout the Balkan Peninsula: Albania, Bosnia and Herzegovina, Montenegro, Macedonia and Greece (Tutin et al. 1968, Josifović 1972, Qosja et al. 1992, Polunin 1997). It belongs to the Balkan floristic element (Rexhepi 1994). In Kosovo, it is found in Golesh, Koznicë, Ibër river valley, Mirusha region, Zatriq, Golesh of Malisheva, Dritan (Dobroshefc), Shkabaj (Gllanasellë) and Drenica Mountain (Krasniqi 2006).



Figure 4 (Slika 4): *Euphorbia glabriflora*.

***Hypericum barbatum* Jacq.** (Figure 5). Leaves 0.6–4 cm, lanceolate to linear-lanceolate or elliptic-oblong, stalkless or nearly so; stem 10–45 cm. Yellow petals usually with black dots over the surface or towards apex only. Sepals with non-glandular hairs along the margin and with numerous superficial black dots and streaks. Orange glands on fruit not prominent. Meadows, stony places (Polunin 1997). Is spread in Southeastern Europe, mainly in the Balkan Peninsula (Albania, Kosovo, Serbia, Macedonia, Bulgaria and Greece), extending to Austria and S. Italy (Tutin et al. 1968, Josifović 1972, Qosja et al. 1992, Polunin 1997). It belongs to the Balkan floristic element (Rexhepi 1994). In Kosovo, it is found in Golesh, Mirusha region (Koznik) and Drenica Mountain (Krasniqi 2006).



Figure 5 (Slika 5): *Hypericum barbatum*.

***Potentilla australis* Krasan.** (Figure 6) is spread in western parts of the Balkans and wider. It belongs to the Illyric floristic element (Rexhepi 1997). In Kosovo, it is spread in: Golesh, Golesh of Malisheva, Mirusha region, Drenica Mountain (Krasniqi 2003, 2006).



Figure 6 (Slika 6): *Potentilla australis*.



Figure 7 (Slika 7): *Linum tauricum*.

***Linum tauricum* Willd. var. *serbicum* (Podp.) Hayek** (Figure 7) is spread in Northern parts of the Balkan Peninsula, Southern parts of Russia. It belongs to the European floristic element (European-Sub Balkans). In Kosovo, it is found in Barel, Golesh, Mirusha region, Drenica Mountain (Krasniqi 2003, 2006).

***Potentilla visianii* Pancic** (Figure 8) is spread throughout the Balkan Peninsula. It belongs to the Balkans floristic element-Balkan Endemic (Rex-



Figure 8 (Slika 8): *Potentilla visianii*.

hepi 2000). In Kosovo, it is found in the Albanian Alps, Kopaonik, Golesh, Pashtrik, Mirusha region and Drenica Mountain (Krasniqi 2003, 2006).

3.3 Community description

Stands of the association *Hyperico – Euphorbietum glabriflorae* Rexhepi 1978 are found in Golesh, Koznicë, Barel, Picel and Mirusha region (Rexhepi 1994). It develops primarily on warm and dry soils. The altitude of these areas of distribution terrains is from 600–1000 m and even higher. There are mostly of south and south-eastern aspect, while the slope inclination is 20–45 degrees. The soil is relatively degraded – typical rendzina on serpentine. The vegetation does not cover the entire surface and there is much bare rock on the surface. The degradation of soils and vegetation is evident. The characteristic species of the community are: *Euphorbia glabriflora*, *Thymus lykae*, *Potentilla visianii*, *Hypericum barbatum*, *Linum tauricum* and *Scorzonera austriaca*, and with lower presence: *Alyssum markgrafii*, *Plantago subulata*, *Stachys recta*, *Potentilla astrachanica*, *Echium rubrum*, *Teucrium montanum*, *Astragalus onobrychis*, *Dorycnium pentaphyllum*, *Stachys scardica*, *Minuartia verna*, *Aster linosyris* etc.

Table 1 presents relevés made in the period 2003–2005 on Drenica Mountain. Species composition indicates warm, dry sites on serpentine bedrocks.

Association *Hyperico – Euphorbietum glabriflorae* Rexhepi 1978 (Figure 9) belongs to the alliance *Centaureo-Bromion fibrosi* Blečić et al. 1969, which is represented with a considerable number of species with constancy class V and IV: *Bromus fibrosus*, *Plantago subulata*, *Alyssum markgrafii*, *Galium lucidum* (Rexhepi 1978, 1982, 1994, 2007). Also the order *Halacsetalia sendtneri* Rt. 1970 (Rexhepi 1982, 2007) is represented with a considerable number of species with constancy class V and III, such as *Potentilla astrachanica* [*P. hirta*], *Astragalus onobrychis*, *Halacsa sendtneri* and *Echium rubrum*.

The class *Festuco-Brometea* Br. Bl. et R. Tx. 1943 (Rexhepi 1978, 1994, 2007), is represented with 10 characteristic species which have the constancy class V and IV. These are: *Sanguisorba minor*, *Dorycnium pentaphyllum*, *Cerastium arvense*, *Aster linosyris*, *Stachys recta*, *Stachys scardica*, *Artemisia alba*, *Convolvulus cantabrica* and *Hippocrepis comosa*. Species *Eryngium campestre* and *Euphorbia cyparissias* have constancy III, while species *Campanula glomerata*, *Filipendula vulgaris*, *Galium verum*, *Thalictrum minus* and *Carex caryophyllea* have constancy II.

The ecological characteristics of association *Hyperico – Euphorbietum glabriflorae* are presented by the life forms analysis (Figure 10). The graph represents the relationship given in percentages between different life forms: H (79%), Ch (7%), and G (5%). According to the biological spectrum, we may indicate this community as hemicyptophytic.



Figure 9: Association *Hyperico–Euphorbietum glabriflorae* (Drenica Mountain 2004).

Slika 9: Asociacija *Hyperico–Euphorbietum glabriflorae* (pogorje Drenica 2004).

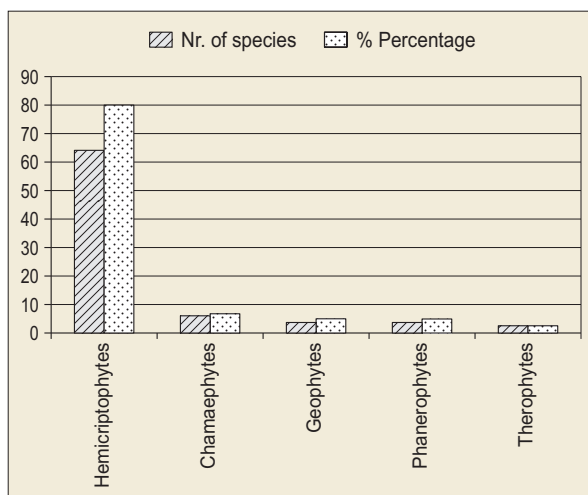


Figure 10: The biological spectrum of association *Hyperico-Euphorbietum glabriflorae*.

Slika 10: Biološki spektrum asociacije *Hyperico-Euphorbietum glabriflorae*.

The biogeographical affiliation of this community can be illustrated by the species areal spectrum (Figure 11). Floristic elements of the community are: European (24%), Euro-Asiatic (21%), Sub-Mediterranean (14%), Pontic (13%), Balkans (11%), Cosmopolitan (5%), Circumpolar (4%), Illyric (4%), Mediterranean (3%) and Boreal (1%). The southern thermophilous elements (Balkans, Mediterranean and Sub-Mediterranean) characterize the community to be of xerothermophilous character.

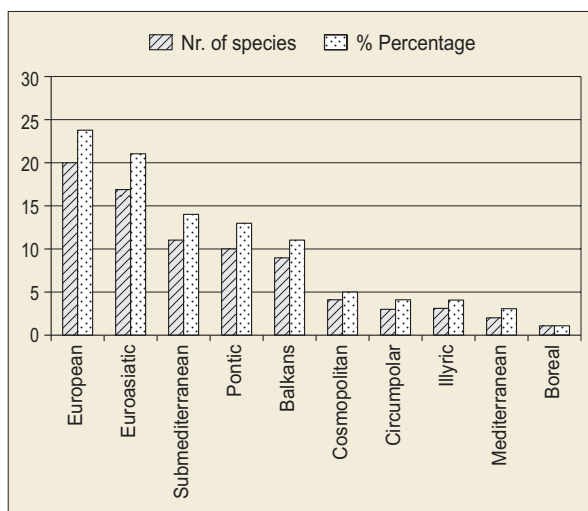


Figure 11: The areal spectrum of ass. *Hyperico-Euphorbietum glabriflorae*.

Slika 11: Fitogeografski spektrum asociacije *Hyperico-Euphorbietum glabriflorae*.

This community has no relevant economic importance, but it is important as a natural protector against soil erosion.

4. SUMMARY

The area of Drenica Mountain, includes terrains with different substrates and natural habitats, where the major part is covered by forests and the remaining parts are grasslands and paddocks. A considerable part of the area of this mountain consists of serpentine substrate (Pavičević et al. 1974, Krasniqi 2006).

According long-term data provided, the Drenica Mountain area has a continental climate, time-to-time hostile, under the influence of wind from the Northeastern part of the region (Tahirsylaj 2004).

In the area of Drenica Mountain 10 communities have been identified. On the serpentine bedrock of Drenica Mountain two grassland communities have been identified: *Hyperico-Euphorbietum glabriflorae* Rexhepi 1978 and *Potentillo-Fumanelum bonapartei* Rexhepi 1979 (Krasniqi 2006). These communities thrive on rocky sites and are found also in other localities in Kosovo territory only on serpentine terrains (Rexhepi 1994, Krasniqi 2006).

Ass. *Hyperico-Euphorbietum glabriflorae* Rexhepi 1978 is spread in Golesh, Koznicë, Barel, Picel and Mirusha region. It develops mostly in dry-warm sites. The altitude of these sites is from 600–1000 m and even higher. There are mostly South and South-Eastern aspects, while the slope is 20–45°. The land is relatively degraded – typical rendzina on serpentine bedrock (Rexhepi 1978, 1994).

During the researching period 2003–2005 on Drenica Mountain, the state of the community was evaluated, as indicated in Table 1. According to the presence of the characteristic species, it is evident that the community is mainly linked to dry and warm sites over serpentine bedrock.

According to the measurements made with GPS, the community *Hyperico-Euphorbietum glabriflorae* is situated at altitude 730–895 m (coordinates: X=0490902 and Y=4708414). The slope is 5–30° and the dominant aspect is Northeast and North. The land is relatively degraded – brownized rendzina on serpentine (Pavičević 1974, Krasniqi 2006). This is the first record of this association on Drenica Mountain.

Ass. *Hyperico-Euphorbietum glabriflorae* Rexhepi 1978 belongs to the class *Festuco-Brometea* Br. Bl. et R. Tx. 1943, order *Halacsetalia sendtneri* Rt. 1970

and alliance *Centaureo-Bromion fibrosi* Bleč. et al. 1969 (Rexhepi 1978, 1982, 1994, 2007).

In the table, 80 species can be found. Characteristic species of association are *Euphorbia glabriflora*, *Potentilla australis*, *Linum tauricum* var. *serbicum*, *Hypericum barbatum*, *Potentilla visianii* and *Scorzonera austriaca*.

According to the biological spectrum, we may conclude that in this case we are dealing with a hemicryptophyte community.

The southern and thermophilous elements (Balkans, Mediterranean and Sub-Mediterranean) give to the community of a xerothermophilous character.

This community does not have any relevant economic importance, but it is important as a natural protector of the land against erosion.

5. APPENDIX

Species in one relevé only:

Allium cupanii 5: +.1, *Anthemis montana* 10: 1.1, *Armeria canescens* 1: +, *Asyneuma limonifolium* 10: +, *Bupleurum flavicans* 7: 1.2, *Centaureum erythraea* 10: 1.1, *Chamaespartium saggitale* 10: 1.2, *Cheilanthes maranthae* 3: +, *Conyza canadensis* 9: +, *Fritillaria messanensis* 9: +, *Helianthemum nummularium* 2: 1.2, *Lotus corniculatus* 9: 1.2, *Melanpyrum cristatum* 9: +.1, *Muscari racemosum* 9: +, *Potentilla argentea* 6: +, *Quercus pubescens* 10: +, *Scilla autumnalis* 6: +.2.

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Table 1: Association *Hyperico-Euphorbietum glabriflorae* Rexhepi 1978.

Tabela 1: Asociacija *Hyperico-Euphorbietum glabriflorae* Rexhepi 1978.

Nr. of relevés	1	2	3	4	5	6	7	8	9	10
Locality	Nekoc (Near “Zabeli i Plakiqëve”)									
Altitude (m)	895	875	850	830	800	750	760	780	780	730
Aspect	NE	NE	NE	NE	NE	N	N	N	NW	NW
LF Slope	15	10	5	5	5	15	20	20	25	30
Geological substratum	S e r p e n t i n e									
Size of relevé (m²)	25	25	25	25	25	25	25	25	25	25

Char. species of ass.

CH	<i>Euphorbia glabriflora</i>	2.2	2.3	3.3	2.3	3.3	2.2	1.2	2.2	2.2	+
H	<i>Potentilla australis</i>	+	+1	+	+	+	+2	1.2	+	+1	+
H	<i>Linum tauricum</i>										
	var <i>serbicum</i>	+	+2	1.2	+	.	1.2	+2	+	+2	.
H	<i>Hypericum barbatum</i>	.	1.1	+	+	1.1	1.1	+	.	+	.
H	<i>Potentilla visianii</i>	.	+	.	1.2	+	1.2	+	1.2	+	.
H	<i>Scorzonera austriaca</i>	+	.	.	.	.	+	+	+	.	.

Nr. of relevés	1	2	3	4	5	6	7	8	9	10
Char. species of All.										
H <i>Bromus fibrosus</i> [<i>B. erectus</i> subsp. <i>fibrosus</i>]	1.2	+	2.2	2.2	1.2	2.2	+2	1.2	+1	2.2
H <i>Plantago subulata</i>	+	1.2	+1	2.2	+1	2.2	2.2	+	+	2.2
H <i>Alyssum markgrafi</i>	1.2	1.2	+1	1.2	+	2.2	+	1.2	+1	+
H <i>Galium lucidum</i> [<i>G. gerardi</i>]	+2	+1	1.1	+1	+	+	+	1.2	+	1.2
Char species of Ord.										
H <i>Potentilla astracanica</i>	1.2	+	+	.	2.2	+1	2.2	+1	1.2	1.2
H <i>Astragalus onobrychis</i> var. <i>multijugus</i>	+	.	+	+	1.1	+	1.1	+	.	+
H <i>Halacsya sendtneri</i>	.	.	.	.	.	+	1.1	1.1	+	+
H <i>Echium rubrum</i>	.	.	.	+	.	1.1	+	.	+	+
Char. species of Class										
H <i>Sanguisorba minor</i>	1.1	1.1	+1	1.1	+	1.1	1.1	+	+1	1.1
H <i>Dorycnium pentaphyllum</i>	1.2	1.2	1.2	2.2	+	1.2	2.2	2.2	+	2.2
H <i>Poa bulbosa</i>	1.1	+1	+	+	+1	1.2	+	+	.	+
CH <i>Cerastium arvense</i> subsp. <i>ciliatus</i>	+1	1.2	+	+	1.1	1.1	1.2	+	1.1	+
H <i>Aster linosyris</i>	1.2	+	+	2.2	+1	1.2	+	+	1.2	1.2
H <i>Stachys recta</i> subsp. <i>baldaci</i> var. <i>chrysophaea</i>	1.2	+	+	1.2	+	1.2	+	.	+	2.2
H <i>Stachys scardica</i>	2.1	1.1	+	.	.	1.1	1.1	+	2.2	2.2
CH <i>Artemisia alba</i>	+	1.2	+	.	+	.	1.2	+1	+	.
H <i>Convolvulus cantabrica</i>	+	1.1	1.2	+	.	+	+	1.1	+	.
H <i>Hippocrepis comosa</i>	.	+	+	1.2	+	+2	+	.	+	.
H <i>Eryngium campestre</i>	.	+	.	+	.	.	+	.	.	+
H <i>Euphorbia cyparissias</i>	+	+	.	+	.	.	+	.	+	1.1
H <i>Campanula glomerata</i>	.	.	+	.	.	+	.	+	.	.
H <i>Filipendula vulgaris</i>	+	+	.	.	.	.	+	.	+	+
G <i>Galium verum</i>	.	.	.	.	.	.	+	+	+	+
H <i>Thalictrum minus</i>	.	.	.	.	.	.	.	+	1.1	+
H <i>Carex caryophyllea</i>	.	.	.	.	+	.	.	+	.	.
Companions										
CH <i>Sedum ochroleucum</i>	2.2	1.2	+2	2.2	2.2	+1	2.2	2.2	1.2	+
H <i>Euphorbia barrelieri</i> var. <i>thesala</i>	1.2	2.2	1.1	+	1.2	2.2	+1	1.2	2.2	+
H <i>Thesium ramosum</i>	+	+	+1	+	+	+	+	1.2	+	1.2
H <i>Minuartia verna</i>	+	+	1.2	+	+	+	+	+	+	+
T <i>Euphrasia pectinata</i>	2.2	1.2	1.2	+	1.2	+	+	1.2	+	.
H <i>Eryssimum diffusum</i>	.	+2	+	+	+2	1.2	+2	+	+	+2
H <i>Leontodon crispus</i> subsp. <i>asperimus</i>	1.1	+1	.	1.1	+	1.1	.	+	+1	1.1
H <i>Minuartia hamata</i>	+1	1.1	+	+	.	+1	1.1	.	+	1.1

Nr. of relevés		1	2	3	4	5	6	7	8	9	10
H	<i>Veronica jacquini</i>	+	+	+	+2	+2	1.2	+2	+1	.	.
T	<i>Cerastium pumilum</i>	+1	1.1	+	1.2	+1	1.1	+	+	.	.
H	<i>Trinia glauca</i>	+	1.1	1.1	.	1.1	.	+	1.1	+	.
G	<i>Transteineria globosa</i>	+	+	+	.	+1	.	1.1	+	+	+
NP	<i>Cytisus decumbens</i>	+	+1	.	+	.	+	+	1.2	+	1.2
H	<i>Rumex acetosella</i>	1.1	+	.	1.1	+	+	+	.	+	+
H	<i>Alyssum murale</i>	.	+	+	+	.	+	+	+1	+	+1
H	<i>Anthyllis vulneraria</i> subsp. <i>polyphylla</i>	+1	1.2	1.1	.	+	1.2	+	+	.	.
H	<i>Paronychia kapela</i>	.	1.2	+	+	.	+1	+1	1.2	+	.
H	<i>Stipa pulcherrima</i>	.	+	+	.	+	.	1.2	+2	1.2	1.2
CH	<i>Sedum album</i>	+	.	+	.	+1	+2	.	+	+2	+1
H	<i>Centaurea splendens</i>	+	2.1	.	+	.	2.1	.	2.1	+	+
H	<i>Hypericum perforatum</i>	1.1	+1	+	.	+	1.1	+	.	.	+
H	<i>Vincetoxicum hirundinaria</i> (<i>Cynanchum athoum</i>)	+	.	.	+	+2	+	.	+	+	+1
H	<i>Scabiosa columbaria</i>	.	+	+	+	.	+	.	+	+	+
H	<i>Hieracium praealtum</i>	+	+	+1	+	.	+	.	+	+	.
H	<i>Verbascum phoeniceum</i>	+	+	+	+	.	+	.	+	+	.
H	<i>Alyssum montanum</i>	+	+	+	+	.	+	.	+	+	.
CH	<i>Teucrium montanum</i>	+2	+1	+2	.	.	+2	.	.	+2	+2
G	<i>Orchis morio</i>	.	+1	.	1.1	+	.	.	+	+1	1.2
H	<i>Inula hirta</i>	.	+	1.1	+1	.	+	+	+	.	.
H	<i>Silene vulgaris</i>	+	.	.	.	+	.	+	+1	+	+
H	<i>Agropyron cristatum</i>	+	+	.	+	+1	.	.	.	+	+1
H	<i>Podospermum laciniata</i>	.	+	+	+	.	+	.	+1	+	.
G	<i>Orobanche gracilis</i>	+	+	+	.	+	.	+	.	+	.
H	<i>Dischanthium ischaemum</i>	+	+	.	+	.	+	.	+	.	+
H	<i>Briza media</i>	+	+	.	+	.	+	.	+	+	.
H	<i>Phleum montanum</i>	+	+	.	.	.	+	+	.	+	+
H	<i>Achillea coarctata</i>	.	.	1.2	+2	+2	+	+	.	.	.
H	<i>Plantago argentea</i>	.	+	.	+	+	+	.	+	.	.
H	<i>Linum perenne</i>	.	.	+	+	+	.	.	+	.	+
H	<i>Onobrychis alba</i>	.	+	.	+	.	+	+	.	.	+
G	<i>Iris reichenbachii</i>	.	+	.	+	.	+	+	.	+	.
H	<i>Trifolium alpestre</i>	+	.	+	+	.	.	+	.	.	.
H	<i>Plantago lanceolata</i>	.	.	+	.	+	.	.	+	+	.
H	<i>Veronica spicata</i>	.	.	.	.	.	.	+2	1.2	+2	.
H	<i>Hypericum rumelicum</i>	.	.	.	.	+	.	.	1.1	+1	+
H	<i>Primula veris</i>	.	.	.	.	.	.	+	.	+	+
H	<i>Dianthus sylvestris</i>	.	.	.	.	.	.	.	+	+	+
P	<i>Fraxinus ornus</i>	.	+	.	.	.	.	.	+	+	.
P	<i>Juniperus oxycedrus</i>	.	.	.	.	.	.	.	+	+	.