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DIVERSITY, DISTRIBUTION AND ECOLOGY OF THE DACIAN BEECH FORESTS IN THE ŞUŞARA VALLEY- PART OF THE NERA GORGES BEUŞNIȚA NATIONAL PARK

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ABSTRACT

The examined area, process which started in 2011, is situated along the course of Şuşara, a tributary of the Nera river and is an integral part of the Nera Gorges-Beuşniţa National Park. The wooden vegetation is represented by forests, underwoods and riverside coppices, the forests occupy the largest area. In the Şuşara basin, important areas are occupied by the beech forests belonging to the Phyllitidi – Fagetum Soó 1964 plant community. A new infra-coenotaxon was described: *Phyllitidi – Fagetum* Soó 1964 *rusconetosum hypoglossae* nova subass.

Several types of analysis concerning the ecological features, the local distribution, the homogeneity (by using the Bray-Curtis dissimilarity index), the floristic composition and the economic importance were performed for this plant community.

INTRODUCTION

The examined area, process which started in 2011, is situated along the course of Şuşara, a tributary of the Nera river and is an integral part of *Nera Gorges-Beuşniţa National Park*. The general aspect of vegetation in the Şuşara Valley represents an image of the very different stationary conditions, to which one can add the influence of the anthropo-zoogenous factors. Herbous vegetation is represented by the meadow vegetation, aquatic and paludous vegetation, ruderal vegetation and saxicole vegetation.
The wooden vegetation is represented by forests, underwoods and riverside coppices, the forests occupy the largest area. In this paper, we present one plant community, belonging to *Querco-Fagetea* class.

MATERIALS AND METHODS

The field research on the field was carried out between 2011-2013, during all seasons and having clearly defined itineraries. The research underpinned solid bibliographical documentation with respect to the physical and geographical environment: the relief, geology-lithology, types of rocks, hydrographic net, soils and the general and local climate. The materials used were topographic, geological and pedological maps. The itinerary was marked on the topographic map. For the study of the vegetal carpet in Lapuşnic Valley, we have used methods of phyto-sociologic research characteristic to the Central European phyto-sociologic 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 basic coenotaxonomic unit which was used to study the vegetation was the vegetal association. The associations were identified and

distinguished according to the characteristic, edifying, dominant and differential species. For the classification of the plant associations, we have used the synthesis papers on the Romanian or European vegetation, elaborated by G. Coldea (1986, 1991), D. Ivan – coordinator (1992), L. Mucina, G. Grabher & T. Ellmauer (1993), J.S. Rodwell, J.H.J. Schaminée, L. Mucina, S. Pignatti, J. Dring, D. Moss (2002).
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

In the Şuşara Valley, important areas are occupied by the beech forests belonging to the Ass. *Phyllitidi – Fagetum* Soó 1964 plant community.

Ass. *Phyllitidi-Fagetum* Vida (1959) 1963 (Syn: ***Phyllitidi-Aceretum*, *Acereto-Fagetum*** auct. roman.)

(Table no. 1)

In the Şuşara Valley the phytocoenoses of this plant communitz are situated on the valleys with moderate or high hydric regime, preferring slopes whose inclination is between 10^0-40^0. The plant community dominated by *Fagus sylvatica* şi *Phyllitis scolopendrium* (fig. 1, 2) develop on the limestone bedrock with rendzine type soils, rich in skeleton, with humus type mull.

In the phytocoenotic composition in the relevees analized on the Şuşara Valley *Fagus sylvatica* is domonant, *Acer pseudoplatanus* is rarely. Are generally young forests and provide a canopy cover between 65-85%. The level of the bushes is poorly developed.

Typical taxa of the *Symphyto-Fagion, Moehringio muscosae-Acerenion* and *Fagetalia*.occur in this plant community, such: *Stellaria nemorum, Asperula taurina, A. odorata, Pulmonaria rubra, Lunaria rediviva, Sanicula europaea, Luzula luyuloides, Dryopterix filix-mas, Rubus hirtus, Euonymus europaea, Asarum europaeum.*The remaining coenotaxa are poorly represented.

The phytocoenosis analized on the Şuşara Valley, part of the *Nera Gorges-Beuşniţa National Park* is characterized by the presence of a number of species characteristic of the class *Quercetea pubescenti-petraeae.*

In some phytocoenoses *Ruscus hypoglossum* was dominant and these phytocoenoses were assigned to a new infra-coenotaxon - *rusconetosum hypoglossae* nova subass. (fig. 3).

In addition to the typical plant community, in 7 of the 12 relevés analized, abundance dominance of *Ruscus hypoglossum* is very high, which is why we considered this pthycoenoses a nova subass. *rusconetosum hypoglossae*
Holotypus hoc loco: table no. 1 rel. 11.

Ruscus hypoglossum has a good development in these phytocenoses, due to the favourable ecologic conditions: calcareous substrate, soil and trophicity higher temperature. Beside the mentioned species, in the same ecologic conditions several species occur: *Oryzopsis virescens and Ruscus aculeatus.*

To these are added and the fact that unlike the southern part of the country (the counties Dolj and Gorj) where the species was collected by peasants used as a species in flower arrangements and sold in markets, here we see that it has a much better protection, which allows a better development.

Observation: Young forest, beech tree's diameter rather small. *Rubus hirtus* in some surveys of the Ungureanu Valley, stifles grassy layer.

High degree of the human impact, here were made in deforestation about 40 years ago.

This plant community is part of the **91V0 habitat - Dacian Beech forests (*Symphyto-Fagion*)**; CLAS. PAL.: 41.1D2*;* HdR R4101, R4103, R4104, R4108, R4109, R4116

Fig. 1. Ass. *Phyllitidi – Fagetum* Soó 1964 on the Ungureanu Valley

Fig. 2. *Phyllitis scolopendrium* (L.) Newman in the *Phyllitidi – Fagetum* Soó 1964 plant community on the Şuşarei Valley

Fig. 3. *Ruscus hypoglossum* L. in the *Phyllitidi – Fagetum* Soó 1964 plant community on theUngureanu Valley

Ass. *Phyllitidi – Fagetum* Soó 1964

Table no. 1

No. of relevée	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**K**
Altitude m.o.s. (x 10 m)	45	45	48	48	48	52	50	55	55	55	55	55	
Exposure	E	V	NV	SV	V	SV	NV	V	V	V	E	NV	
Inclination (in grades)	5	30	40	35	20	30	30	30	30	30	20	20	
Canopy	0,6	0,6	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,8	0,7	
Coverage of herbacaeous layer (%)	30	35	30	30	25	35	40	35	35	35	45	50	
Sampling surface (m2)	400	1000	1000	400	1000	1000	400	1000	400	400	400	400	
Char. ass.													V
Fagus sylvatica var. *moesiaca*	4	4	4	4	4	4	4	4	4	4	4	4	V
Phyllitis scolopendrium	1	1	+	1-2	1-2	+	1	+-1	1	1	+	1	V
Moehringio – Acerion et Symphyto – Fagion													
Acer pseudoplatanus	-	+	+	-	+	+	-	-	-	-	-	-	II
Acer platanoides	-	+	+	+	-	+	+	+	+	+	1	1	V
Fraxinus excelsior	-	-	-	+	+	+	+	+	+-1	+-1	1	1	IV
Polystichum aculeatum	+	-	+	+	-	+	+	+	+	+	+	+	V
Lunaria rediviva	+	-	+	+	-	+	+	+	+	+	+	1	V
Festuca drymeia	-	-	-	+	+	+	+	+	1	1	+	+	IV
Polystichum setiferum	+	+	-	+	-	-	+	-	-	-	+	+	III
Stellaria nemorum	-	+	-	-	+	-	+	-	-	-	+	+	III
Ruscus hypoglossum	+	+	+	+	+	1-2	2	2	1-2	2	2-3	2-3	V
Asperula taurina	+	+	-	+	+	+	-	-	+	-	+	+	IV
Fagetalia													
Galeobdolon luteum	-	-	+	-	-	+	-	-	-	-	-	-	I
Veronica urticifolia	-	-	+	-	-	+	-	-	-	-	-	-	I
Mycelis muralis	-	-	+	-	-	+	+	-	-	-	+	+	III
Pulmonaria rubra	+	+	-	+	+	+	+	+	+	+	+	+	V
Dentaria bulbifera	+	+	-	+	+	-	-	-	+	+	-	-	III
Lapsana communis	-	+	-	-	+	-	+	-	-	-	+	+	III
Luzula luzuloides	+	-	+	-	-	-	-	+	+	+	-	-	III
Hedera helix	+	+	+	+	+-1	+-1	+	+	1	1	+-1	+	V
Tilia platiphyllos	+	+	-	-	-	-	-	+	+	+	-	-	III
Tilia platiphyllos reg.	-	-	-	-	-	-	-	+	+	+	-	-	II
Asarum europaeum	+	-	+	-	+	+	+	+	+	+	+	+	V
Asperula odorata	+	+	-	+	-	+	+	-	-	+	-	-	III
Sanicula europaea	-	+	+	+	-	-	-	-	-	-	-	-	II
Ranunulus auricomus	+	+	-	+	-	-	-	-	-	+	-	-	II
Mercurialis perennis	+	+	+	-	+	+	-	-	+	-	-	-	III
Querco – Fagetea													
Dryopteris filix-mas	-	-	+	-	-	+	-	-	-	+	+	+	III
Brachypodium silvaticum	+	+	+	+	+	+	+	+	+	+	+	+	V
Galium schultesii	-	-	+	+	+	-	+	-	-	+	-	+	III
Euonymus europaea	+	-	+	+	-	+	-	-	-	-	+	+	III
Staphylea pinnata	+	+	-	-	+	-	-	-	-	-	+	+	III

Geranium robertianum	+	+	+	+	+	+	+	+	+	+	-	-	V
Carpinus betulus	+	+	-	-	+	-	-	-	-	-	+	-	II
Clematis vitalba	+	+	-	+	-	-	-	-	-	-	-	-	II
Coryllus avellana	-	-	+	-	-	+	+	+	-	-	-	-	II
Sorbus torminalis	-	+	+	-	+	-	-	-	+	+	-	-	III
Geum urbanum	+	+	+	-	-	+	-	-	-	-	-	-	II
Quercetea pubescenti-petraea													
Carpinus orientalis	-	+	+	+	-	-	-	+	+	-	+	-	III
Tilia tomentosa	+	-	-	+	+	-	-	-	-	+	+	+	III
Cynancum vincetoxicum	+	+	+	-	-	-	+	+	-	-	-	-	III
Euonymus verrucosus	+	+	-	-	+	-	+	+	-	-	+	-	III
Fraxinus ornus	+	+	+	-	+	-	-	-	-	-	-	-	II
Scutellaria altissima	-	-	+	+	+	-	-	+	+	-	-	-	III
Ruscus aculeatus	+	-	+	+	-	+	-	-	+	+	+	+	IV
Oryzopsis virescens	+	-	+	+	-	+	-	+	+	+	-	-	III
Silene nutans	-	+	-	+	-	-	-	-	+	-	-	-	II
Variae Syntaxa													
Rubus hirtus	1	1	+	+	+	+	+	+	+	1	2	2	V
Glechoma hederacea	+	+	+	-	-	+	-	-	-	-	-	-	II
Sambucus nigra	+	+	-	+	+	-	-	-	-	-	+	+	III
Oxalis acetosella	+	+	-	+	-	-	-	-	-	-	-	-	II
Sedum maximun	+	-	+	-	-	-	-	-	-	-	-	-	I
Ceterach officinarum	-	-	-	+	+	-	-	-	-	-	-	-	I

Place and data of the relevés:1, 2, 3, 4 – Şuşarei Valley; 5, 6, 7, 8, 9, 10–Ungureanu Valley, 19.VII.2012

CONCLUSIONS

The examined area, process which started in 2011, is situated along the course of Lăpuşnic, a tributary of the Nera river and is an integral part of the *Nera Gorges-Beuşniţa National Park*. The general aspect of vegetation in the Şuşara Valley represents an image of the very different stationary conditions, to which one can add the influence of the anthropo-zoogenous factors. Herbous vegetation is represented by the meadow vegetation, aquatic and paludous vegetation, ruderal vegetation and saxicole vegetation.
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