DEGRADATED VEGETATION ASPECTS FROM THE UPPER BASIN OF RIVER'S DORNA (DISTRICT OF SUCEAVA)

ASPECTE DE VEGETAȚIE DEGRADATĂ DIN BAZINUL SUPERIOR AL RÂULUI DORNA (JUD. SUCEAVA)

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Abstract. *In the paper the association Festuco rubrae-Agrostietum capillaris Horvat 1951, subassociation nardetosum strictae (Csürös et Resm. 1960) Oroian 1998 from Molinio-Arrhenatheretea R. Tx. 1937 class, is analyzed both from the phytocoenologic viewpoint and from the viewpoint of the bioforms, of the floristic elements and of the ecological indices. The aspects of the economic (fodder) importance of the species identified in the phytocoenoses of the subassociation which is the object of the study are also described in the paper. Pursuant to the analysis, it had been ascertained that these phytocoenoses are low productive, especially due to the over-grazing.*

Rezumat. *În lucrare se analizează asociația Festuco rubrae-Agrostietum capillaris Horvat 1951 subasociația nardetosum strictae (Csürös et Resm. 1960) Oroian 1998 din clasa Molinio-Arrhenatheretea R. Tx. 1937, atât din punct de vedere fitocenologic, cât şi din punct de vedere al bioformelor, elementelor floristice şi al indicilor ecologici. De asemenea, în lucrare sunt surprinse şi aspecte ale importanței economice (furajere) ale speciilor identificate în fitocenozele subasociației luate în studiu. În urma analizei, s-a constatat că aceste fitocenoze sunt slab productive, mai ales din cauza suprapăşunatului.*

MATERIAL AND METHODS

For the study of the vegetation we used the method of the phytocoenological School in Zurich-Montpellier, perfected by J. Braun-Blanquet and J. Pavillard. On taking into consideration few phytosociological papers of classification (Sanda, 2002, Sanda and collab. 1997, Sanda and collab. 2001), the association was framed in the following coenosystem:

Cls. *Molinio-Arrhenatheretea* R. Tx. 1937
Ord. *Arrhenatheretalia* R. Tx. 1931
Al. *Cynosurion* R. Tx. 1947
As. *Festuco rubrae-Agrostietum capillaris* Horvat 1951
sass. *nardetosum strictae* (Csürös et Resm. 1960) Oroian 1998.

RESULTS AND DISCUSSIONS

The association *Festuco rubrae-Agrostietum capillaris* Horvat 1951 subassociation *nardetosum strictae* (Csürös et Resm. 1960) Oroian 1998 has not been recorded in the area of the Dorna river superior basin (basin which is placed

in the South-Western part of Suceava county) so far. The phytocoenoses of this association, specific to the montane area meadows, are permanently subjected to over-grazing and therefore are degraded.

From **the chorologic** point of view, phytocoenoses of this subassociation have been identified at Dornişoara; along the Dorna axial path, between Tinovul Mare and Dorna; along the Borcut Muncelu forest path.

As regards **the ecology**, the phytocoenoses of this subassociation vegetate at altitudes which range between 924 and 1050 meters, on fields poor in nutritive substances, accomplishing a 100% covering of the vegetation. These phytocoenoses, typical of the montane area, are specific to the meadows which are exclusively intended for the grazing and therefore they are degraded and low productive.

The phytocoenological characterization. Besides the characteristic and edifying species, *Festuco rubra* and *Agrostis capillaris* we notice the presence of the differential species *Nardus stricta, Hypericum maculatum ssp. maculatum, Potentilla erecta*. Beside these, numerous species specific to *Molinio-Arrhenatheretea* class (and implicitly to the phytocoenotaxons which are inferior to this class) participate to the extent of 75%, followed by species of the *Festuco-Brometea* class (14.58%) and *Juncetea trifidi* (4.16%) (table I).

Table 1

Ass. *Festuco rubrae-Agrostietum capillaris* Horvat 1951
sass. *nardetosum strictae* (Csürös et Resm. 1960) Oroian 1998

Relevé number	**1**	**2**	**3**	**4**	**5**	
Altitude (m)	**924**	**924**	**998**	**1050**	**1050**	
Cover of the vegetation (%)	**100**	**100**	**100**	**100**	**100**	
Surface of the relevé (m²)	**100**	**100**	**100**	**100**	**100**	
Number of species	**34**	**34**	**29**	**21**	**25**	**K**
Charact. ass.						
Agrostis capillaris	1	2	1	3	2	V
Festuca rubra	2	1	2	1	1	V
Dif. sass.						
Hypericum maculatum ssp. maculatum	-	-	+	-	+	II
Nardus stricta	2	3	3	2	3	V
Potentilla erecta	+	+	+	-	+	IV
Cynosurion						
Bellis perennis	+	+	-	+	+	IV
Cynosurus cristatus	+	+	+	-	+	IV
Leontodon autumnalis ssp. autumnalis	+	+	-	-	-	II
Phleum pratense	-	+	+	+	-	III
Plantago major ssp. major	-	-	+	-	+	II
Prunella vulgaris	+	+	+	-	+	IV
Trifolium repens ssp. repens	-	+	+	+	-	III
Veronica serpyllifolia ssp. serpyllifolia	-	+	-	-	-	I
Arrhenatherion						

Campanula patula	+	+	+	-	+	IV
Centaurea phrygia	+	+	-	+	+	IV
Taraxacum officinale	+	+	+	+	-	IV
Arrhenatheretalia						
Achillea millefolium ssp. millefolium	+	+	-	+	+	IV
Briza media	+	+	-	1	+	IV
Carum carvi	+	+	-	-	-	II
Leucanthemum vulgare ssp. vulgare	+	-	+	+	-	III
Luzula campestris	+	-	-	-	-	I
Thymus pulegioides	+	-	-	+	-	II
Deschampsion caespitosae						
Carex palescens	+	-	-	-	+	II
Deschampsia caespitosa	1	+	+	-	+	IV
Molinietalia						
Lychnis flos-cuculi	-	+	-	+	-	II
Potentillion anserinae						
Potentilla anserina	+	+	-	-	-	II
Molinio-Arrhenatheretea						
Alchemilla vulgaris	1	1	1	+	1	V
Anthoxanthum odoratum	-	+	+	-	+	III
Centaurea jacea	+	+	-	-	-	III
Cerastium holosteoides	+	+	+	-	-	III
Euphrasia officinalis ssp. pratensis	+	+	+	-	-	III
Lotus corniculatus	+	+	-	+	+	IV
Plantago lanceolata ssp. lanceolata	-	+	+	-	+	III
Polygala vulgaris ssp. vulgaris	+	-	+	-	-	II
Ranunculus acris ssp. acris	+	+	-	+	-	III
Stellaria graminea	+	-	+	-	-	II
Trifolium pratense ssp. pratense	+	+	1	1	+	V
Festuco-Brometea						
Anthyllis vulneraria ssp. vulneraria	-	+	-	-	+	II
Euphrasia stricta ssp. stricta	-	-	+	+	+	III
Galium mollugo	+	-	-	-	-	I
Hieracium pilosella	+	-	+	+	-	III
Plantago media	+	+	+	-	+	IV
Ranunculus polyanthemos ssp. polyanthemoides	-	-	+	-	-	I
Trifolium pannonicum	-	-	+	-	+	II
Juncetea trifidi						
Campanula serrata	+	-	+	-	-	II
Potentilla ternata	-	+	-	-	-	I
Variae syntaxa						
Cirsium vulgare	-	+	-	+	+	III
Cruciata glabra	+	+	+	+	-	IV

Place and date of the relevées: 1, 2 – axial path Dorna, between Tinovul Mare and Dorna river (27.07.2006), (19.08.2006); 3 – forest path Borcut Muncelu (21.08.2006); 4, 5 – Dornişoara (10.08.2007).

The hemicryptophytes have the highest percentage (87.5%) within **the bioforms' spectrum**, a situation which is absolutely normal for this type of

vegetation. The hemiterrophytes which achieve a percentage of 6.25% and the terrophytes which represent 4.16% follow at long distance. The camephytes occur in these phytocoenoses to the extent of 2.08% (fig. 1).

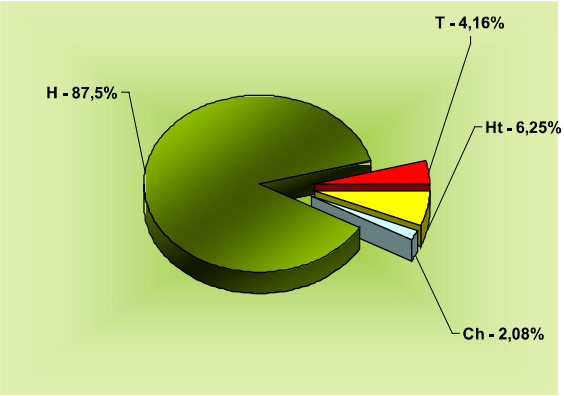

Fig.1 - The bioforms spectrum – as. *Festuco rubrae-Agrostietum capillaris* Horvat 1951 sass. *nardetosum strictae* (Csürös et Resm. 1960) Oroian 1998

Most of the **geoelements** types are Eurasian (Euras.) and European (Eur.), the latter representing together 75% of the total number of species existing in these phytocoenoses. The cosmopolite elements (Cosm.) occur to the extent of 10.42% and the circumpolar ones (Circ.) are represented by 8.33% of the species (fig. 2).

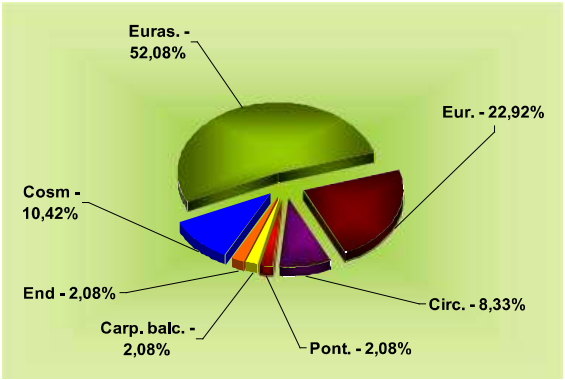

Fig.2 - The floristic elements spectrum – as. *Festuco rubrae-Agrostietum capillaris* Horvat 1951 *sass. nardetosum strictae* (Csürös et Resm. 1960) Oroian 1998

The spectre of ecological indices show that 93.75% of the total number of species are heliophile plants, 68.75% are eurythermal species; 62.51% are plants that prefer the moderate humidity soils, and 29.17% are amphytolerant species from this point of view. 64.58% of the vegetal components of these phytocoenoses endure large variations of the sublayer' pH, being euryionic plants. The fact that the phytocoenoses of this subassociation grow on soils which are less rich in nutritive substances is also reflected by the significant percentage of the species with an ecologic optimum represented by the soils poor in mineral nitrogen (45.82%); the amphytolerant species represent 27.08%, followed by the

species which grow especially on soils with a moderate content of this element (16.66%) (fig. 3).

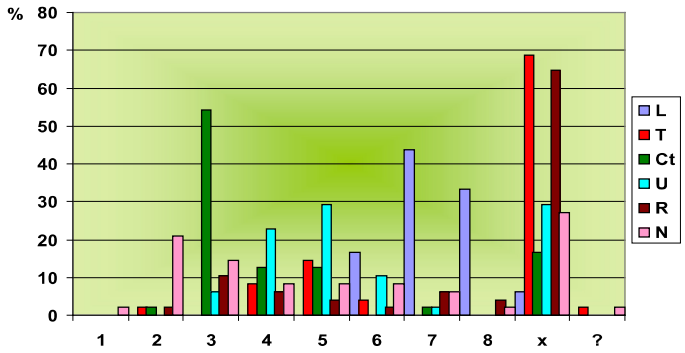

Fig.3 - The ecological indices spectrum – as. *Festuco rubrae-Agrostietum capillaris* Horvat 1951 sass. *nardetosum strictae* (Csürös et Resm. 1960) Oroian 1998

As regards **the economic value** of the species identified in these phytocoenoses, we ascertained, taking into account the specialized literature [5, 6], that more than half (**23** species) have **a fodder value**. Thus from the total number of the fodder value species, 11 species have a low fodder value (*Nardus stricta*, *Bellis perennis*, *Anthoxanthum odoratum*, *Potentilla ternata*, *Plantago major* ssp. *major*, *Briza media*, *Carum carvi*, *Deschampsia caespitosa*, *Anthyllis vulneraria* ssp. *vulneraria*, *Potentilla erecta*, *Plantago media*), 4 species have an average fodder value (*Achillea millefolium* ssp. *millefolium*, *Alchemilla vulgaris*, *Trifolium pannonicum*, *Plantago lanceolata* ssp. *lanceolata*), 5 species have a good fodder value (*Agrostis capillaris*, *Festuca rubra*, *Cynosurus cristatus*, *Taraxacum officinale*, *Lotus corniculatus*) and only 3 species have a very good fodder value (*Phleum pratense*, *Trifolium repens* ssp. *repens*, *Trifolium pratense* ssp. *pratense*) (fig. 4).

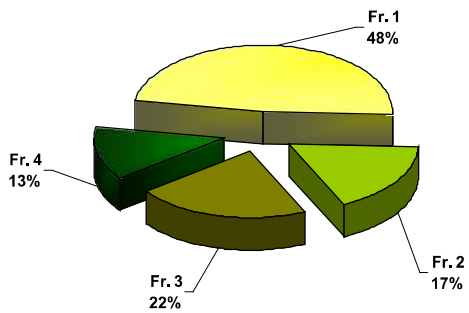

Fig.4 - The spectrum of the fodder value plants: Fr.- fodder plants, Fr. 1 – with low value, Fr. 2 - average value, Fr. 3 – with good value, Fr. 4 - very good value – as. *Festuco rubrae-Agrostietum capillaris* Horvat 1951 sass. *nardetosum strictae* (Csürös et Resm. 1960) Oroian 1998

Within the economic category the noxious species from the meadows were also included, including the weeds that decrease the fodder value of the meadows. Among these, only 2 species can be distinguished in the analyzed phytocoenoses:

Ranunculus acris ssp. acris and *Cirsium vulgare*, each of them achieving the constant value number III.

This analysis confirms the fact that these phytocoenoses are low productive and always subjected to the grazing.

CONCLUSIONS

The floristic composition of the identified phytocenoses is less diversified, being represented by 49 species.

From the phytocoenologic viewpoint, the phytocoenoses of the association which is the object of the study are clearly dominated by species which belong to the *Molinio-Arrhenatheretea* R. Tx. 1937 class and to the phytocoenotaxons which are inferior to it.

The phytocoenoses of this association are low productive and are always subjected to over-grazing, this aspect being also emphasized by the percentage of 65% achieved by the species with a low and average fodder value.

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